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MEMO TO FILE

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TRIP TO FORD MOTOR COMPANY PLANT
USING BULK SHIPMENTS OF GROUP 7 FIBER
ASB-9902

Due to adverse publicity about the health hazards of asbestos fiber, Ford Motor Company had been studying alternate materials to be used to replace asbestos fiber. Unsuccessful in their search for a substitute, they asked for help to reduce the airborne concentrations of asbestos fiber in the plant.

Description of Process

Group 7 asbestos fiber is brought in hopper bottom cars to the plant. By means of high-pressure air, the material is fluidized and blown to one of two bins in which it is stored. On top of the bins are Flex-Kleen bag collectors.

Periodically, fiber is drawn from one of the bins and fed across the weigh belt. Fiber drops off the weigh belt into a rotary valve and through the valve into a pipe in which it is transported under positive pressure to a weighing receiver above a mixer. The weighing receiver is vented to a Flex-Kleen collector.

Batches are made up in the mixer into which numerous materials including the weighed amounts of asbestos fiber are charged. A man makes up deficient weights of asbestos fiber into the mixer by hand. After the mixer, there is probably no health hazard because the mixture is wetted and does not dust.

A hazard does exist later on in the process after the mixture has been charged into presses and cured. Pieces from the presses have flashing cleaned off by hand and are drilled in jigs. Both of the mechanical processes generate air-borne dust.

Air Borne Asbestos Dust and Methods of Control

When the asbestos fiber is blown into the bins, the bins are under positive pressure because the Flex-Kleen dust collectors venting the bins have no fans. There are openings in the top of the bins where controls have been removed. When the bins are being charged, a cloud of dust fills the plant.

All leaks in the tops of the bins should be repaired. A fan should be added to the Flex-Kleen dust collector so that the air is vented under negative pressure through that collector. That system must be studied to ensure that there is adequate cloth area in the Flex-Kleen collector to permit negative pressure to be maintained in the bin.

The piping to the bins is connected at joints by split sleeves that look to be homemade. These joints leak dust into the plant. All split sleeve connectors should be replaced with leaktight, quick-disconnect couplings that are standard in pneumatic conveying work.

The weigh belt under the bins does not seem to serve any useful purpose. Fiber is weighed both on this belt and in the receiver. The receiver weighing should be made fool-proof and the weigh belt removed. The weigh belt is difficult to enclose and generates dust below the bin.

The rotary valve leaks, and the pipe under positive pressure blows dust into the enclosure under the bin. A study should be made to see whether the conveying system from the bin to the receiver should be made negative. If it can't, the conveying system from the bin to the receiver should be made completely leaktight.

When we were there, the Flex-Kleen collectors above the receiver were leaking probably due to holes in the bags. The dust was blowing into the plant as fiber was being transported. The bags in the Flex-Kleen collector must be kept in perfect repair. If the system is not made negative, then a fan should be installed so as to keep at least the receiver under negative pressure.

The dust control connection on the mixer itself is poor. Settling chambers should be installed ahead of the dust connection so that it does not take away too much material when it is adequately venting the mixer.

The weighing process should be improved to the point where a man does not have to add asbestos fiber by hand into the mixer. Until that is done, the open bags of fiber should be installed in a opening hood very similar to those designed for Johns-Manville plants. Any scooping of fiber should be done under that hood. The hood must, of course, be adequately vented so that 150 to 200 feet per minute face velocity is maintained in the face of the hood.

Empty bags of fiber should be changed from the hood into a clean bag much as it is done in Johns-Manville plants.

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The handling of fiber bags in the warehouse is poor. Training need in Johns-Manville plants of repairing all broken bags and sleeving all piles of fiber should be adopted. No loose moulds of fiber in the warehouse area should be tolerated.

The dust control of the tables where flashing is removed and where the jigs are used to drill the cured parts was inadequate. The dust control should be improved, to accepted standards of dust control practice.

If the recommendations are followed as outlined in this report, then there would be no need for health reasons to search for any substitutes for asbestos fiber.

It is readily apparent from the description of operations in this report that customers of Johns-Manville asbestos fiber could use some of the know-how that has been developed in Johns-Manville plants over the past years.

J. GOLDFIELD
EC Engineering

P.S. The asbestos fiber is blown into the lining at the base of the Flex-Kleen dust collector. The collector will not plug as badly if the fiber line is connected in a cyclone chamber on the bin as far removed from the collector as possible.