Johns-Manville

Internal Correspondence

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Subject: ASBESTOS EXPOSURE WHILE HANDLING THERMOBESTOS INSULATION AND MIXING INSULATING CEMENTS - SIMULATED 1960's CONDITIONS

The purpose of these environmental determinations was to simulate and quantiate conditions that existed in the 1960's while sawing THERMOBESTOS pipe insulation and mixing insulating cements.

Two 40 x 8 ft enclosed trailers were rented to be used for storage, sawing and mixing. Sawing, the initial phase of the sampling, was conducted inside the trailer with no mechanical ventilation provided. Slight breezes did provide some natural ventilation through the open rear doors and the partially open side doors.

The sawing phase was done on August 17, 1976. The simulation involved obtaining various sized pieces of THERMODESTOS pipe insulation from the storage trailer, carrying the material to the second trailer, removing the cloth covering, sawing on a band saw and asiding the cut pieces. This sequence was carried on throughout the day at a pace equivalent to a normal work day.

The environmental sampling was done by three methods. The first method was the "Standard Impinger Sampling Method" which utilizes a Greenburg-Smith impinger operated at a sampling flow rate of 1.0 CFM. This is the method used in the 1960's for asbestos evaluations. The results of these determinations are as follows:

STANDARD IMPINGER SAMPLING METHOD (1960's)

Asbestos Threshold Limit Value (1965)	Test Result
5.0 mppcf*	102.7 mppcf
5.0 mppcf	109.1 mppcf
5.0 mppcf	87.8 mppcf
5.0 mppcf	116.9 mppcf
5.0 mppcf	139.7 mppcf
5.0 mppcf	112.7 mppcf

*Million Particles Per Cubic Foot

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The above samples were taken throughout the work day for durations of 15 minutes, as was done in the 1960's.

The second technique used was the currently accepted OSHA method for asbestos exposure determination. This method involves the collection of asbestos on a filter media at a sampling flow rate of 2.0 liters per minute. The results of these determinations are as follows:

CURRENTLY ACCEPTED OSHA METHOD (1976)

Sample Type	Asbestos Threshold Limit Value (1976)	Test Result
Operator, Personal	2.0 F/cc TWA**	14.1 F/cc
	2.0 F/cc	9.9 F/cc
	2.0 F/cc	8.1 F/cc
	2.0 F/cc	7.1 F/cc
	2.0 F/cc	9.2 F/cc
	2.0 F/cc	10.3 F/cc
	2.0 F/cc	13.8 F/cc
	2.0 F/cc	11.3 F/cc
	10.0 F/cc PEAK***	18.5 F/cc
	10.0 F/cc	16.2 F/cc
Area Sample	2.0 F/cc	13.4 F/cc
	2.0 F/cc	6.8 F/cc
	2.0 F/cc	3.5 F/cc
	2.0 F/cc	2.8 F/cc

**Fibers per cubic centimeter, Time Weighted Average
***Peak Exposure (15 minutes)

The third sampling technique is not related to asbestos exposures but is supplied for informative purposes only. This sampling was for silica dust concentration determinations. The results showed that less than 1.0 percent quartz and less than 1.0 percent cristobalite existed in the respirable fraction of the generated dust. Sampling in accordance with the present day silica sampling methods was done with the following results obtained:

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CURRENTLY ACCEPTED OSHA METHOD (1976) - SILICA

Silica Threshold Limit Value (1976)	Test Result
5.0 mg/M^3	6.97 mg/M^3
5.0 mg/M^3	20.63 mg/M^3

The mixing of insulating cement was done on August 18, 1976. This simulation involved mixing 7M-13 fiber in a 2 x 4 ft trough inside one of the trailers. The sequence of mixing was carried on throughout the day at a pace equivalent to a normal work day. The environmental sampling consisted of the same methods employed when sawing THERMOBESTOS with the exception that no silica work was done. The results of this sampling are as follows:

STANDARD IMPINGER SAMPLING METHOD (1960's)

Asbestos Threshold Limit Value (1965)	Test Result
5.0 mppcf	4.6 mppcf
5.0 mppcf	3.3 mppcf
5.0 mppcf	1.4 mppcf
5.0 mppcf	1.6 mppcf

CURRENTLY ACCEPTED OSHA METHOD (1976)

Sample	Asbestos Threshold Limit Value (1976)	Test Result
Operator	2.0 F/cc TWA	4.8 F/cc
	2.0 F/cc	3.1 F/cc
	2.0 F/cc	5.9 F/cc
	2.0 F/cc	5.5 F/cc
	10.0 F/cc PEAK	6.6 F/cc
	10.0 F/cc	6.6 F/cc
Area	2.0 F/cc	3.6 F/cc
	2.0 F/cc	1.[illegible] F/cc

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In conclusion, I would like to make a few comments on the authenticity of the simulated conditions of our testing. During the late 1960's and early 1970's I visited several of the insulation warehouse operations in the United States. I believe that our work would represent the worst conditions that existed for sawing material and about average or slightly below average for the cement mixing operation.

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