



DOW CHEMICAL U.S.A.

2-10-73

TEXAS DIVISION
FREEPORT, TEXAS 77541

ENVIRONMENTAL HEALTH REPORT

PLAINTIFF'S EXHIBIT

DOW-794

EVALUATION OF ASBESTOS EXPOSURE
TO INSULATORS AT GLYCOL "A"

FILE NO. A18-237

DATE November 21, 1973

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CHECKED R.L. Daniel

DATE 11/21/73

Summary

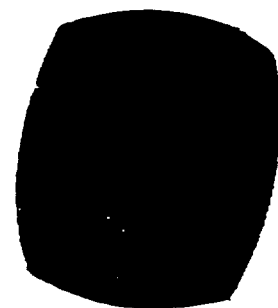
Contractor insulator exposure to asbestos fibers were evaluated during the removal of insulation on two columns at Glycol "A". The time-weighted average (the average exposure of asbestos fibers to employees during an eight hour work day) and peak exposures to asbestos fibers are within acceptable levels, although the peak exposures could approach maximum allowable concentrations due to the variability in the asbestos handling procedures. The employees should continue to wear respiratory protection during the handling of asbestos, and every effort should be made to wet down the asbestos insulation before and during removal.

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F. A. Newman A-510
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AN OPERATING UNIT OF THE DOW CHEMICAL COMPANY



INTRODUCTION

Environmental Health Services was asked to evaluate the exposure of Insulators to asbestos fibers during the removal of asbestos insulation from two reaction towers at Glycol "A".

METHODOLOGY

Breathing zone and general area air samples were collected on 47 mm-diameter(.8 micron pore size) membrane filters at a sample rate of about 2.0 LPM. The air pumps used were M.S.A. permissible portable personnel pumps. The fibers on the filters were counted by the standard phase-contrast microscopy technique at 450 magnification by the Texas Division Microscopy Laboratory.

DISCUSSION

Table A shows the insulator exposures to asbestos fibers based on an eight hour work day when insulation is being removed from reaction towers. His time weighted average and peak exposure are within acceptable levels based on the present OSHA standard.

Table B shows the results of the sample analyses for the various Insulator operations. The highest asbestos fiber concentration, up to 1.29 fibers/ml, were found during the actual removal of insulation by the employee. Because of the variability in the asbestos handling procedures the employee peak exposures could exceed the allowable ceiling concentration.

CONCLUSION

1. The employees time weighted average and peak exposures to asbestos fibers are within acceptable levels.

RECOMMENDATION

1. Asbestos insulation should be stored in plastic bags, tagged and sealed for disposal.
2. Employees who work regularly with asbestos should have clean work clothes daily. (Work clothes should not be taken home for laundering).

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RECOMMENDATIONS (continued)

3. Continue the work practice of wearing respiratory protection whenever asbestos is handled.
4. Employees with significant exposure should shower at the end of the work day.
5. Water should be used to wet down the insulation before and during the dismantling operation. This will reduce the possibility of asbestos fibers becoming air borne.
6. Environmental measurements should be made annually to determine the adequacy of precautions taken.
7. The contractor employer should be familiar with Subpart G, section 1910.93a, of the Federal Register.

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TABLE A
CONTRACTOR INSULATOR EXPOSURES
TO ASBESTOS FIBERS, GLYCOL "A"

OPERATION	*TIME WEIGHTED AVERAGE (fibers/ml)	*THRESHOLD LIMIT VALUE (fibers/ml)	MAXIMUM ALLOWABLE CONCENTRATIONS
Insulator wearing personnel monitor during the removal of insulation from the towers. He is putting the insulation in plastic bags.	1.43	5	10
Insulator wearing personnel monitor while at ground level. He is tagging & stacking the plastic bags full of insula- tion.	.063	5	10

* Threshold Limit Value (TLV)--The time-weighted average concentration to which it is believed most people could be exposed daily without adverse effect.

* Time Weighted Average ----- The average exposure of asbestos fibers to employees during an eight hour work day.

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TABLE B

INSULATORS SUMMARY OF SAMPLE ANALYSIS

AREA OPERATION	NO. OF SAMPLES	ASBESTOS CONCENTRATION FIBERS/ML	
		<u>AVERAGE</u>	<u>RANGE</u>
Personnel monitor on employee actually removing insulation from tower. (Only able to obtain one sample due to short operation).	1	1.43	---
Personnel monitor on Insulator at ground level, tagging each plastic bag full of asbestos & stacking it for removal later. (Only able to obtain one sample due to short operation).	1	.063	---
Area sampling around towers.	6	.243	0 to 1.31

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ENVIRONMENTAL RESEARCH SAMPLE RECORD

FILE NUMBER A18-237	PROCESS Contractor Insulators @ A-1801	BLOG. NO. A-1801	DATE 10/2/73
MATERIAL Asbestos	SAMPLING METHOD Filter (Cellulose)	TRAPPING MEDIUM .8 μ millipore filter	
EQUIPMENT NUMBER 2, 3, 4, 6	TYPE OF EQUIPMENT MSA Pumps	FLOW INDICATOR SETTING 8	SAMPLE FLOW RATE
REMARKS (VENTILATION, ETC.)		OUTSIDE TEMP. 	INSIDE TEMP.

SAMPLE NO.	CONTAINER NO.	DESCRIPTION OF SAMPLE	TIME		CONCENTRATION
			START	INCREMENT	
1	6	At base of tower 22. No activity (man just took break). Visible dust still seen after workers took break. Talked to foreman about applying water to asbestos.	21 min	25 sec	.055 f
		Applying water to asbestos now !!!			
2	6	At base of towers #22 & 25 $\approx$ 30' N. Workers tearing down insulation, and seen to be more careful this time. Also starting to use plastic bags and lowering insulation to ground. Man on ground is tagging bags and keeping area wet.	25 min		-0-
3	4	$\approx$ 40' N.W. of the two towers (in structure on ground floor $\approx$ 15' E of A-1801-B) Tearing down insulation & lowering to ground.	16 min	30 sec	.051 f

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ENVIRONMENTAL RESEARCH SAMPLE RECORD

FILE NUMBER A-19-237	PROCESS Contractor Insulators @ A-1801	BLDG. NO. A-1801	DATE 10/2/73
MATERIAL Asbestos	SAMPLING METHOD Cellulose Filter	TRAPPING MEDIUM .8μ millipore filter	
EQUIPMENT NUMBER 2,3,4,6	TYPE OF EQUIPMENT MSA Pumps	FLOW INDICATOR SETTING 8	SAMPLE FLOW RATE "
REMARKS (VENTILATION, ETC.)		OUTSIDE TEMP. "	INDOOR TEMP. "

SAMPLE NO.	CONTAINER NO.	DESCRIPTION OF SAMPLE	TIME		CONCENTRATION
			START	INCREMENT	
4	<u>Pump</u> 4	≈ 20' N.W. of tower 22 ground level men tearing down insulation	40 min 35 sec.		.023 f/
5	3	On Mr. B. Neclaye. This employee is taking asbestos ^{plastic} bags from tower. He is also watering down the area. Putting green warning tags on each plastic bag full of asbestos. The tags state: Caution: Contains asbestos fibers. Avoid creating dust. Breathing asbestos dust may cause serious health harm.	33 min 25 sec.		.063 f/
6	6	Same location as #2 (tearing down insulation and lowering to ground in plastic bags)	18 min 35 sec.		.024 f/
7	2	On employee Andy Holy. Tearing down insulation in column 22. Not using water, but carefully handling & putting into plastic bags	31 min 30 sec		1.43 f/

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ENVIRONMENTAL RESEARCH SAMPLE RECORD

FILE NUMBER A 18-237		PROCESS Contractor Insulators @ A-1801		BLDG. NO. A-1801	DATE 10/2/73	
MATERIAL Asbestos		SAMPLING METHOD Cellulose Filter		TRAPPING MEDIUM .8μ millipore filter		
EQUIPMENT NUMBER 2,3,4,6	TYPE OF EQUIPMENT MSA Pumps	FLOW INDICATOR SETTING 8		SAMPLE FLOW RATE	OUTSIDE TEMP. °	INSIDE TEMP. °
REMARKS (VENTILATION, ETC.)						

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DOW

R. L. Silverthorne
Safety and LP, B-101

THE DOW CHEMICAL COMPANY
TEXAS DIVISION

CENTRAL LABORATORY FREEPORT

FILE LMDATE THIS REPORT 10-17-73CHARGE 1308-00020REPORT OF ANALYSISDESCRIPTION Air Filters (Insulators #1-8)DATE OF SAMPLE 10-2-73

Particles and fibers were counted on eight air filters from areas which involved the use and handling of asbestos. Individual counts were made for particles greater than 2.5 microns, fibers 5 microns to 10 microns, and fibers greater than 10 microns. The numbers reported are as total number of counts per filter square.

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BY: LDM dv

SIGNED

Lee A. Martin

DOW CHEMICAL U.S.A.
TEXAS DIVISION

JOB NO. _____

AUTH. NO. _____

CHARGE NO. 1308

FILE NO. _____

SUBJECT: AIR FILTERSBY P. MontanDATE 10-12-73

SHEET _____ OF _____

CHECKED BY _____

SAMPLE DESCRIPTION + DATE	No. of Passes	Particles > 25 μ	FIBERS 5 μ - 10 μ	FIBERS > 2 μ
#1 Insulators A-1801 10-2-73 /square	4	182 489	1 3	6 18
#2 Insulators A-1801 10-2-73 /square	3	107 428	0 0	0 0
#3 Insulators A-1801 10-2-73 /square	6	100 200	- 8	4 8
#4 Insulators A-1801 10-2-73 /square	2	150 900	1 6	2 12
#5 Insulators A-1801 10-2-73 /square	2	109 654	4 24	3 18
#6 Insulators A-1801 10-2-73 /square	2	15 420	2 8	0 0
#7 Insulators A-1801 10-2-73 /square	1	156 5472	70 516	33 456
#8 Insulators A-1801 10-2-73 /square	2	155 930	17 402	35 210
/square				
/square				
/square				

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