

CENTRAL FILES

F2
February 3, 1956

TRIP REPORT TO ALBA CRAFT LABORATORY ON JANUARY 23, 1956

J. A. Quigley, M.D.

C. E. Schumann and J. A. Huesing

Objective of Trip:

On Monday, January 23, 1956, a trip was made to Alba Craft Laboratory, Oxford, Ohio. The purpose of this trip was to conduct the second in a series of industrial hygiene surveys which have been planned for the Alba Shop. This report is a compendium of the data obtained.

Persons Visited:

Arrangements for this survey were made with Mr. Eugene Albaugh, owner and manager of the Alba Craft Laboratory.

Description of Trip:

The machining operations at the Alba Shop were identical with those of last month when the first survey was made. Five (5) turret lathes, two (2) machine lathes, four (4) engine lathes, and three (3) drill presses were being employed in the preparation of hollow drilled uranium slugs.

A. Air Dust Survey:

In order to determine the amount of air contamination resulting from the various machining operations, both breathing zone and general air samples were collected during all operational phases. The results of these samples are summarized in Table I.

Table I

<u>Operation or Operating Area</u>	<u>Results, d/m/m³</u>		
	<u>High</u>	<u>Low</u>	<u>Ave.</u>
BX (3) Hollow drilling slugs with Morey Turret Lathe	41	23	32
BX (3) Turning hollow slugs with Cincinnati machine lathe	25	14	18
BX (3) Deburring ends of slugs with South Bend engine lathe	67	48	56
BX (4) Facing slugs with South Bend Engine lathe	10	0	6

Table I (cont'd)

<u>Operation or Operating Area</u>	<u>Results, d/m/M³</u>		
	<u>High</u>	<u>Low</u>	<u>Ave.</u>
BZ (3) Reaming hollow drilled slugs with drill press	19	0	6
GA (4) Morey turret lathe area	68	41	53
GA (3) South Bend engine lathe area	38	0	13
GA (3) Drill Press Area	33	17	25
GA (3) Slug Storage and Scale Area	33	21	28
GA (4) Washroom	29	0	15
GA (2) Office	56	42	49
GA (3) Lunch Area during lunch period	10	8	9

These results indicate all operations and areas within the building are below the MAC. During the previous survey (December 15, 1955) the only operation in excess of the MAC was the facing and de-burring of slugs on the small South Bend engine lathes. Since that time, however, the spindle speed of this machine has been reduced (recommendation from C. E. Bussert to E. Albaugh) thereby eliminating excessive sparking and dusting.

B. Radiation Survey:

During the December, 1955, survey, radiation measurements taken at the various machines indicated a few possible external radiation exposures in excess of the weekly MPD. A recommendation was made at that time to reduce the stockpiling of slugs around the machines and to keep the exposed surfaces of the slugs to a minimum. Similar radiation measurements were taken during this survey at which time the stockpile was considerably reduced at the drill presses, but in the other areas no noticeable reduction had been made. The results of both surveys are shown in Table II for comparison purposes.

Table II

	<u>β / γ (mreps/hr)</u>	
	<u>Dec. 15 Survey</u>	<u>Jan. 23 Survey</u>
South Bend Engine Lathe Operator #1	3.5	Not operating
South Bend Engine Lathe Operator #2	2.5	1.2

Table II (cont'd)
 β / γ (mreps/hr)

	<u>Dec. 15</u> <u>Survey</u>	<u>Jan. 23</u> <u>Survey</u>
South Bend Engine Lathe Operator #3	Not operating	1.8
South Bend Engine Lathe Operator #4	Not operating	N.0
South Bend Engine Lathe Operator #5	Not operating	2.8
LeBlond Machine Lathe Operator	4.0	5.8
Cincinnati Machine Lathe Operator	4.5	4.9
Monarch Machine Lathe Operator	5.5	N.0
Morey Lathe Operator #1	6.0	6.3
Morey Lathe Operator #2	3.0	7.5
Morey Lathe Operator #3	N.0	6.0
Morey Lathe Operator #4	2.5	6.5
Morey Lathe Operator #5	N.0	5.8
Drill Press Operator #1	8.0	2.3
Drill Press Operator #2	8.5	3.8
Drill Press Operator #3	6.0	N.0
Drill Press Operator #4	17.0	N.0
Drill Press Operator #5	14.0	2.8

Based on a 40 hour work week the above exposures appear to be within the MFD. However, if an 84 hour work week is to be continued the hourly exposure (as shown above) would have to be kept below 7.1 mreps/hr.

G. Floor Contamination:

Alpha radiation measurements taken on the floor surfaces of the shop resulted as follows: (All measurements obtained with a Juno Survey meter).

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	a d/m/100 CM ²		
	High	Low	Ave.
Engine Lathe Area	8000	1000	1500
Turret Lathe Area	4500	500	1000
Drill Press Area	3500	500	1000
Main Aisleway	2500	0	1200
Office	800	0	500
Storage Area	2500	0	500

A part time janitor is employed by the Alba Shop and the floors are cleaned and mopped three times per week. Scattered throughout the building, however, are small deposits of uranium chips imbedded in clumps of sludge which ordinary cleaning and mopping will not remove. Otherwise, floor contamination is minimal.

Conclusions and Recommendations:

Overall hygienic conditions at the Alba Craft Laboratory appear adequate. However, since strict control is necessitated in keeping these conditions within tolerable ranges, the following comments and recommendations are submitted.

1. Keep exposed (unlidded) slugs limited to one box per machine. (Recent film badge results indicate a reduction in personnel exposure during the past month).
2. Do not allow turnings to pile up on lathe carriages; keep them raked down into coolant trough to avoid fires which may contribute to air contamination.
3. To further reduce air contamination, replace and maintain filters in both heating units.
4. Continue present practice of adjusting coolant quench and slowing spindle speeds on operations where excessive sparking or dusting is evident.
5. Remove present sludge and chip deposits from floor surfaces and keep such floor contamination to a minimum in the future.

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Miscellaneous Comments:

It should be noted that previous Alba recommendations forwarded to C. E. Bussert were promptly acted upon and completed.

C. E. Schumann

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J. A. Huesing

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CES/JAH/ljm

cc: J. A. Quigley (2x)
C. E. Bussert
R. C. Heatherton
Central File

OUT FOUNT DUST

No 6828

NATIONAL LEAD CO. OF OHIO — HEALTH & SAFETY DIVISION

1956					Industrial Hygiene or Medical Dept.					Analytical Chemistry Dept.									
I. H.# 181					Sample Nos. 11					Date Collected 1/23 by CES					Route to CES				
Location ALBA CRAFT SHOP					Type of Sample air dust					Analyzed for F					Alpha XX				
Remarks OXFORD, OHIO					V					Beta					Ra				
4 engine lathes operating, 2 machine lathes, 5 turret lathes, 3 drill presses operating.					No. 3					Oil					pH				
										Date Received 1-24-56					by Lab				
										Date Reported 1-26-56					by MM				
										Method of Analysis Automatic alpha proportional counter 1					by CJM				
										Counting Data:									
										BKGD .17 c/min					GEO 41%				
										.16 c/min					42%				

Sample No.	Hour	Sample Description	R	T	Q	Count	Time	C/min	d/m/M ³
T 723	1036	GA Washroom	.02	15	.3	20	7.41	2.53	29
T 724		GA Washroom	.02	15	.3	20	7.99	2.33	27
T 725		GA South Bend engine lathe area by #2 lathe.	.02	15	.3	20	5.80	3.28	38
T 726		GA Same as T 723	.02	15	.3	4	10.46	0.21	2
T 727		GA Same as T 724	.02	15	.3	0	15.87	n.d.	n.d.
T 728		GA Same as T 725	.02	15	.3	0	13.92	n.d.	n.d.
T 729		GA Same as T 725	.02	15	.3	0	14.48	n.d.	n.d.
T 730		GA Drill press area by #3 press.	.02	15	.3	20	6.55	2.89	33
T 731		GA Drill press area by #4 press.	.02	15	.3	20	9.28	2	23
		Nos. 1,2,5 drill presses operating; engine lathes operating.							
		Nos. 2,3,4,5							
T 732	1130	GA Same as T 730	.02	15	.3	20	12.14	1.49	17
T 733	1130	GA Same as T 731	.02	15	.3	20	7.72	2.43	28

OUT PLANT AIR DUST

N^o 8113

NATIONAL LEAD CO. OF OHIO — HEALTH & SAFETY DIVISION

Industrial Hygiene or Medical Dept.						Analytical Chemistry Dept.			
1956									
I. H.#	582	Sample Nos.	6	Date Collected	3/28 by CES	Route to	CES		
Location	ALBA CRAFT		Type of Sample	air dust	Analyzed for	F	Alpha xx		
Remarks	OXFORD, OHIO		- One machine lathe only operating in south end of building.		No ₂	V	Beta		
			no other operations.		Oil		Ra		
							pH		
						Date Received	3-29-56	by Lab	
						Date Reported	3-30-56	by MW	
						Method of Analysis Alpha scintillation counter 2 by CJM			
						Counting Data:			
						BKGD	.23 c/min	GEO	41%

Sample No.	Hour	Sample Description	R	T	Q	Count	Time	C/min	d/m/M ³
7601	1011	BZ LeBlond machine lathe operator turning O.D. on hollow drilled slug.	.02	2.25	.045	6	15	0.17	13
7602		BZ Same as 7601	.02	2.25	.045	13	15	0.64	50
7603		BZ Same as 7601	.02	2.25	.045	8	15	0.30	23
		No visible smoke or dust during machining operation. However, some smoke emitted occasionally as turnings burn for a few seconds before being raked down into coolant.							
7604		GA Alongside LeBlond machine lathe on north end during O.D. turning.	.02	20	.4	32	8.85	3.39	30
7605		GA Same as 7604	.02	15	.3	32	11.50	2.55	30
7606		GA West side of LeBlond lathe where operator stands.	.02	15	.3	32	9.80	3.04	35

N^o 8115

NATIONAL LEAD CO. OF OHIO

HEALTH & SAFETY DIVISION

Industrial Hygiene or Medical Dept.						Analytical Chemistry Dept.					
1956											
I. H. #	583	Sample Nos.	9	Date Collected	3/28 by CES	Route to	CES	Date Received	3-29-56	by	Lab
Location	ALBA CRAFT		Type of Sample	air dust		Analyzed for	F Alpha XX	Date Reported	4-2-56	by	MM
Remarks	OXFORD, OHIO - Operating: 4 turret lathes, 2 machine lathes turning O.D., 2 drill presses reaming, 1 machine lathe undercutting, 1 double drill press deburring, 1 drill press for facing.						V	Beta	Method of Analysis Alpha scintillation counter 2		
					No ₃	Ra		Counting Data:		by CJM	
					Oil	pH		.25 c/min		41%	
								BKGD .27 c/min	GEO	42%	

Sample No.	Hour	Sample Description	R	T	Q	Count	Time	C/min	d/m/M ⁵
7607	1058	BZ #1 Morey turret lathe operator hollow drilling one slug.	.02	3.5	.07	21	15	1.17	58
7608		BZ Same as 7607	.02	3.25	.065	16	17	0.71	38
7609		BZ Same as 7607	.02	3.25	.065	13	15.45	0.61	33
7610		GA Between #1 and #2 Morey lathes, SE corner #2.	.02	15	.3	32	6.77	4.50	52
7611	1110	GA Same as 7610	.02	15	.3	32	8.56	3.51	41
7612		GA SE corner #1 Morey lathe.	.02	15	.3	32	6.80	4.44	50
7613	1242	BZ #1 drill press operator facing slugs; 4 per minute (8 slugs). No coolant used on this operation. Considerable sparking noted.	.02	2	.04	25	15	1.40	119
7614		BZ Same as 7613	.02	2	.04	14	15	0.66	56
7615		BZ Same as 7613	.02	2	.04	32	13.02	2.19	186

LOOSE AS FOLLOWS

No 2185

NATIONAL LEAD CO. OF OHIO — HEALTH & SAFETY DIVISION

Industrial Hygiene or Medical Dept.	Analytical Chemistry Dept.
I. H.# <u>2031</u> Sample Nos. _____ Date Collected <u>8/2</u> by <u>RHS</u> Route to <u>RHS</u>	Date Received <u>8-3-54</u> by <u>Lab</u>
Location <u>Albaugh Craft Shop</u> Type of Sample <u>air dust</u> Analyzed for <u>alpha</u>	Date Reported <u>8-4-54</u> by <u>Lab</u>
Remarks <u>Oxford, Ohio</u>	Method of Analysis <u>Counter #1</u>
	by <u>Lab</u>

First day of machining by our group. Only sawing and facing of slugs on end of slugs.

Counting Data:
BKGD 12 8 GEO 43 41

Sample No.	Hour	Sample Description	R	T	Q	Count	Time	c/m	d/m/l ³
E 901	1200	BZ Man facing end of slug on small lathe.	.02	1.5	.03	15	38	.19	21
E 902	1205	BZ Same as E 901	.02	2.0	.04	13	37.2	.14	12
E 903	1210	BZ Same as E 901	.02	2.0	.04	16	30.5	.42	37
E 904	1215	BZ Same as E 901	.02	2.0	.04	9	40.35	.12	10
E 905	1230	BZ Same as E 901	.02	2.0	.04	18	26	.59	51
E 906	1300	BZ Man sawing one slug on large hack saw (Star).	.02	1.25	.025	32	25	1.18	164
E 907	1305	BZ Same as E 906	.02	1.25	.025	32	58.57-	.44	61
E 908	1310	BZ Same as E 906	.02	1.5	.03	25	41	.5	58
E 909	1315	BZ Same as E 906	.02	1.5	.03	16	30	.43	50
E 910	1320	BZ Same as E 906	.02	1.5	.03	9	27.6	.22	26
E 911	1325	BZ Same as E 906	.02	1.5	.03	17	32	.43	50
E 912	1302	GA On desk in smoking area.	.02	30	.60	32	24.95	1.1	6
E 913	1325	BZ Man cutting one slug on small saw (Peerless).	.02	.75	.015	32	49.05	.55	128

O.T. 9

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