PLAINTIFF'S EXHIBIT

DOW-2661

DOW CHEMICAL U.S.A.

50983

TEXAS DIVISION
FREEPORT, TEXAS 77541

ENVIRONMENTAL HEALTH REPORT

ATMOSPHERIC CONCENTRATION OF ASBESTOS FIBERS WHILE CUTTING TRANSITE AT A-510

FILE NO. M-164

DATE April 19, 1973

AUTHOR R. L. Silverthorne

CHECKED PC Gay

DATE 4/19/73

Summary

Concentrations of asbestos during the cutting of transite, using a water saw, was found to be below the standards set in the Federal regulations, but may be significant when considering possible carcinogenesis. During the cutting of transite without water the levels were above the standards.

Attached is a copy of the survey with recommendations.

Distribution

Emil Prihoda A510
File

[redacted]

AN OPERATING UNIT OF THE DOW CHEMICAL COMPANY

ST0014475

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PROBLEM

At the request of supervision, the Industrial Hygiene Department was asked to evaluate the asbestos hazard presented by the cutting of transite material.

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CONCLUSION

(1) Asbestos fibers are liberated by the cutting operation in significant quantities.
(2) The concentration of asbestos fibers found during dry cutting were as follows:

(a) Breathing Zone of man doing cutting----------36.04 f/cc
(b) Breathing Zone of man doing cutting----------20.44 f/cc
Avg.----------28.24 f/cc

(3) The concentration of asbestos fibers found during wet cutting were as follows:

(a) Breathing zone of man doing cutting---------- .445 f/cc
(b) Breathing zone of man doing cutting---------- .267 f/cc
Avg.---------- .356 f/cc

Current government regulations allow no more than an 8 hour time weighted average concentration of 5 f/cc. The regulation also states that no employee shall be exposed at any time to airborne concentration of asbestos fibers in excess of 10 fiber/cc.

(4) The current regulation governing permissible exposures to asbestos are based upon the possibility of contraction of asbestosis. Asbestos fibers, however, have also been shown to be carcinogenic. No dose/disease relationship has been established, so efforts must be made to reduce and eliminate, if possible, the workers exposures.

RECOMMENDATION

(1) Cutting of transite material should be minimized if possible.

(2) A water saw should be used whenever cutting is to be done.

(3) The man assigned to cutting transite shall wear an approved dust respirator.

(4) Work clothing should be changed and washed daily.

(5) Environmental measurements should be made annually to determine the adequacy of precautions taken.

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RECOMMENDATIONS (continued)

(6) A suitable periodic medical examination program should be arranged for employees exposed to asbestos fibers.

DISCUSSION

Asbestos fibers inhaled over a prolonged period can cause a pulmonary disease called asbestosos. This fact has been recognized for many years by those involved in the production and sale of asbestos. During the last few years a threshold limit value has been established for asbestos fibers in the atmosphere, the purpose of which is to prevent asbestos workers from contracting asbestosos. The current standard is 5 fibers/cc as recognized by the Federal Government. However, over the last few years respirable asbestos fibers have been recognized as being carcinogenic. A dose/disease relationship has not yet been established, so no standard has been published prescribing the acceptable concentration of asbestos fibers below which cancers will not appear.

For this reason exposures must be reduced to as low a level as is possible. This is done most desireably by reducing the exposure to the workers, and then providing protective equipment if the exposure cannot be eliminated.

A total of 4 samples were taken on Milliport 0.8 micron 47 mm AAWG membrane filters. MSA Monitaire portable vacuum pumps calibrated and used. Used filters were cropped into 4 grid sections and immersed in 10% solution of diethyl oxylate and dimethyl phthalate on a slide, and then covered with a cover slip. When the membrane became transparent counting was performed using 40X objective and a 12.5X eyepiece, for a total magmafication of 500X. The eyepiece was equipped with a micrometer of 100 divisions 2.5 microne each.

Phase contrast illumination was used.

It should be remembered that the numbers given as the concentrations of atmospheric asbestos fibers is not to be considered as the absolute concentration, but the best technique presently known. Tests have shown that this method produces numbers that are difficult to reproduce from lab to lab, or microscopist to microscopist. However, it is the best technique we have.

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ENVIRONMENTAL SURVEY SAMPLE RECORD

DATE: 2-28-73

BUILDING NO.	PROCESS		SUPERVISOR		
A-510	Cutting Asbestos Transite		Emil Prihoda		
MATERIAL OR CHEMICAL	SAMPLING METHOD		TRAPPING MEDIUM		
Asbestos	Air		Filter paper		
TYPE OF EQUIPMENT	FLOW INDICATOR	SAMPLING RATE	WIND DIR.	VELOCITY	TEMP.
MSA Pump	10	Pump 1 - 2.57 L/M Pump 2 - 2.69 L/M	ENE	12 mph	

REMARKS
S. corner of A-510 (Outside of door D)

Liters F.fibers f
75μ

Sample No.	Container No.	SAMPLE DESCRIPTION	TIME Start	TIME Stop	TIME Δ	Sample Volume	Analysis	Co Ir
1		Buddy Hammonds using water saw to cut corrogated transite. Wearing respirator. (2-28-73) Pump #1	9.14 AM	9:16 AM	2 min	5.14	2310	-
2		Buddy Hammonds using water saw (without water) to cut ½" flat transite. Wearing respirator. (2-28-73) Pump #2	9:18 AM	9:20 AM	2 min	5.38	195,888	3.
3		R. A. Hall using water saw to cut asbestos transite. Wearing respirator (3-30-73) Pump #1			40 sec.	1.71	462	-
		Dry cutting of asbestos transite R. A. Hall. (3-30-73) Pump #2			40 sec.	1.79	36,960	2
5		Blank					0	

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ASBESTOS IN ATMOSPHERE DURING CUTTING OF ASBESTOS TRANSITE

Filter Factor = 154

SAMPLE NUMBER	TIME	SAMPLE RATE ($\frac{\text{Liters}}{\text{Min.}}$)	TOTAL VOLUME (Liters)
1	2 min.	2.57	5.14
2	2 min.	2.69	5.38
3	40 sec.	2.57	1.71
4	40 sec.	2.69	1.79

	FIBERS 75 u Per Square	Filter Factor	Total Fibers	Total Corrected Fibers	Fibers Per cc
(1)	15	154	2310		.445
(2)	1272	154	195,888		36.04
(3)	3	154	462		.267
(4)	240	154	36,960		20.44
(5)	0	154	0		0

$$\text{Concentration} = \frac{\text{Total Fibers 75 u}}{\text{Total Volume}} = \frac{\text{Fibers}}{\text{cc}}$$

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