SHELL OIL CO.

PLAINTIFF'S EXHIBIT

SH-2892

DATE SEPTEMBER 13, 1974

TO MANAGER ENGINEERING FIELD
MR. E. J. NELSON

FROM MANAGER SAFETY
WOOD RIVER REFINERY

SUBJECT ASBESTOS SAMPLING SUMMARY

To monitor the effectiveness of the asbestos handling procedures instituted in 1972, samples of work activities were taken during May and July, 1974. The initial set of samples taken on May 30 involved demolition work at the old Distilling 2 area south of the Distilling 1. The work assigned involved removal of asbestos bearing materials from pumps and piping in the area immediately north of the old Distilling 2 control room. This was grade level work and the refinery practice for handling asbestos bearing materials was used. Two Insulators were assigned, Mr. Meiners and Mr. Pence. In reviewing their activities, it will be noted that sample nos. WRR-5 and WRR-6 exceed the maximum fiber count of 10 fibers per milliter of air by 2.72 and 3.3 fibers. In addition, the time weighted averages of 4.2 and 4.9 are higher than we would anticipate but do not exceed the allowable standard of 5 fibers per milliter of air. From observation of field activities, it was anticipated that more dusts were being generated than necessary. More water was used in wetting down and better handling procedures were used on the next day, May 31. Test results reflect this improved handling.

A second set of samples was taken on July 25 and 26 reviewing job procedures to assure adherence to refinery practice. Work performed was similar to the May test and in the same area. It should be noted that greater emphasis on normal refinery practice brought all sample results below maximum fiber counts of 10 fibers and the current time weighted average standard of 5 fibers and the future time weighted average standard of 2 fibers (effective July, 1976). These tests again reaffirm that control of this activity is necessary to meet requirements. The following steps are necessary for control:

1. Have pressured water hose on the job site at all times while removing asbestos.

2. Wet down asbestos before dropping it (by hand line) to ground, keeping ground wet in area of drop.

3. Wet down asbestos after it is on the ground and before bagging.

In the light of these results, we suggest that the training program completed in 1972 by Mr. Jim Thompson, Craft Supervisor, Field Craft Group, be repeated in the immediate future and that all employees (including foremen) exposed to asbestos bearing materials (Insulators) participate in this training. We would be happy to offer any assistance in course composition, material, and/or presentation that you deem necessary in executing this program. We would request that attendance at these meetings be documented and a copy of this training attendance be forwarded to the Safety Department.

LAM 019520

ABS-000331

In addition to the above Insulator testing, we received a request from the Tinners to evaluate the exposure to cutting asbestos gasket bearing materials in the Tin Shop. Included in these results is one test for Mr. A. Fritzche, Tinner 1. We have determined by this evaluation that no exposure exists in this activity. These results have been conveyed to Mr. Fritzche and the other Tinners at the time the test results were available.

If we can be of further assistance in this area, please let us know.

BLB/mah H. G. Rollins

Attachments

cc-Messrs. P. E. Slack
J. D. Terry
H. G. Rollins
Safety Department File

RE: CONVERSATION ROLLINS/EMSHOUSEN/PENCE
SHOWER TIME

Received a call from Mr. Emshousen approximately 1:30 p.m. on Thursday, September 5, 1974, requesting a conversation on the subject of shower time. I met Mr. Emshousen and Mr. Pence at the Lube Zone Shop and invited them to join me in my car. Mr. Emshousen referred to Mr. Willens, Illinois Department of Labor Industrial Hygienist, visit of March 21, 1972. Bonnie sited the conversation between Willens/Rollins/Emshousen alleging 80% shower time for the Insulators (asbestos workers). I reviewed with Mr. Emshousen and Mr. Pence that Mr. Willens visit was to relate to the exposure of our Insulators to asbestos bearing materials. The conversation referred to by Mr. Emshousen covered our practice at that time of giving approximately 80% of the crew shower time for work with asbestos bearing materials. We, however, did not cover the subject of non-asbestos bearing materials.

Bonnie eluded to a conversation during '72 negotiations with Mr. Kastner and the contract in which asbestos workers should be given shower time 100% of the time regardless of the material that they were working with. He reiterated recent experience where Engineering Field had tightened up on shower time and they were down 30%. When asked what the present level of shower time was, he indicated it was 70%. The percentages quoted indicate the number of the crew who are receiving shower time each day. After numerous words, it was agreed that Mr. Rollins would review with Mr. Nelson. Mr. Nelson would have a conversation with Mr. Emshousen covering the results of recent asbestos testing, the role of shower time for this activity, and plans for an Insulator training program covering asbestos procedures. Included in the training program should be clarification on when asbestos procedures should be utilized, i.e. recovering asbestos bearing insulation when the procedures justify this expenditure in craft time.

H. G. Rollins

HGR/mah
9/12/74

cc-Messrs. E. J. Nelson
P. E. Slack
J. D. Terry
H. G. Rollins
Safety Department File

LAM 019522

ABS-000333

SUMMARY
ASBESTOS MONITORING RESULTS

OLD DISTILLING #2

5/30/74	5/31/74	7/25/74	7/26/74
4.925	1.14		1.66
4.23	2.50		
		0.33	
		0.45	1.8

GASKET CUTTING TABLE TIN SHOP

5/16/74
0.072

LAM 019523

ABS-000334

ASBESTOS SAMPLES
MAY 30, 1974
PENCE - INSULATOR #1
EMPLOYEE NO. 1881

TIME	SAMPLE NO.	LEVEL	ELAPSED TIME x FLOW**	CONCENTRATION FIBERS *
0800-0820	out of area	0	20 x 0	0
0820-0900	WRR-1	2.72	40 x 2	217.6
0900-10:00	WRR-3	7.65	60 x 2	918.0
10:00-11:00	WRR-5	12.72	60 x 2	1526.4
11:00-12:00	WRR-7	0.47	60 x 2	56.0
12:30-13:30	WRR-9	5.62	60 x 2	674.4
13:30-15:00	WRR-11	1.38	90 x 2	248.4
15:00-16:05	WRR-13	3.26	65 x 2	423.8
16:05-16:30	out of area			0
				4064.6

$$TWA = \frac{4064.6}{8x60x2} = 4.23 \text{ fibers}$$

*Fiber > 5 μ/ml air

**Instrument calibrated at 2 liters per minute flow rate.

LAM 019524

ABS-000335

ASBESTOS SAMPLES
MAY 30, 1974
MEINERS - INSULATOR #1
EMPLOYEE NO. 8315

TIME	SAMPLE NO.	LEVEL	ELAPSED TIME x FLOW**	CONCENTRATION FIBERS *
0800-0820	out of area		0	
0820-0900	WRR-2	5.77	40 x 2	461.6
0900-1000	WRR-4	4.68	60 x 2	561.6
1000-1100	WRR-6	13.30	60 x 2	1596.0
1100-1200	WRR-8	9.82	60 x 2	1178.4
1200-1230	out of area		0	
1230-1330	WRR-10	1.50	60 x 2	180.0
1330-1500	WRR-12	0.50	90 x 2	90.0
1500-1605	WRR-14	5.08	65 x 2	660.4
1605-1630	out of area			
				4728.0

$$TWA = \frac{4728}{8 \times 60 \times 2} = 4.925$$

*Fiber > 5 μ/ml air

**Instrument calibrated at 2 liters per minute flow rate.

LAM 019525

ABS-000336

ASBESTOS SAMPLES
MAY 31, 1974
PENCE - INSULATOR #1
EMPLOYEE NO. 1886

TIME	SAMPLE NO.	LEVEL	ELAPSED TIME x FLOW**	CONCENTRATION FIBERS *
0800-0900	WRR-15	0.15	60 x 2	18
0900-1000	WRR-17	0.30	60 x 2	36
1000-1100	WRR-19	1.99	60 x 2	238.8
1100-1200	WRR-21	3.18	60 x 2	381.6
1200-1230	out of area			
1230-1330	WRR-23	3.92	60 x 2	470.4
1330-1430	WRR-25	0.14	60 x 2	16.8
1430-1530	WRR-27	9.87	60 x 2	1184.4
1530-1605	WRR-29	0.78	35 x 2	54.6
				2400.6

$$TWA = \frac{2400.6}{8x60x2} = 2.50$$

*Fiber > 5 μ/ml air

**Instrument calibrated at 2 liters per minute flow rate.

LAM 019526

ABS-000337

ASBESTOS SAMPLES
MAY 31, 1974
MEINERS - INSULATOR #1
EMPLOYEE NO. 8315

TIME	SAMPLE NO.	LEVEL	ELAPSED TIME x FLOW**	CONCENTRATION FIBERS *
0800-0900	WRR-16	0.78	60 x 2	93.6
0900-1000	WRR-18	0.45	60 x 2	54.0
1000-1100	WRR-20	1.71	60 x 2	205.2
1100-1200	WRR-22	0.76	60 x 2	91.2
1200-1230	out of area			
1230-1330	WRR-24	2.28	60 x 2	273.6
1330-1430	WRR-26	0.20	60 x 2	24.0
1430-1530	WRR-28	2.71	60 x 2	325.2
1530-1605	WRR-30	0.37	35 x 2	25.9
				1092.7

$$\text{TWA} = \frac{1092.7}{960} = 1.14$$

*Fiber > 5 μ/ml air

**Instrument calibrated at 2 liters per minute flow rate.

LAM 019527

ABS-000338

ASBESTOS SAMPLES
JULY 25, 1974
W. SYDALL - INSULATOR
EMPLOYEE NO. 7702

TIME	SAMPLE NO.	LEVEL	ELAPSED TIME x FLOW**	CONCENTRATION FIBERS *
0800-1000	WRR-31	0.27	120 x 2	64.8
1000-1200	WRR-34	0.41	120 x 2	98.4
1200-1230	out of area			
1230-1400	WRR-35	0.62	90 x 2	111.6
1400-1610	WRR-37	0.62	130 x 2	161.2
1610-1630	out of area			
				436

$$TWA = \frac{436}{960} = 0.45$$

*Fiber > 5 μ/ml air

**Instrument calibrated at 2 liters per minute flow rate.

LAM 019528

ABS-000339

ASBESTOS SAMPLES
JULY 25, 1974
A. EMSHOUSEN - INSULATOR
EMPLOYEE NO. 2026

TIME	SAMPLE NO.	LEVEL	ELAPSED TIME x FLOW**	CONCENTRATION FIBERS *
0800-1000	WRR-32	0.26	120 x 2	62.4
1000-1200	WRR-33	0.32	120 x 2	76.8
1200-1230	out of area			
1230-1400	WRR-36	0.73	90 x 2	131.4
1400-1610	WRR-38	0.19	130 x 2	49.4
1610-1630	out of area			
				320

$$TWA = \frac{320}{960} = 0.33$$

*Fiber > 5 μ/ml air

**Instrument calibrated at 2 liters per minute flow rate.

LAM 019529

ABS-000340

ASBESTOS SAMPLES
JULY 26,1974
W. SYDALL - INSULATOR
EMPLOYEE NO. 7702

TIME	SAMPLE NO.	LEVEL	ELAPSED TIME x FLOW**	CONCENTRATION FIBERS *
0800-1000	WRR-39	0.50	120 x 2	120.0
1000-1200	WRR-41	1.74	120 x 2	417.6
1200-1230	out of area			
1230-1410	WRR-44	2.13	100 x 2	426.0
1410-1610	WRR-45	3.23	120 x 2	775.2
1610-1630	out of area			
				1738.8

$TWA = \frac{1738.8}{960} = 1.8$

*Fiber > 5 μ/ml air

**Instrument calibrated at 2 liters per minute flow rate.

LAM 019530

ABS-000341

ASBESTOS SAMPLES
MAY 16, 1974
A. FRITZCHE - TINNER #1
EMPLOYEE NO. 1883

TIME	SAMPLE NO.	LEVEL	ELAPSED TIME x FLOW**	CONCENTRATION FIBERS *
0800-0920	out of area			
0920-0940	WRR-1	0.14	20 x 2	5.6
0940-0945	out of area			
0945-1015	WRR-2	0.20	30 x 2	12.0
1015-1045	WRR-3	0.16	30 x 2	9.6
1045-1100	out of area			
1100-1140	WRR-4	0.15	40 x 2	12.0
1140-1235	out of area			
1235-1300	WRR-5	0.10	25 x 2	5.0
1300-1330	WRR-6	0.09	30 x 2	5.4
1330-1400	WRR-7	0.09	30 x 2	5.4
1400-1430	WRR-8	0.08	30 x 2	4.8
1430-1500	WRR-9	0.07	30 x 2	4.2
1500-1530	WRR-10	0.09	30 x 2	5.4
1530-1630	out of area			
				69.4

TWA = $\frac{69.4}{960}$ = 0.0722

*Fiber > 5 μ/ml air

**Instrument calibrated at 2 liters per minute flow rate.

LAM 019531

ABS-000342

INDUSTRIAL HYGIENE REPORT OF

REFRACTORY REMOVAL FROM #27 BOILER

SULPHER RECOVERY UNIT

APRIL 19, 1984

BACKGROUND

As part of the Shell major projects, Insulating and Materials was requested to remove asbestos containing refractory materials from the north end of #27 Boiler in the Sulpher Recovery Unit (SRU). The material being removed had been used to seal the head of the boiler.

A bulk sample of this material was obtained and analyzed on April 18, 1984. The analysis indicated an asbestos content of approximately 15%. Because of the asbestos content careful removal procedures were utilized. The two insulators were trained in asbestos removal techniques and are experienced in removal work. Appropriate protective equipment was provided and worn during the removal. The protective equipment was as follows 1) disposable coveralls with hood, 2) MSA Comfo II with type S cartridge and, 3) gloves. Prior to starting the job both employees were observed and instructed by the MPO industrial hygienist in conducting positive and negative pressure fit test of the respirator face piece.

The material removed was a hard refractory material that

required the use of chisels and hammers to break loose. Dusting was reduced by periodically wetting the refractory material with water. Egg sized pieces were removed and immediately placed in appropriate plastic bags. This greatly reduced area contamination. The work platform was also covered with a plastic covering to catch falling debris.

INDUSTRIAL HYGIENE MONITORING

To evaluate exposure to the insulators performing the removal and potential exposure to the area two personal and two area samples were obtained. Sampling was conducted on April 19, 1984, during active removal and represents worst case conditions. At the beginning of the removal one employee removed a small portion of the refractory material without wetting. His exposure was 0.063 fibers/cc. This employee's exposure was significantly greater than the second (0.005 fibers/cc) employee, who worked using wet methods during his entire exposure. Both area samples were negative. Table I contains the results of this survey.

CONCLUSIONS

Because of careful work practices employee and area exposure was minimal. The work area was cleaned up well after completion of the job, and no secondary exposure is expected.

TABLE I
AIRBORN FIBER CONCENTRATIONS
SULFER RECOVERY UNIT
Shell Wood River Refinery
April 19, 1984

Sample Number	Location	Fiber Concentration (F/CC)
SRU-1	West side of control area	N.D.*
SRU-2	East side of control area	N.D.
SRU-3		0.063
SRU-4		0.005

*N.D.=None Detected

LAM 019534