

INDUSTRIAL HYGIENE REPORT

TEXAS OPERATIONS

DOW CHEMICAL U.S.A.
AN OPERATING UNIT OF THE DOW CHEMICAL COMPANY

PLAINTIFF'S EXHIBIT

DOW-834

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TITLE:

ASBESTOS MONITORING DURING TRANSITE REMOVAL AT A-1128
FOR PLANT A REFRIGERATION

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SUMMARY

Area asbestos monitoring was done during a transite removal job at A-1128 Refrigeration Shop on October 4, and October 17, 1988. The monitoring was done to ensure that the approved asbestos handling procedures would result in acceptable airborne concentrations of asbestos.

All measured asbestos concentrations were well below the OSHA Permissible Exposure Limit (PEL) of 0.2 fibers per cubic centimeter. The highest level found was 0.006 fibers/cc during the transite removal job.

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**ASBESTOS MONITORING DURING TRANSITE REMOVAL
AT A-1128 FOR PLANT A REFRIGERATION.**

INTRODUCTION

Area monitoring for asbestos was done during the removal of transite siding on the Plant A Refrigeration Shop, A-1128. The removal was done by Industrial Specialist Contractors. The monitoring was done to ensure that the use of approved job procedures would result in acceptable airborne concentrations of asbestos.

CONCLUSIONS AND RECOMMENDATIONS

1. All measured asbestos concentrations were well below the OSHA Permissible Exposure Limit (PEL) of 0.2 fibers per cubic centimeter. The highest level found was 0.006 fibers per cubic centimeter during the transite removal. All exposures were potential since workers within the regulated areas wore half-face respirators with high-efficiency particulate air (HEPA) cartridges.
2. Texas Operations asbestos handling procedures must always be followed. The Texas Operations Asbestos Handbook and Safety Standard T-12 must be reviewed. These procedures are designed to make the transite removal jobs safe. If these procedures are not followed, a potentially serious exposure or safety situation may result. For this reason, the asbestos handling procedures must be reviewed, understood, and enforced by all personnel involved in the asbestos removal jobs.

RESULTS AND DISCUSSION

Table I shows the results of area monitoring during the removal of transite siding. The highest area measurement was 0.006 fibers per cubic centimeter, located down wind on the restricted perimeter line. Results showed that all measured concentrations were well below the OSHA PEL of 0.2 fibers per cubic centimeters.

The results clearly show that the potential for harmful exposure to asbestos during the transite removal jobs is very low. However, improvement is needed in the asbestos handling procedures (i.e. pre-job meetings, ensuring job procedures are followed, etc.). These procedures are designed to make the transite removal jobs safe. For this reason, the asbestos handling procedures must be reviewed, understood, and enforced by all personnel involved in the asbestos removal jobs.

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**ASBESTOS MONITORING DURING TANSITE REMOVAL
AT A-1128 FOR PLANT A REFRIGERATION**

METHODOLOGY

Asbestos samples were collected using Gilian HFS 513A and 113A air sampling pumps. A known volume of air was pulled through a 25 millimeter mixed cellulose ester membrane filter, 0.8 micron pore size. Samples were collected at a flow rate of approximately 2.0 liters per minute. The pumps were calibrated before and after the sampling, and the samples were counted by McKee Environmental Health Services using phase contrast microscopy. NIOSH method 7400 used.

EVALUATION CRITERIA

The evaluation of exposure levels was based on the following criterion:

<u>AGENT</u>	<u>EXPOSURE GUIDELINE</u>	<u>SOURCE</u>
Asbestos	0.2 fibers/cc	OSHA (PEL)

The OSHA Permissible Exposure Limit (PEL) is the time-weighted average concentration for a normal 8-hour workday, 40-hour work week, to which nearly all workers may be repeatedly exposed without adverse health effects.

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TABLE I

**ASBESTOS MONITORING DURING TRANSITE REMOVAL
AT A-1128 FOR PLANT A REFRIGERATION**

Area	Sample Number	Date	Sample Time (Min)	Concentration (fibers/cc) TWA
In shop on top of cabinet near side working	1-10388	10-4-88	394	0.002
In shop area on back side - on top face shield case	2-10388	10-4-88	398	0.004
Outside perimeter line down wind	3-10388	10-4-88	387	0.006
Inside office area located near outside door	4-10388	10-4-88	399	0.005
Inside shop area near removal site	1-101788	10-17-88	420	0.001
Inside shop area near removal site	2-101788	10-17-88	420	0.001
OSHA PEL				0.2

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INDUSTRIAL HYGIENE SAMPLING RECORD

FILE NO. <i>A11-3403</i>	PROCESS <i>Maint Shop -</i>	BLDG.	DATE <i>10-4-88</i>
MATERIAL <i>Asbestos</i>	SAMPLING METHOD <i>25mm filter</i>	TRAPPING MEDIUM	
TYPE OF PUMP <i>Chas. Hg</i>	FLOW SET <i>2 lpm</i>	FLOW RATE	FLOW FACTOR
REMARKS (VENTILATION, ETC.) <i>Ind. Spec - Removing transite siding from - A-1128 Shop - dusts - lined off area - etc -</i>			

SAMPLE NO	SAMPLE DESCRIPTION		ROTO-METER	TIME	TOTAL TIME (MIN)		
CL-1-10388	PUMP S/N 1261	START		8:50	394		
	In shop on top of Cabinet nearest side where working	STOP		33:25			
	TOTAL LITERS AIR: 789.7						
	Analysis: fibers/cm ³ → 5.10						
CL-2-10388	PUMP S/N 2097C	START		8:46	398	STOP 15383	
	In shop area on back side - of shop on top w/ safety face shield case	STOP		3:25			
	TOTAL LITERS AIR: 815.1						
	Analysis: fibers/cm ³ → 8.92						
CL-3-10388	PUMP S/N 1256C	START		8:50	387		
	Outside on mainline downwind	STOP		325			
	TOTAL LITERS AIR: 778.8						
	Analysis: fibers/cm ³ → 11.46						

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SIGNATURE:

DATE:

INDUSTRIAL HYGIENE SAMPLE RECORD

FILE NO.	PROCESS	LDG.	DATE
MATERIAL	SAMPLING METHOD		TRAPPING MEDIUM
TYPE OF PUMP	FLOW SET	FLOW RATE	FLOW FACTOR
REMARKS (VENTILATION, ETC.)			

SAMPLE NO	SAMPLE DESCRIPTION		ROTO-METER	TIME	TOTAL TIME (MIN)
CL-4-10388	PUMP S/N 1260-C	START		8:40	399
	Area - Inside	STOP		3:21	
	office entrance	TOTAL LITERS AIR: 795.4			
	from outside -				
	Analysis: fibers/mm ² → 10.19	70			

CL-5-10388	PUMP S/N	START			ST0015384
	Blank	STOP			
	TOTAL LITERS AIR:				
	Analysis: fibers/mm ² → <0.6				

PUMP S/N	START			
	STOP			
	TOTAL LITERS AIR :			

SIGNATURE:

DATE:

Asbestos -
A-1128

During Monitors
Removal
Area

12057
FLOW AVERAGE # SAMPLES
2020 2020 01
2032 2026 02
2026 2026 03
2021 2025 04
2022 2024 05
2025 2024 06
2029 2025 07

FLOW AVERAGE # SAMPLES
2623 2623 01

2097C
FLOW AVERAGE # SAMPLES
1995 1995 01
1999 1997 02
1995 1996 03
1996 1996 04
1994

FLOW AVERAGE # SAMPLES
2097C After Monitor
2020 2020 01
2029 2025 02
2024 2024 03
2022 2024 04
2025 2024 05
2025 2024 06

12057

FLOW AVERAGE # SAMPLES
2012 2012 01
2009 2011 02
2009 2010 03
2014 2011 04
2010 2011 05
2016 2012 06
2014 2012 07

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#12057 - Area Sample
Time on: 8:05
Time off: 3:05
(420)

CS #1 - 101788

flow - 2018

2097C - Area Sample
Time on: 8:05
Time off: 3:05
(420)

CS #2 - 101788

flow - 2010

Blank

CS #3 - 101788

INDUSTRIAL HYGIENE SAMPLE RECORD

FILE NO.	PROCE. <i>Maintenance Shop A1128</i>	LDG. <i>A1128</i>	DATE <i>10-17-88</i>
MATERIAL	SAMPLING METHOD		TRAPPING MEDIUM
TYPE OF PUMP	FLOW SET	FLOW RATE	FLOW FACTOR
REMARKS (VENTILATION, ETC.) <i>Area monitoring during Removal of transit siding on the Refrigeration Shop A-1128</i>			

SAMPLE NO	SAMPLE DESCRIPTION		ROTO-METER	TIME	TOTAL TIME (MIN)	
CS#1-10 101 8	PUMP S/N 12057	START		8:05	420	
	Flow - 2018					
		STOP		3:05		
	TOTAL LITERS AIR: 859					
	Area sampled in shop -					
	Fiber/cc = 1.27 $(1.27 -) 385 = .0005 \rightarrow 0.001$ 859 (1000)					
CS#2 101-88	PUMP S/N 2097C	START		8:05	420	ST0015386
	Flow - 2018					
		STOP		3:05		
	TOTAL LITERS AIR: 964.8					
	Area sampled in shop -					
	Fibers/cc = 3.82 $(3.82 - 1.27) 385 = 0.001 -$ 964.8 (1000)					
CS#3 10-17-88	PUMP S/N	START				
		STOP				
	TOTAL LITERS AIR :					
	Blank					
	Fiber/cc = 1.27					

SIGNATURE:

DATE:

ST0015386