

INDUSTRIAL HYGIENE REPORT

TEXAS OPERATIONS

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

FILE NUMBER: B1-3401

DATE ISSUED: December 19, 1988

PLANT CODE: 82006

TITLE:

ASBESTOS MONITORING DURING TRANSITE MODIFICATION
AT B-1313 BY THE PLANT B CARPENTERS

PLAINTIFF'S EXHIBIT

DOW-832

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SUMMARY

Short-term personal and eight-hour area asbestos monitoring was done during a transite modification job at B-1313 by the Plant B Carpenters on November 4, 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 STEL of 1.0 fiber per cubic centimeter (30 minute period) for employees performing the job and below the Permissible Exposure Limit (PEL) of 0.2 fibers per cubic centimeter for area samples taken during the job. The highest personal short-term level found was 0.037 fibers/cc. The highest area sample obtained was 0.004 fibers/cc.

ST0015362

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**ASBESTOS MONITORING DURING TRANSITE MODIFICATION
AT B-1313 BY THE PLANT B CARPENTERS.**

INTRODUCTION

Personal and area monitoring for asbestos was done during the modification of transite siding at B-1313 by the Plant B Carpenters. The job consisted of cutting nine holes measuring approximately twelve inches by twelve inches. 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 and the OSHA STEL of 1.0 fiber/cc for a thirty minute period. The highest level found was 0.037 fibers per cubic centimeter during the thirty minutes that it took to to drill and cut the transite. All area samples ranged from less than 0.001 to 0.004 fibers/cc. All exposures were potential since workers within the regulated areas wore half-face respirators with high-efficiency particulate air (HEPA) cartridges.
2. A local exhaust method was used during the drilling and removal of the transite material. The method used is described on Table I of this report. 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 personnel monitoring during the drilling and removal of transite siding. The highest potential personnel measurement was 0.037 fibers per cubic centimeter, for the 25 minute job. Results showed that measured short-term concentrations were well below the OSHA STEL of 1.0 fibers per cubic centimeters for a 30 minute period.

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**ASBESTOS MONITORING DURING TRANSITE MODIFICATION
AT B-1313 BY THE PLANT B CARPENTERS**

DISCUSSION AND RESULTS (CONT')

Table II shows the results of area monitoring during the drilling and removal of transite. The area measurements ranged from 0.001 to 0.004 fibers/cc. All measured concentrations were well below the OSHA PEL of 0.2 fibers/cc.

The results clearly show that the potential for harmful exposure to asbestos during the drilling and removal of transite jobs is very low when local exhaust ventilation is used when glove bag or enclosures are not feasible. 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.

METHODOLOGY

Asbestos samples were collected using Gilian HPS 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 (8-Hr.TWA)	OSHA (PEL)
	1.0 fibers/cc (30 minute)	OSHA (STEL)

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. The OSHA Short-term Exposure Level (STEL) is the excursion limit averaged over a thirty minute period.

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TABLE I

ASBESTOS MONITORING DURING TRANSITE MODIFICATION
AT B-1313 BY THE PLANT B CARPENTERS

Master Number	Sample Number	Date	Sample Time (Min)	Concentration (fibers/cc) TWA
133058	CS110488-4	11-4-88	27	0.009
139749	CS110488-5	11-4-88	24	0.037
OSHA STEL (30 MIN)				1.0

NOTE:

The following job procedure was used:

Twelve inch square holes were cut by drilling holes approximately every 3/4 inches around the outside of the squares and breaking the inside area of the transite out with a chisel and hammer. The transite material was kept wet during the entire job. A damp foam block was placed to the back side of the transite wall to prevent any pieces of transite from falling inside. During the entire procedure a HEPA filtered vacuum was used to in the immediate area of the drilling to remove any contamination. All the requirements in Section XI, under Transite and asbestos shingles cutting, drilling, or abrading minimum requirements were followed during the job.

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IHS File B1-3401

TABLE II

ASBESTOS MONITORING DURING TRANSITE MODIFICATION
AT B-1313 BY THE PLANT B CARPENTERS

Area	Sample Number	Date	Sample Time (Min)	Concentration (fibers/cc) TWA
Outside yellow tape area	CS110488-1	11-4-88	321	<0.001
In warehouse on cabinet under area where drilling transite	CS110488-2	11-4-88	338	0.001
Inside warehouse on drum rack	CS110488-3	11-4-88	342	0.004
		OSHA PEL		0.2

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INDUSTRIAL HYGIENE SAMPLE RECORD

Plant code
82006

FILE NO. B1-3401	PROCESS CARPENTERS / TRANSITE (P&M)	BLDG. B1300	DATE 11-4-81
MATERIAL Asbestos	SAMPLING METHOD 25mm filter	TRAPPING MEDIUM Air-	
TYPE OF PUMP GILIAN	FLOW SET	FLOW RATE	FLOW FACTOR
REMARKS (VENTILATION, ETC.) CARPENTERS WERE cutting holes (using a drill) in TRANSITE SIDING to be able to bolt Eye beams to the frame of the Building for support -			

SAMPLE NO	SAMPLE DESCRIPTION		STROKE COUNT	TIME	TOTAL TIME (MIN.)
CS 110488 #1	PUMP S/N 12055	START			321
	FLOW FACTOR: Before 2001				
	After 2025	STOP			
	Area sample - pump	TOTAL LITERS AIR: 642 Liters			
	located outside yellow tape perimeter - movement along with work as it progressed.				
	Area sample - < 6 0				
ST00153					

CS110488 # 2	PUMP S/N 1261	START		338
	FLOW FACTOR: pre- 1986			
	post- 2018	STOP		
	TOTAL LITERS AIR: 676. Liters			
	Area - in warehouse on cabinet labeled for shift on back wall of warehouse -			
	2.55 [1.001]			

CS 110488 # 3	PUMP S/N 2100	START		342
	FLOW FACTOR: <i>pre 2000</i>			
	<i>post 2012</i>	STOP		
	<i>Area - Inside warehouse</i>		TOTAL LITERS AIR: <i>686. Liters</i>	
	<i>on drum rack - back side where drilling transite</i>			
	7.64 1.004			

SIGNATURE: .

DATE:

INDUSTRIAL HYGIENE SAMPLING RECORD

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

SAMPLE NO	SAMPLE DESCRIPTION		STROKE COUNT	TIME	TOTAL TIME (MIN)
CS110488 # 4	PUMP S/N 2099	START			27
	FLOW FACTOR: pre - 2000 post - 2020	STOP			
	Master# - 133058	TOTAL LITERS AIR: 54. Liters			
	Cutting holes in transite by drilling with vacuum cleaner pulling dust - Chisel and Hammer used to remove rest of transite 1.91 [.009]				
CS110488 # 5	PUMP S/N 2802C	START			24
	FLOW FACTOR: pre 2010 post 2025	STOP			
	Master# 139749	TOTAL LITERS AIR: 48 Liters			
	working with Master # 133058 on transite job 5.16 [.041] [.037]				
CS110488 # 6	PUMP S/N	START			
	FLOW FACTOR:	STOP			
	Blank	TOTAL LITERS AIR :			
	4.6				
CS110488 # 7					
	2.55				

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SIGNATURE:

DATE:

Pre Calc

Information for Ugraph
Station 700 11-2-88

2100
FLOW AVERAGE # SAMPLES
2005 2005 01
2000 2003 02
2001 2002 03
1995 2000 04
2001 2000 05
1996 2000 06

FLOW AVERAGE # SAMPLES
(261)
1995 1995 01
1907 1991 02
1984 1989 03
1986 1988 04
1984 1987 05
1982 1986 06

FLOW AVERAGE # SAMPLES
2077
2000 2000 01
2000 2000 02
2000 2000 03
2000 2000 04
2000 2000 05

FLOW AVERAGE # SAMPLES
12055
1996 1996 01
2003 2000 02
2004 2001 03
2004 2002 04
2000 2001 05
2000 2001 06

FLOW AVERAGE # SAMPLES
20202C
2007 2007 01
2004 2006 02
2012 2008 03
2014 2009 04
2014 2010 05
2010 2010 06

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Post calibration for asbestos
11-7-88

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FLOW AVERAGE # SAMPLES

2100

2009	2009	01
2013	2011	02
2009	2010	03
2014	2011	04
2013	2012	05

FLOW AVERAGE # SAMPLES

1261

2020	2020	01
2022	2021	02
2017	2020	03
2017	2019	04
2013	2018	05

FLOW AVERAGE # SAMPLES

12055

2026	2026	01
2036	2031	02
2029	2030	03
2032	2031	04
2022	2029	05

28020

FLOW AVERAGE # SAMPLES

2024	2024	01
2026	2025	02
2024	2025	03
2026	2025	04
2024	2025	05

2099

FLOW AVERAGE # SAMPLES

2013	2013	01
2021	2017	02
2020	2018	03
2024	2020	04
2021	2020	05

CUTTING HOLES IN TRANSITE WALL AT B-1313

ST0015371

1. THIS JOB REQUIRE THE CUTTING OF 8 HOLES IN TRANSITE, 12" X 12" FOR PIPE RACK SUPPORTS.

REQUIREMENT

1. REQUIREMENT SPECIFIED IN SECTION I, 1, 2, 3, 4, 5, 6, 7, 8, WILL APPLY TO THIS JOB.

(A) THE CARPENTERS WILL USE A ELECTRIC DRILL MOTOR WITH, A 1/4" BIT, TO DRILL HOLES APPROX. EVERY 3/4" AROUND THE OUTSIDES OF THE 12" SQUARES & BREAK THE INSIDE AREA OF TRANSITE OUT WITH A HAMMER.

(B) THERE WILL BE A VACUUM WITH THE HEPA FILTERS USED TO COLLECT ANY ASBESTOS PARTICLES THAT ARE CAUSED BY THE DRILLING PROCESS.

(C) THERE WILL BE POLY FILM UNDER THE AREA TO BE CUT TO CATCH ANYTHING THE VACUUM MIGHT MISS. AFTER THE HOLE HAS BEEN CUT WE WILL USE THE VACUUM TO CLEAN ANY AREA THAT MAY BE CONTAMINATED INSIDE AND

OUTSIDE THE BUILDING.

- (D) THE CARPENTERS WILL BAG AND PROPERLY DISPOSE OF ANY TRASH BEING REMOVED.
- (E) THE CARPENTERS WILL USE DISPOSABLE COVERALLS DURING THIS OPERATION, WITH ATTACHED BOOTS.
- (F) AN APPROVED RESPIRATOR WILL BE USED.
- (G) THE AREA WILL BE ROPED OFF WITH YELLOW TAPE.
- (H) INDUSTRIAL HYGIENE PEOPLE WILL MONITOR & FOLLOW THIS JOB.
- (I) THE VACUUM CLEANER & ALL TOOLS WILL BE CLEANED AS PER REQUIREMENTS AFTER THE JOB IS COMPLETED.

ST0015372

J.E. Cwalt 11-2-82