

1089

MIDLAND, MICHIGAN
October 2, 1968

Dr. C. G. Kramer
Medical Department
607 Building

EXPOSURE TO ASBESTOS FIBERS BY ROBERT FRIDAY, PIPE SHOP DEPARTMENT

Robert Friday began work as a pipe coverer on 11/5/51, with the classification "Apprentice Helper." On 11/5/52 he was advanced to Senior Helper and on 6/19/53 to Journeyman Pipe Coverer. He has continued in this classification to date.

The work of the pipe coverer, including all job classifications, is entirely with a multitude of pipe and tank covering operations. It is estimated by supervision that approximately 10% of a man's time is spent in using a small hand saw to cut the covering material. Eighty per cent of the time is spent fitting material and another 10% is used to mix an insulating cement and form bends. It is evident that in sawing the insulating material, and in the mixing of the insulating cement, exposure to fine dust can occur. Attached is a table showing the results of a study of dust exposure of workers cutting various types of pipe covering material used at the Dow Corning Corporation. The material most widely used by Dow workers is Carey's "Air Cell," an asbestos fiber material built up of alternating layers of plain and indented asbestos paper of 22 layers per inch, with a density of nine pounds per cubic foot.

Samples of Carey's Air Cell were analyzed by X-ray diffraction and shown to be chiefly chrysotile with five to 10% of the sample brucite, which is magnesium hydroxide, and <5% magnitite, which is Fe_3O_4 . The Johns-Mansville High Temp which is shown in the following table as calcium silicate, actually was shown by analysis to be for the most part (in the crystalline phase, that is) cristotilite in the form of SiO_2 , with both chrysotile and amphibole forms of asbestos present -- probably 10 to 20% of each.

There was an indication of the presence of amorphous material which is probably the calcium silicate mentioned in the summary of materials used. A copy of the analytical report is included with this letter.

If one assumes that hand sawing of the Carey Air Cell will give rise to about the same amount of dust in the air as the hand sawing of the materials studied at Dow Corning, approximately 5 - 10% sawing of this man's time was spent in an environment where the dust concentration of asbestos and crystalline silicon dioxide particles

ST006804

10/2/68

ranged between ten and twenty millions of particles per cubic foot. The Industrial Hygiene Standard both for asbestos fibers and for silica is five million particles per cubic foot. It should be remembered, however, that this Industrial Hygiene Standard is for repeated exposures of eight hours per day rather than the 5 - 10% of the man's time which is estimated to have been spent in atmospheres containing the ten to twenty million particles per cubic foot of dust.

It would appear, therefore, that the likelihood of either asbestosis or silicosis resulting from these exposures is extremely low. It is true, however, that there is the possibility of asbestos particles in the air and therefore, asbestos might be found in the lungs of a pipe coverer.

A Dow material usage report for 1966, indicated the following and is considered to be typical of the proportionate amounts used.

	<u>Pipe Covering Material</u>	
	<u>Quantity</u>	
	<u>Board Ft.</u>	<u>Per Cent</u>
Carey "Air Cell" (asbestos fiber)	75,971	51.4
Owens Corning Fiberglas SSL	11,561	7.8
Owens Corning Hi Temp. Fiberglas	1,796	1.2
Owens Corning "Kaylo" (Calcium silicate)	58,148	39.4
Johns-Mansville Hi Temp. (Cal. silicate)	<u>245</u>	0.2
	147,722	

	<u>Block Material</u>
Owens Corning "Kaylo" (calcium silicate)	12,334 sq. ft.
Johns-Mansville Hi Temp. (cal. silicate)	<u>245 sq. ft.</u>
	12,579 sq. ft.



E. J. Schneider
Biochemical Research Laboratory
1701 Building

EJS:reh

ST006805