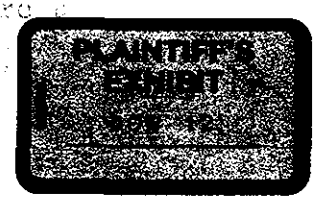
THE DOW CHEMICAL COMPANY



MIDLAND DIVISION
July 30, 1970

Confidential

Harold Bosscher, Manager
Midland Division
47 Building

SUMMARY ON ASBESTOS IN THE MIDLAND DIVISION

Since the recognition of health hazards associated with the use of asbestos, the following steps have been taken.

Environmental Health conducted a study of pipe coverers on the job and determined the exposure to dusts from insulating materials in use. By determining how long and how often the various activities were performed a time-weighted exposure was established. From this information, the minimal respiratory protection was established for each type of insulating material and each activity in the pipe coverers job.

During August, 1969 the results of this study were presented to the pipe coverers, maintenance supervisors and production representatives. Additionally, the Medical Department explained the health hazards involved and the effects of smoking as a habit which enhances the chances of developing cancer of the lung. The maintenance group explained what would be required for respiratory protection and when it was to be worn. The use of fiberglass as a replacement for aircell was discussed.

Since August, 1969, the use of aircell has been discontinued and replaced with fiberglass(100°F - 350°F). Careytemp 1500 has been introduced as the replacement for calcium silicate type insulations up to 1500°F. Purchasing will not buy an insulation containing asbestos without notifying the Maintenance Technology Center and insuring that there is no other material that will do the job. Careytemp is more difficult to work with and install than some of the calcium silicate insulations. Because of this, there is probably a 5 to 10% extra cost in using Careytemp. As the coverers become more experienced with Careytemp, this should drop. Work is underway with the manufacturer to improve the product.

Present technology does not give us a substitute for asbestos at high temperatures (+1500°F.). Ceramic foam may offer a possibility for high temperature use. Insulating cements are also a problem area. Until substitutes can be developed, careful handling procedures must be followed during the mixing.

The introduction of additional asbestos containing insulation into the Division has been vastly reduced. In the coming years, the prime source of asbestos exposure will be the removal, transportation and disposal of old asbestos insulation. Procedures for handling and sending old insulation to disposal must be developed.

The other major use of asbestos is in the chlorine cell maintenance area in the manufacture of diaphragms for chlorine cells. The asbestos is received in 50 lb bags and dumped into a mix tank. About 150 lbs is required for a diaphragm for the present cells and 450 - 500 lbs will be required per diaphragm in the new plant. The new plant will use about 50,000 lbs/yr of asbestos for this purpose.

The operation has been studied by Environmental Health and the proper respiratory equipment has been specified for the mixing operation. In the old cell maintenance area only full bags of asbestos are handled and use of partial bags is avoided which reduces exposure. The mixing is an intermittent operation which also reduces personnel exposure. The new plant will have a complete ventilation system above the mix tank which will go to a filter unit and then to a scrubber or bag filter.

In the cell buildings asbestos is handled in small amounts by the operators. It is dumped directly into the cell to plug holes in the diaphragm. This operation requires respiratory protection. For the long term solution, a new material of construction for diaphragms is being considered but a likely successor has not yet been found.

In the cell maintenance area as the old diaphragms are washed with high pressure water, 70% of the asbestos is recovered on a set of vibrating screens and is sent to land fill. The remainder is recovered at the treatment plant on the centrifuges.

Environmental Health is making a complete inventory of uses of asbestos and recommended disposal techniques. The Maintenance Technology Center will work with Waste Disposal and Environmental Health to develop procedures for handling and disposal of covering.

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