



DOW CHEMICAL U.S.A.



TEXAS DIVISION
FREEPORT, TEXAS 77541

ENVIRONMENTAL HEALTH REPORT

RE-EVALUATION OF ASBESTOS EXPOSURES,
CELL SERVICE, A-1323 AND A-1022 BUILDING

FILE NO. A10-196
DATE September 12, 1973
AUTHOR R.L. Silverthorne
L. G. Trahan
B. S. Horvath
CHECKED R. E. Hah
DATE 9-12-73

Summary

The cell service employees exposure to asbestos fibers were re-evaluated during the diaphragm drawing operations. The time-weighted average and peak exposures to asbestos fibers are within acceptable levels, though the peak exposures could approach the maximum allowable concentration. The employees should continue to wear respiratory protection during the weighing and dumping of asbestos into the drawing vat.

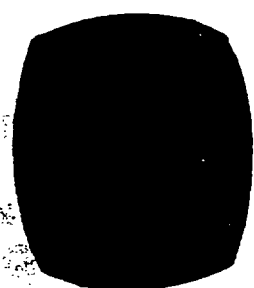
Attached are recommendations that could reduce exposure to airborne asbestos to employees even more than the precautions already taken.

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Distribution

J. M. Hart A-1003
S. F. Edquist A-1201
File

AN OPERATING UNIT OF THE DOW CHEMICAL COMPANY



PROBLEM

Industrial Hygiene was asked to re-evaluate the exposures of Cell Service employees to asbestos fibers during the diaphragm drawing operations.

CONCLUSIONS

- (1) The employees time-weighted average and peak exposures to asbestos fibers are within acceptable levels.
- (2) During the weighing and dumping of asbestos, peak concentrations could approach the maximum allowable concentration for short term exposure. The men working around the pulling tank when asbestos bags are handled and dumped into the vat should continue to wear respiratory protection.

RECOMMENDATIONS

- (1) Empty asbestos bags should be stored in a plastic bag and sealed before disposal.
- (2) Employees who work regularly with asbestos should have clean work clothes daily. (Work clothes are not to be taken home for laundering).
- (3) Continue the work practice of wearing respiratory protection whenever asbestos is handled.
- (4) Showering should be compulsory at the end of the work day for those employees with significant exposures.
- (5) Engineering methods to be utilized to eliminate asbestos exposure to employees.

PRESENTATION OF DATA

Table I, II, and III shows the operators exposure to asbestos fibers based on an 8 hour day when the drawing operation is in progress at A-1322 and A-1022. His time-weighted average and peak exposures were within acceptable levels based on the present standard.

Table A shows the results of the sample analyses for the various Cell Services operations. The highest asbestos fiber concentration, up to 5.86 fibers/ml, were found during the weighing and du

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PRESENTATION OF DATA (continued)

dumping of asbestos. Because of the variability in the asbestos handling procedures (and in the fiber counting technique) the operator peak exposures could exceed the allowable ceiling concentration. The men working around the drawing vat, during the handling of dry asbestos, should wear respiratory protection.

Asbestos fiber levels exceeding 0.5 fibers/ml were found only in the immediate area of the drawing vat. The exposures of the other employees working in the building were well within acceptable levels. Their TWA* exposure would be in the .01 to .03 fibers/ml range.

SAMPLE AND ANALYSIS

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 fibers on the filters were counted by the standard phase - contrast microscopy technique at 450 magnification by the Texas Division Microscopy Laboratory.

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

S&LP/bbs
9-12-73

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TABLE I

CELL SERVICES OPERATOR (DIAPHRAGM DRAWING) EXPOSURES

TO ASBESTOS FIBERS, CHLORINE 5, A-1322 BUILDING

OPERATION	A TIME PER 8 HR. DAY (MIN.)	B AVERAGE CONC. (FIBERS/ML)	A X B 480
Weighing and dumping asbestos bags into mixing tank	12	2.21	.050
Diaphragm drawing operation	324	.009	.006
Lunch & Breaks and other misc. work	144	-	
Time-Weighted Average	480		.056
Threshold Limit Value *			5.0
Maximum Allowable Conc.		10.0	

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

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TABLE II

CELL SERVICES OPERATOR (DIAPHRAGM DRAWING) EXPOSURES

TO ASBESTOS FIBERS, CELL SERVICES, A-1022 BUILDING

OPERATION	A TIME PER 8 HR. DAY (MIN.)	B AVERAGE CONC. (FIBERS/ML)	A X B 480
Dumping Asbestos from bags into slurry tank	75	2	.31
Slurry tank operation (dipping cathode)	75	.04	.006
Analyzing slurry tank solution (asbestos & caustic)	75	.04	.006
Breaks, Lunch, misc. duties	255		
Time Weighted Average	480		.322
Threshold Limit Value*			5.0
Maximum Allowable Conc.		10.0	

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

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TABLE III

CELL SERVICES TOMMOTOR OPERATOR EXPOSURES TO ASBESTOSFIBERS, CHLORINE V, A-1322 BUILDING

OPERATION	A TIME PER 8 HR. DAY (MIN.)	B AVERAGE CONC. (FIBERS/ML)	A X B 480
Transports Asbestos from A-1303 Warehouse to drawing vat	5	.033	.00
Misc. duties, breaks, lunch	475		
Time-Weighted Average	480	.033	.00
Threshold Limit Value*			5.0
Maximum Allowable Conc.		10.0	

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

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TABLE A

CELL SERVICES SUMMARY OF SAMPLE ANALYSIS

AREA OPERATION	NO. OF SAMPLES	ASBESTOS CONCENTRATION FIBERS/ML.	
		Range	Average
OPERATOR Weighing and dumping asbestos into mixing tank (A-1323)	3	.41 to 3.34	2.210
OPERATOR Dumping asbestos into vat (A-1022)	4	.46 to 5.86	2.000
General work around drawing vat (A-1323) No activity	4	.0 to .030	.010
General work around drawing vat during dumping and drawing operation (A-1323)	7	0 to .06	.022
General work around drawing vat (A-1022) No activity	2	.029 to .041	.035
General work around drawing vat during dumping and drawing operation A-1022	11	.0 to 5.33	.581
Tow motor moving asbestos bags to vat (A-1323 & A-1022)	5	0 to .04	.027
Employees work clothes (dirty & dry)	1	1.3	1.3

8-29-73
S&LP/bbs

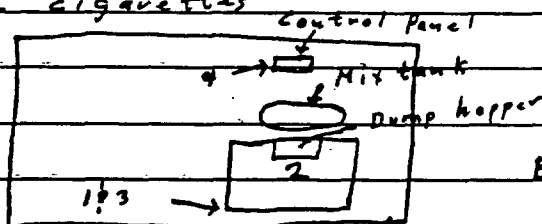
ENVIRONMENTAL RESEARCH.. SAMPLE RECORD

FILE NUMBER A 10-196	PROCESS Cell Services (Asbestos) Drawing	BLDG. NO. A-1323	DATE 6-6-73
MATERIAL Asbestos	SAMPLING METHOD Cellulose Filter	TRAPPING MEDIUM .8 μ Millipore Filter	
EQUIPMENT NUMBER	TYPE OF EQUIPMENT MSA Monitor Pumps	FLOW INDICATOR SETTING 8	SAMPLE FLOW RATE ≈ 2 l/min
REMARKS (VENTILATION, ETC.)		OUTSIDE TEMP.	INSIDE TEMP.

Drawing M-61 cells, two at a time.

Pump

SAMPLE NO.	CONTAINER NO.	DESCRIPTION OF SAMPLE	TIME		CONCENTRATION
			START	INCREMENT	
CS-1	4	On northeast railing of dumping platform. No dumping going on. Ventilation; none to speak of. Doors to bldg are all open.	8:35 to 9:05	30min	.021 f/cc
CS-2	1	On operator Edwards. Dumped 250 lbs of asbestos into the hopper. Asbestos fiber dumps in air above hopper, but did not generally fly around. Operator Edwards wore Acme respirator.	9:00 to 9:05	5min	3.34 f/cc
CS-3	1	Same as CS-1 on platform during drawing. Post dumping.	9:05 to 9:35	30min	.006 f/cc
CS-4	4	At control panel for drawing operation. During drawing operation, post dumping. Note: both operators Edwards & Cook smoke cigarettes.	9:05 to 9:35	30min	.009 f/cc



**B. S. Herveth
6-6-73**

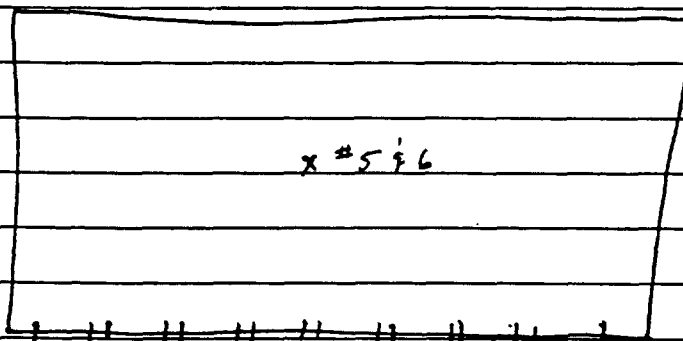
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ENVIRONMENTAL RESEARCH. SAMPLE RECORD

FILE NUMBER A-10-196	PROCESS Asbestos Warehouse	BLDG. NO. A-1303	DATE 6-6-73
MATERIAL Asbestos	SAMPLING METHOD Cellulose Filter	TRAPPING MEDIUM .8μ Millipore Filter	
EQUIPMENT NUMBER	TYPE OF EQUIPMENT MSA Monitor Pump	FLOW INDICATOR SETTING 8	SAMPLE FLOW RATE ≈ 2 l/m
REMARKS (VENTILATION, ETC.)		OUTSIDE TEMP.	INSIDE TEMP.

Pump

SAMPLE NO.	CONTAINER NO.	DESCRIPTION OF SAMPLE	TIME		CONCENTRATION
			START	INCREMENT	
CS-5	1	A-1303 Warehouse (No Activity)	2:23 to 2:43	20 min	.015 f/cc
CS-6	4	Same location as CS-5, but with tawmotor coming in and out	2:52 to 3:02	10 min	.032 f/cc
CS-7	1	On tawmotor operator. Man making 4 runs at the warehouse using same pallet load of intact bags.	2:52 to 3:02	10 min	.030 f/cc



8 doors equally spaced on
south wall

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ENVIRONMENTAL RESEARCH. SAMPLE RECORD

FILE NUMBER A10-196	PROCESS Cell Services (Asbestos) Drawing	BLDG. NO. 1022	DATE 6-6-73
MATERIAL Asbestos	SAMPLING METHOD Cellulose Filter	TRAPPING MEDIUM .8µ Millipore Filter	
EQUIPMENT NUMBER	TYPE OF EQUIPMENT MSA Monitor Pump	FLOW INDICATOR SETTING 8	SAMPLE FLOW RATE 2.2 L/m
		OUTSIDE TEMP.	INSIDE TEMP.

REMARKS (VENTILATION, ETC.)

Used Clean type holders except on sample 205 (All doors Pump open in A-¹⁰²²~~1923~~)

SAMPLE NO.	CONTAINER NO.	DESCRIPTION OF SAMPLE	TIME		CONCENTRATION
			START	INCREMENT	
101	2	On man dumping asbestos into vat (Dumped 3½ bags weighing 240 lbs) Visible asbestos in air during dumping operation	11:08 to 11:18	10min	.466 f/cc
102	8 hour Pump 5	Center of bldg. ≈ 30' S.W. of drawing vat during dumping of asbestos during sample 101	11:13 to 11:28	15min	.099 f/cc
103	1	In center of bldg (no activity)	10:53 to 11:13	20min	.029 f/cc
201	2	On handrail behind platform for vat. (Complete operation after dumping asbestos) Dumping cathode & drying.	12:03 to 11:09	66min	.018 f/cc
202	8 hour pump 5	Middle of bldg. ≈ 30' S.W. of vat (Complete operation after dumping asbestos) Dumping cathode & drying	12:03 to 11:09	66min	-0-

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ENVIRONMENTAL RESEARCH SAMPLE RECORD

FILE NUMBER A10-196	PROCESS Cell Services Diaphragm Drawing	BLOG. NO. A-1022	DATE 6-7-73
MATERIAL Asbestos	SAMPLING METHOD Cellulose Filter	TRAPPING MEDIUM .8 μ Millipore Filter	
EQUIPMENT NUMBER 4,5, & 6	TYPE OF EQUIPMENT MSA Monitor Pump	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	
Pump 1	203	Mixing asbestos & epoxy for repairing Cl ₂ cells between A-1020 & 1022. Monitor on man. He is mixing epoxy and dry asbestos with electric motor mixer in 10 qt. bucket. Takes asbestos out of open bag with 1 gal. container & adds to bucket & starts mixer again. This was done 3 times. Puts gloves in trash container. Dry asbestos can be seen on his clothes. (Washes and clothes at home)	12:22 to 12:32	10m	1.31 f
Pump 1	204	101 oven B (in middle) 200°F in oven	11:04 to 11:06	2m	.149
Pump 4	205	A-1023 Asbestos Storage	11:10 to 11:45		0

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ENVIRONMENTAL RESEARCH SAMPLE RECORD

FILE NUMBER A10-196	PROCESS Cell Services Diaphragm Drawing	BLDG. NO. A-1022	DATE 6-7-73
MATERIAL Asbestos	SAMPLING METHOD Cellulose Filter	TRAPPING MEDIUM .8μ millipore filter	
EQUIPMENT NUMBER 4, 5 & 6	TYPE OF EQUIPMENT MSA Monitor Pumps	FLOW INDICATOR SETTING 8	SAMPLE FLOW RATE
REMARKS (VENTILATION, ETC.) 	OUTSIDE TEMP. °F	INSIDE TEMP. °F	

SAMPLE NO.	CONTAINER NO.	DESCRIPTION OF SAMPLE	TIME		CONCENTRATION
			START	INCREMENT	
	Pump			Min	
301	2	On handrail behind man dumping asbestos ($3\frac{1}{2}$ bags - 250 lbs)		7	.488 f/cc
302	5	In center of bldg. $\approx 30'$ S.W. of vat during dumping of asbestos		7	.035 f/cc
303	1	On man dumping asbestos. Putting asbestos bags on platform & opening and dumping bags. Then putting bags in dumpster.		7	1.19 f/cc

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ENVIRONMENTAL RESEARCH SAMPLE RECORD

FILE NUMBER A10-196	PROCESS Cell Services Diaphragm Drawing	BLOG. NO. A-1323	DATE 8-14-73
MATERIAL Asbestos	SAMPLING METHOD Cellulose Filter	TRAPPING MEDIUM .8μ Millipore Filter	
EQUIPMENT NUMBER 4, 5, & 6	TYPE OF EQUIPMENT MSA Monitor Pumps	FLOW INDICATOR SETTING 8	SAMPLE FLOW RATE
REMARKS (VENTILATION, ETC.)		OUTSIDE TEMP. 	INSIDE TEMP.

3 wall fans on S. side of bldg. are on. All doors open.

SAMPLE NO.	CONTAINER NO.	DESCRIPTION OF SAMPLE	TIME		CONCENTRATION
			START	INCREMENT	
	<u>Pump</u>			<u>M.m</u>	
CS-50	5	On N.E. side of hand rail for dumping platform. No dumping going on, but drawing operation in progress.		25	- 0 -
CS50-A	6	Center of bldg. Same condition as CS-50.		25	.005 f/cc
CS-51	4	On operator Henry Marash. Dumped 210 lbs of asbestos into the hopper. No visible dust. Mr. Marash is a smoker.		10	.41 f/cc
CS-51-A	6	Center of bldg during dumping operation.		17	.05 f/cc
CS-52	5	On N.E. side of hand rail for dumping platform, during dumping of asbestos. Same time as CS-51.		16.75	.06 f/cc

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ENVIRONMENTAL RESEARCH. SAMPLE RECORD

FILE NUMBER A-10-196	PROCESS Cell Services Diaphragm Drawing	BLOG. NO. A-1323	DATE 8-14-73
MATERIAL Asbestos	SAMPLING METHOD Cellulose Filter	TRAPPING MEDIUM .8μ Millipore Filter	
EQUIPMENT NUMBER 4, 5, & 6	TYPE OF EQUIPMENT MSA Monitor Pumps	FLOW INDICATOR SETTING 8	SAMPLE FLOW RATE
REMARKS (VENTILATION, ETC.)		OUTSIDE TEMP. °F	INSIDE TEMP. °F

SAMPLE NO.	CONTAINER NO.	DESCRIPTION OF SAMPLE	TIME		CONCENTRATION
			START	INCREMENT	
	<u>Pump</u>			<u>Min</u>	
CS-53	4	At control panel for drawing operation. Drawing in progress		25	.013 f/cc
CS-54	5	A-1303 Warehouse in center (No Activity)		20	.015 f/cc
CS-55	5	Same as CS-54, but with tow motor coming in and out		5	-0-
CS-56	4	On tow motor operator. Man making 3 runs at the warehouse.		5	.04 f/cc

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ENVIRONMENTAL RESEARCH SAMPLE RECORD

FILE NUMBER A 10-196	PROCESS Cell Services Cathode Drawing	BLDG. NO. A-1023	DATE 8-10-73
MATERIAL Asbestos	SAMPLING METHOD Cellulose Filter	TRAPPING MEDIUM .8 μ Millipore Filter	
EQUIPMENT NUMBER 4, 5, and 6	TYPE OF EQUIPMENT MSA Monitor Pumps	FLOW INDICATOR SETTING 8	SAMPLE FLOW RATE OUTSIDE TEMP. INSIDE TEMP.
REMARKS (VENTILATION, ETC.) A-1023 Bldg has all the fans on and doors open			

SAMPLE NO.	CONTAINER NO.	DESCRIPTION OF SAMPLE	TIME		CONCENTRATION
			START	INCREMENT	
CS-57	4	Pump on Mr. Telar dumping 300 lbs of hooker #2 and 200 lbs hooker #1 into vat. Wearing approved dust respirator. Took empty bags to dumpster. Visible asbestos		14	5.86 f/cc
S-58	5	Center of bldg A-1023 $\approx$ 30' S.W. of drawing vat during dumping of asbestos during sample CS-57		18.3	5.33 f/cc
S-59	6	In center of bldg. A-1022. No Activity		12	.041 f/cc
S-60	4	On handrail behind platform for vat. Complete operation after dumping asbestos, which included dumping the cathode and letting it dry		42	.045 f/cc

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ENVIRONMENTAL RESEARCH SAMPLE RECORD

FILE NUMBER A10-196	PROCESS Cell Services Cathode Drawing	BLDG. NO. A-1022	DATE 8-10-73
MATERIAL Asbestos	SAMPLING METHOD Cellulose Filter	TRAPPING MEDIUM .8 μ Millipore Filter	
EQUIPMENT NUMBER 4, 5, & 6	TYPE OF EQUIPMENT MSA Monitor Pumps	FLOW INDICATOR SETTING 8	SAMPLE FLOW RATE OUTSIDE TEMP. INSIDE TEMP.
REMARKS (VENTILATION, ETC.)			

SAMPLE NO.	CONTAINER NO.	DESCRIPTION OF SAMPLE	TIME		CONCENTRATION
			START	INCREMENT	
CS-61	Pump 5	Middle of bldg A-1022 $\approx$ 30' S.W. of vat (complete operation after dumping asbestos). This includes dumping cathode and letting it dry.		Min 42	.09 f/cc
CS-62		Mixing Asbestos & Epoxy (This procedure stopped)			
CS-63		101 even B (in middle)			
CS-64	6	In center of A-1023 storage. Doors closed. No Activity		41	- 0 -
CS-65	6	On handrail behind man dumping asbestos into vat. Mr. Talar wearing respirator. Took empty bags to trash. Also, washed down platform after dumping asbestos.		12.5	.29 f/cc

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ENVIRONMENTAL RESEARCH SAMPLE RECORD

FILE NUMBER A10-196	PROCESS Cell Services Cathode Drawing	BLDG. NO. A-1022	DATE 8-10-73
MATERIAL Asbestos	SAMPLING METHOD Cellulose Filter	TRAPPING MEDIUM .8μ Millipore Filter	
EQUIPMENT NUMBER 4, 5, & 6	TYPE OF EQUIPMENT MSA Monitor Pumps	FLOW INDICATOR SETTING 8	SAMPLE FLOW RATE OUTSIDE TEMP. INSIDE TEMP.
REMARKS (VENTILATION, ETC.)			

SAMPLE NO.	CONTAINER NO.	DESCRIPTION OF SAMPLE	TIME		CONCENTRATION
			START	INCREMENT	
CS-66	5	In center of bldg A-1022 ≈ 30' S.W. of vat during dumping of asbestos. Dumped 450 lbs of hooker #2, and 225 lbs of hooker #1.		Min 9.5	-0-
CS-67	4	On Mr. Tolav dumping asbestos into vat. Putting asbestos bags on platform & opening and dumping bags. Same amount as CS-66. Mr. Tolav wore resp. and took empty bags to dumpster. Fan above vat off.		15	.5 f/cc
CS-68	4	Towmotor operator bringing 2 pallets of asbestos from A-1023 to A-1022. Two bags are ripped open		12.1	.03 f/cc
CS-69	6	On ^{hand} rail behind man dumping asbestos. Dumped 300 lbs of hooker #2 and 200 lbs of hooker #1. Fan over vat off		18.3	-0-

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ENVIRONMENTAL RESEARCH. SAMPLE RECORD

FILE NUMBER	PROCESS	BLDG. NO.	DATE
A10-196	Cell Services Cathode Drawing	A-1022	8-10-73
MATERIAL	SAMPLING METHOD	TRAPPING MEDIUM	
Asbestos	Cellulose Filter	0.8 μ Millipore Filter	
EQUIPMENT NUMBER	TYPE OF EQUIPMENT	FLOW INDICATOR SETTING	SAMPLE FLOW RATE
4, 5, & 6	MSA Monitor Pump	8	
REMARKS (VENTILATION, ETC.)		OUTSIDE TEMP.	INSIDE TEMP.

[illegible]

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ENVIRONMENTAL RESEARCH SAMPLE RECORD

FILE NUMBER A 10-196	PROCESS Cell Services Diaphragm Drawing	BLDG. NO. A-1323	DATE 8-14-73
MATERIAL Asbestos	SAMPLING METHOD Cellulose Filter	TRAPPING MEDIUM 0.8µ Millipore Filter	
EQUIPMENT NUMBER 4, 5, & 6	TYPE OF EQUIPMENT MSA Monitor 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	
	<u>Pump</u>			<u>Min</u>	
CS-71	5	On N.E. railing of dumping platform. No dumping going on. No activity except for two men working on a wet cathode		10	-0-
CS-72	6	In center of bldg with no activity. Same conditions as CS-71		10	.03 f/cc
CS-73	4	On operator Henry Marsh. Dumped 210 lbs of asbestos into the hopper. No visible dust. Mr. Marsh is a smoker.		15	2.9 f/cc
CS-74	5	On N.E. side of handrail for dumping platform, during dumping of asbestos.		15.5	.06 f/cc
CS-75	6	Center of bldg. during dumping operation		15	.007 f/cc

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DOW CHEMICAL U.S.A.
TEXAS DIVISION

JOB NO. _____

AUTH. NO. _____

CHARGE NO. _____

FILE NO. _____

SUBJECT MSA Pump #1

BY R.L.S.

Calibrated by Burnett

DATE 8-20-73

SHEET 1 OF 2

CHECKED BY _____

With inline .3 μ Millipore Filter

<u>Rotometer Reading</u>	<u>Minutes</u>	<u>LPM</u>
10	.42	2.4
8	.50	2.0
6	.65	1.5
4	.96	1.0

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TEXAS DIVISION

JOB NO. _____

AUTH. NO. _____

CHARGE NO. _____

FILE NO. _____

SUBJECT MSA Pump #2

BY RLS

Calibrated by Barrett

DATE 8-20-73

SHEET _____ OF _____

CHECKED BY _____

With in line .8µ Millipore Filter

<u>Rotometer Reading</u>	<u>Minutes</u>	<u>LPM</u>
9	.43	2.32
8	.46	2.17
6	.68	1.47
4	.93	1.07

ST0580562



DOW CHEMICAL U.S.A.
TEXAS DIVISION

JOB NO. _____

AUTH. NO. _____

CHARGE NO. _____

FILE NO. _____

SUBJECT MSA Pump #3

BY RLS

Calibrated by Burratt

DATE 8/27/78

SHEET _____ OF _____

CHECKED BY _____

With inline .8 μ millipore filter

<u>Rotometer</u> <u>Reading</u>	<u>Minutes</u>	<u>LPM</u>
10	.4	2.5
8	.5	2.0
6	.7	1.4
4	1.08	.9

ST0580563



DOW CHEMICAL U.S.A.
TEXAS DIVISION

JOB NO. _____ AUTH. NO. _____
CHARGE NO. _____ FILE NO. _____
SUBJECT MSA Pump #4 BY R. L. S
Calibrated by Burrett DATE 8/20/73
SHEET 1 OF 2 CHECKED BY _____

With in line .8 μ Millipore filter

<u>Rotometer</u> <u>Reading</u>	<u>Minutes</u>	<u>LPM</u>
<u>10</u>	<u>.45</u>	<u>2.2</u>
<u>8</u>	<u>.53</u>	<u>1.9</u>
<u>6</u>	<u>.75</u>	<u>1.3</u>
<u>4</u>	<u>1.06</u>	<u>.93</u>

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DOW CHEMICAL U.S.A.
TEXAS DIVISION

JOB NO. _____

AUTH. NO. _____

CHARGE NO. _____

FILE NO. _____

SUBJECT MSA Pump #5

BY R.L. Silverthorn

Calibrated by Durrant

DATE 8-20-79

SHEET 1 OF 2

CHECKED BY _____

With in line filter. Using .8 μ Millipore filter

<u>Rotometer Reading</u>	<u>Minutes</u>	<u>LPM</u>
8	.6	1.6
6	.7	1.4
4	1	1.0

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TEXAS DIVISION

JOB NO. _____

AUTH. NO. _____

CHARGE NO. _____

FILE NO. _____

SUBJECT MSA Pump #6

BY R.L.S.

Calibrated by Burratt

DATE 8/28/73

_____ SHEET _____ OF _____

CHECKED BY _____

With inline .8µ Millipore Filter

<u>Rotometer Reading</u>	<u>Minutes</u>	<u>LPM</u>
8	.55	1.8
6	.70	1.4
4	.96	1.0

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DOW

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

THE DOW CHEMICAL COMPANY
TEXAS DIVISION

CENTRAL LABORATORY FREEPORT

FILE LM

DATE THIS REPORT 8-28-73

CHARGE 1308-00020

REPORT OF ANALYSIS

Air Filters from Dow Industrial Service and Cell Services

DESCRIPTION _____

DATE OF SAMPLE _____

8-9-73 - 8-16-73

Particles and fibers were counted on thirty-two 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.

ST0580567

BY: LM dv

SIGNED

Lee N. Martin

JOB NO. _____

AUTH. NO. _____

CHARGE NO. 1908

FILE NO. _____

SUBJECT AIR FiltersBY R. MartinLee Silver thorneDATE 8-17-73SHEET 1 OF 3 CHECKED BY _____

SAMPLE DESCRIPTION + DATE	No. of Passes	Particles > 2.5 μ	FIBERS 5 μ -10 μ	FIBERS > 10 μ
#10 DIS ✓ 8-9-73 /square	6	80 160	1 2	1 2
#11 DIS ✓ 8-9-73 /square	3	105 420	6 24	0 0
DIS #12 ✓ 8-16-73 /square	6	100 200	1 2	2 4
DIS 17 ✓ 8-16-73 /square	3	119 476	2 8	3 12
DIS #18 ✓ 8-16-73 /square	6	45 90	0 0	3 6
DIS #19 ✓ 8-16-73 /square	6	73 146	0 0	0 0
CS - 50 ✓ 8-14-73 /square	6	64 128	0 0	0 0
CS - 50-A ✓ 8-14-73 /square	6	71 142	0 0	1 2
CS - 51 ✓ 8-14-73 /square	2	123 738	8 48	5 30
CS - 51A ✓ 8-14-73 /square	6	37 74	0 0	0 0
✓ CS - 52 8-14-73 /square	6	55 110	5 10	3 6

10580568

JOB NO. _____

AUTH. NO. _____

CHARGE NO. 1308

FILE NO. _____

SUBJECT AIR FILTERSBY R. MartinLee SilverthorneDATE 8-20-73SHEET 2 OF 3

CHECKED BY _____

SAMPLE DESCRIPTION + DATE	No. of Passes	Particles > 2.5 μ	FIBERS 5 μ -10 μ	FIBERS > 10 μ
✓ CS - 53 8-14-73 /square	6	118 236	2 4	1 2
✓ CS - 54 8-16-73 /square	6	128 256	0 0	1 2
✓ CS - 55 8-16-73 /square	4	96 288	0 0	0 0
✓ CS - 56 8-16-73 /square	6	127 254	1 2	1 2
✓ CS - 57 8-10-73 /square	1	159 1910	10 120	3 36
✓ CS - 58 8-10-73 /square	1	159 1910	11 132	2 24
✓ CS - 59 8-10-73 /square	3	120 480	0 0	2 8
✓ CS - 60 8-10-73 /square	1	154 1850	2 24	1 12
✓ CS - 61 8-10-73 /square	1	168 2020	2 24	3 36
✓ CS - 64 8-10-73 /square	1	175 2100	0 0	0 0
✓ CS - 65 8-10-73 /square	1	115 1380	3 36	2 24

JOB NO. _____

CHARGE NO. _____

SUBJECT AIR FILTERS

Lee Silverthorne

AUTH. NO. _____

FILE NO. _____

BY L. Martin

DATE 8-21-73

SHEET 3 OF 3

CHECKED BY _____

SAMPLE DESCRIPTION + DATE	No. of Passes	Particles > 25 μ	FIBERS 5 μ -10 μ	FIBERS > 10 μ
✓ CS - 66 8-10-73 /square	3	122 488	0 0	0 0
✓ CS - 67 8-10-73 /square	1	151 1810	11 132	1 12
✓ CS - 68 8-10-73 /square	2	165 990	1 6	0 0
✓ CS - 69 8-10-73 /square	3	143 572	0 0	0 0
✓ CS - 70 8-10-73 /square	3	132 528	6 24	6 24
✓ CS - 71 8-14-73 /square	6	39 78	0 0	0 0
✓ CS - 72 8-14-73 /square	6	33 66	3 6	0 0
✓ CS - 73 8-14-73 /square	1	182 2180	34 408	35 420
✓ CS - 74 8-14-73 /square	6	106 212	4 8	4 8
✓ CS - 75 8-14-73 /square	6	80 160	1 2	0 0
/square				