WJ-0537 #19
File

MEMORANDUM

To: Mr. J. M. Butcher
Dr. T. G. Day
Mr. P. W. Gregory
F. E. Medford, M. D.
Mr. A. Pauley
Mr. M. E. Perry

May 24, 1968

From: Fred Williams

Subject: Supplemental Asbestos Air Sampling Data

The attached diagram shows air sampler locations and smoke test patterns while the results are shown on a separate chart for asbestos air sampling in Building 770 - Shop.

The air sampling was done while two 5-gallon drums were being covered with Kaylo insulation by [redacted] May 16, 1968. [redacted] wore a half-face respiratory device to prevent inhalation of the material.

Even though the two window exhaust fans were operating, all but two of the windows were open. The open windows reduce the effectiveness of the fans. Note the smoke pattern when released in the vicinity of the insulation operation.

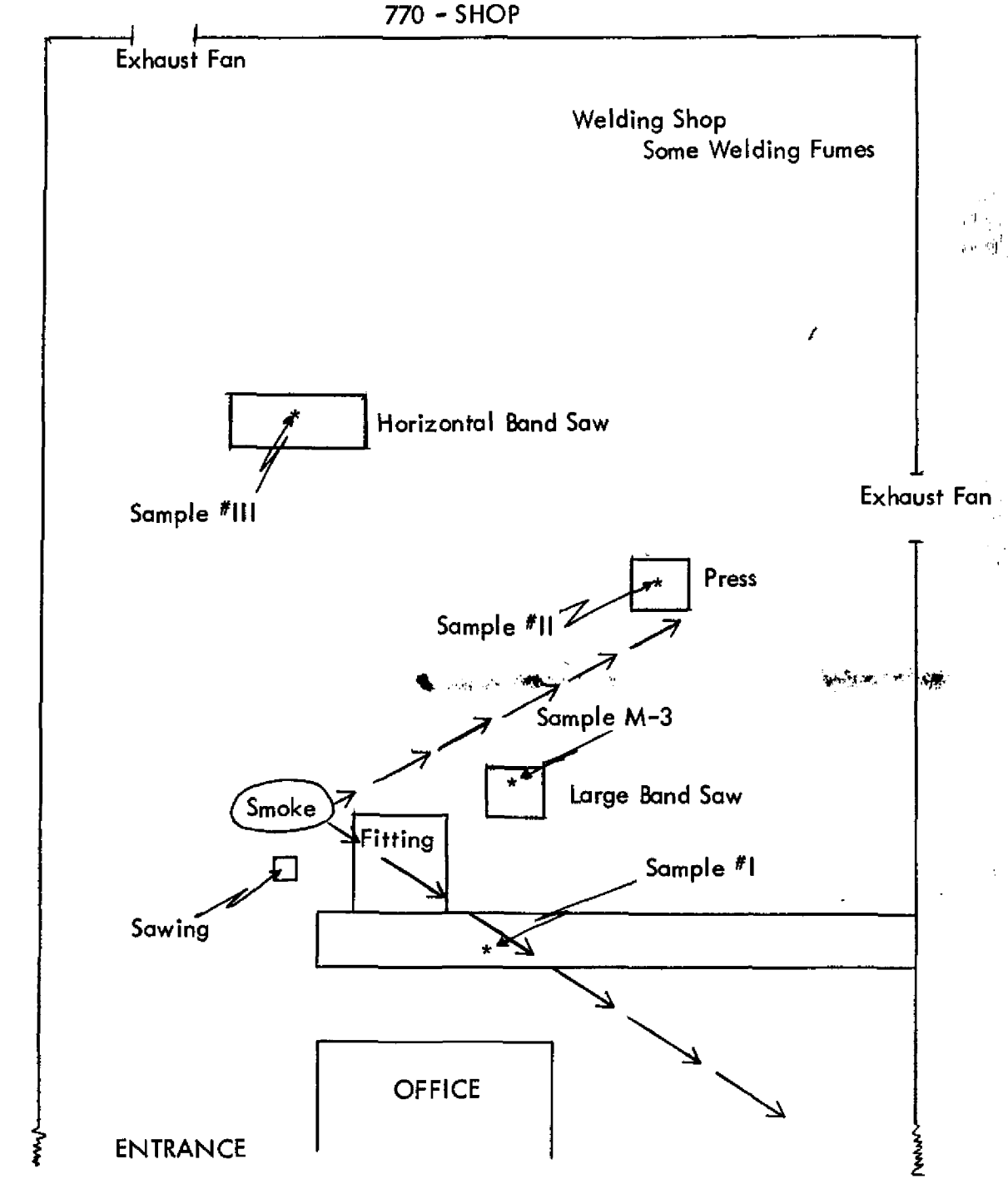
While only one result of the air samples was in excess of the TLV of 5.0 million particles per cubic foot of air, the wearing of the respiratory device was justified during this period of sampling. Apparently, the airborne insulation did not travel very far from the source. However, good housekeeping will be necessary to prevent accumulation of the asbestos fines which may become airborne via wind currents or dry sweeping.

Fred Williams
Industrial Hygienist

F.Williams/ebc

DIAGRAM - ASBESTOS AIR SAMPLING

Date: May 16, 1968
By: R. O. Midkiff



→ → → Smoke drifting from smoke tube.
* Sampler location.

ASBESTOS AIR SAMPLING

BUILDING 770 - SHOP

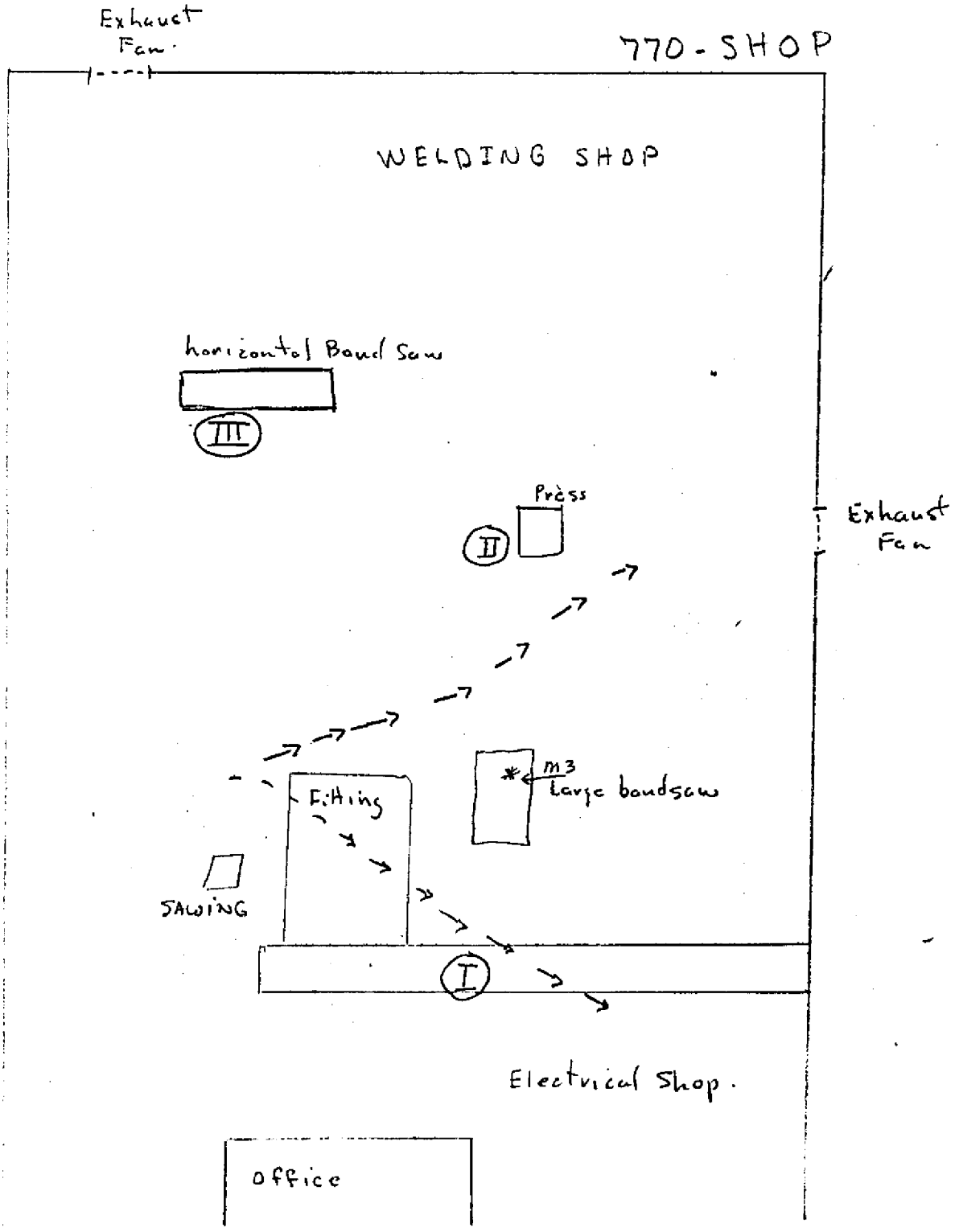
Equipment:
- Midget Impingers
- Greenburg-Smith Impingers
- Distilled Water
- MSA Monitaire Air Sampler Pumps
- Vacuum Pump
- Bausch & Lomb Microscope (100X, light field)
- Dunn Cell

Date: May 16, 1968
Time: 9:15 a.m. - 2:10 p.m.
Collected by: R. O. Midkiff
Analyzed by: Williams & Midkiff

Sampler Number	Sampling Time, Min.	Flow Rate Lpm	Net Count <10μ	Net Count 10μ - 50μ	Net Count <10 - 50μ	MPPCF <10μ	MPPCF 10 - 50μ	MPPCF <10-50μ	Sampler Worn by	Operation & Location
M-1	30	1.35	723	30	753	13.1	0.54	13.64	[redacted]	Cutting & fitting sides; wiring pieces in place - tapping.
M-2	16	1.35	41.9	0.4	42.3	2.45	0.023	2.47	[redacted]	Cutting & fitting top & bottom.
M-2	82	1.35	1.4	0	1.4	0.016	0	0.016	--	On large band saw table during work on 2nd drum.
I	9:12 a.m.-10:05 a.m. 12:45 p.m.-2:10 p.m.	5.0	0.9	0	0.9	0.026	0	0.026	--	On bench.
II	Same	5.0	1.0	0	1.0	0.027	0	0.027	--	On press.
III	Same	5.0	1.3	0	1.3	0.036	0	0.036	--	On horizontal band saw.

UCC 000353

→ = drifting of smoke from smoke tube.
2 - 5 gal drums being insulated.



Asbestos Insulation Dust. 770-Shop. 5-16-68

No.	Time	LPM	Activity	Conditions
M1	30	1.35	Cutting & fitting around, most apparent while wiring (Tapping Insul.)	2 exhaust fan on, all but 2 windows open.
M2	16	1.35	Cutting & fitting top & Bottom.	"
M3	82	1.35	placed on large band saw table during insulation of 2nd 5 gal. drum -	"
I	9:12 - 10:05 12:45 - 2:10	5	see drawing for locations	"
II	9:12 - 10:05 12:45 - 2:10	5		"
III	9:12 - 10:05 12:45 - 2:10	5		"

small amount of welding fumes visible in area short period of Time.

M1 & M2 worn by J. R. Monin -

Sample No.	Avg. Ct. (Blank Corrected) <10 μc	10-50 μ	Sample liquid Vol. (mls)	Air Vol. (L.)	Air ft³	
M-1	72.3 x10² (723) ~~32.6~~	3.0 x10² (30) ~~0.8~~	10	40.5	2.21	diluted 2.4 → 24
M-2	41.9	0.4	10	21.6	0.76	
M-3	1.4	0	10	110.6	3.91	
I	0.9	0	160	690	24.4	
II	1.0	0	150	690	24.4	
III	1.3	0	150	690	24.4	
Blank	2.1	0				

	<10μ	10-50μ
#1.	$\frac{723 \times 4 \times 10^3 \times 10}{2.21 \times 1.0 \times 10^6} = 13.09$ MPPCF	$\frac{30. \times 4 \times 10^3 \times 10}{0.21 \times 1.0 \times 10^6} = 0.543$ MPPCF
#2.	$\frac{41.9 \times 4 \times 10^3 \times 10}{0.76 \times 0.9 \times 10^6} = 2.45$	.023
#3.	$\frac{1.4 \times 4 \times 10^3 \times 10}{3.91 \times 0.9 \times 10^6} = .016$	0
I	$\frac{0.9 \times 4 \times 10^3 \times 160}{6.9 \times 0.9 \times 10^6} = .026$	0
II	$\frac{1.0 \times 4 \times 10^3 \times 150}{6.90 \times 0.9 \times 10^6} = .027$	0
III	$\frac{1.3 \times 4 \times 10^3 \times 150}{6.90 \times 0.9 \times 10^6} = .036$	0

WV-0031 #21

To: Mr. Fred Williams Date:

From: Industrial Hygiene

Subject: Air Sampling During Use of "Calidria" Asbestos

Summary One "personal" air sample was collected during the performance of a laboratory function involving the "blending" of "Calidria" asbestos and distilled water. Analysis of this sample shows no airborne fibers. The operation was performed in Building 770-257 by Mr. C.N. Withrow of the R and D. Department

Discussion On February 3, 1972, the Industrial Hygiene group monitored for possible airborne asbestos fiber during the blending of asbestos into distilled water. The solution was prepared to determine physical properties of an oil well drilling fluid.

The material used was "Calidria" asbestos, standard grade, SG 210, a Union Carbide product. Ten grams of "Calidria" asbestos was added to a beaker for weighting. The weighed asbestos was then added to a "Waring Blender" containing 700 milliliters of distilled water. With the blender lid in place, the mixture was allowed to "blend" for 20 minutes. The mixture was then poured into a wide mouth glass jar and sealed. The

2/3/72

770-25.

observed asbestos blending. w. throw -

10gms Std. grade SG 210

Weighed into beaker, added to 700 ml distilled H2O in Waring blender. Cap on, blend 20 min., operation Time approx 1 min.

determining physical properties
2 in oil well drilling fluid.

770-25 3/9/72

Calidria asbestos
(U.C.)

Std grade open S-G 210

Weigh 10 gm. into blender H2O mix 20 min.

Total 3 min @ 2 lpm

INDUSTRIAL HYGIENE
SAMPLING

Date 5/9/72 Location - Bldg. 770 Room 255

CONTAMINANT asbestos Collected By Nudkiff

IDENTIFICATION

I Calidria asbestos, St. grade - open, 5-G 210
Union Carbide

3 minutes at 2 lpm

RESULTS RECORDED IN G-JEN-100 CE N.

Sampling Equipment Used

Operation being monitored

INDUSTRIAL HYGIENE DEPARTMENT
ASBESTOS DUST STUDY

Department [illegible] Bldg. [illegible] Date [illegible] Time _____

Sampled By: [illegible] Analyzed By: C. E. [illegible] Method: _____

General Conditions: _____

I CALL [illegible] ASBESTOS, ST GRATE, OPEN S-G210
UNION [illegible]

FIBER COUNT (Fibers > 5μ in Length)

Slide 1				Slide 2 D			
1	0	11	0	1	0	11	0
2	0	12	0	2	0	12	0
3	0	13	0	3	0	13	0
4	0	14	0	4	0	14	0
5	0	15	0	5	0	15	0
6	0	16	0	6	0	16	0
7	0	17	0	7	0	17	0
8	0	18	0	8	0	18	0
9	0	19	0	9	0	19	0
10	0	20	0	10	0	20	0
Total	0	Avg.		Total	0	Avg.	

CALCULATIONS

SAMPLE VOLUME: 3 Min. @ 2 LPM = 6 LITERS

$$\frac{\text{(Avg.Fiber Count-Avg.Blank Count)(Total Filter Area)}}{\text{(Counting Area)(Vol.Air-Liters)(1000)}} = \text{Concentration, Fibers per Milliliter} > 5\mu$$

1. $\frac{(\quad - \quad)(\quad)}{(\quad)(6)(1000)} = \sim 0$ Fibers per Milliliter > 5μ

2. $\frac{(\quad - \quad)(\quad)}{(\quad)(6)(1000)} = \sim 0$ Fibers per Milliliter > 5μ

Special Conditions: _____

Remarks: RESULTS RECORDED IN 9-SEN-100 C.E.N