STANDARD FORM NO. 64

Office Memorandum • UNITED STATES GOVERNMENT

TO : Roy C. Hageman, Director, Compliance Division, Chicago Operations Office

DATE: June 7, 1961

FROM : Donald T. Walker, Director, Licensee Compliance Division, Idaho Operations Office

SUBJECT: REPORT OF ANALYSES OF AIR AND LIQUID SAMPLES COLLECTED AT LINDSAY CHEMICAL CO.

SYMBOL: LC:AWH

Transmitted herewith is one copy of each of the analytical data sheets submitted with the samples collected recently at the Lindsay Chemical Company plant, West Chicago, Illinois.

The samples are arranged according to areas sampled, viz., one group represents the samples taken in the thorium processing area, including the sand roasting area. Another group represents the samples taken in the rare earth section. The single sheet represents two samples, one breathing zone and one general air, taken during the thorium repack operation. It is to be noted that all samples analyzed, with two exceptions, indicate concentrations of airborne thorium well within the permissable concentration of 3.0×10^{-11} µc/ml of air. The exceptions noted are the two samples taken during the thorium repack operations. It appears that these samples indicate a rather significant concentration of natural thorium, as an airborne contaminant, during this operation. It is to be noted also that no employees were observed to be wearing respirators during the time that the above reported samples were taken.

Also included with the air sample results, is a sample report sheet containing data obtained from the water sample collected from Slough Creek at Highway 59 bridge. As may be seen, the concentrations of thorium reported are well below the MPC_w values listed in 10 CFR 20 Appendix B.

It is hoped that this information will be of assistance to you in your present and future inspection contacts with the licensee. If this office can be of any further assistance to your group, please feel free to request such assistance.

Enclosure:
IDO-130 (7 pages)
IDO-104 (1 page)

LICENSE FILE ROUTING	
JAF	
RMT	

AIRMAIL

JUN 11 1961

ID-130
(8-59)

U. S. ATOMIC ENERGY COMMISSION
IDAHO OPERATIONS OFFICE
HEALTH AND SAFETY DIVISION
SAMPLE RECORD

Serial No. 21-22

Sample from: Lindsay Chemical Co
Address West Chicago, Illinois
Collected by: AW Ivy
Date: 4/19
Analyzed by: RW Willis
Date: 5-16

Sample No.	Hour	Sample Description	Sampling Rate L/M	Sampling Time Min.	Sampling Total Liters	Anal. No.	Quantity Used, ml.	Fluor. Read., sc. div.	Uranium present Total μμ curies	Uranium present μc/ml x 10"
B 4	15	Dry Screening, RE. Oxide	32.5	15	487.5		0.200	15.1	2.	0.4
20		Dry Screening, RE. Oxide (To Laundry)	32.5	15	X					
B 8	1	Post # 8	32.5	15	487.5		0.200	14.0	<0.3	<0.07
B 11		Post # 11 (In Each Coat Lab)	32.5	15	487.5			13.9		
B 12		Post # 12	32.5	15	487.5			13.1		
B 15		Post # 14 (Sample + Laundry)	32.5	15	X					
B 4		Shop Area, Post # 3	32.5	15	487.5			13.1		
B 13		Post # 2	32.5	15	487.5			13.1		
B 12		Shop Bench	32.5	15	487.5			13.1		
B 11		$RECO_3$ Drier	32.5	15	487.5			13.1		
B 10		Mc Cooks Office	32.5	15	487.5			13.1		
B 9		Lab. Door	32.5	15	487.5			13.1		

(Run Hrs)

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ID COMPLIANCE

Standard 22 sc. div. per 5 μg Block 13.3 sc. div. Sensitivity 0.14 microgram/sc. div.

APPROVED
Chief, Analysis Branch

ID-1130
(8-59)

U. S. ATOMIC ENERGY COMMISSION
IDAHO OPERATIONS OFFICE
HEALTH AND SAFETY DIVISION
SAMPLE RECORD

Serial No. **21723**

Sample from: Link'sy Chemical Co

Address: West Chicago, Illinois

Collected by: H W H

Date: 4/19

Analyzed by: [illegible]

Date: 5-16

Sample No.	Hour	Sample Description	Sampling: Rate L/M	Sampling: Time Min.	Sampling: Total Liters	Anal. No.	Quantity Used, ml.	Fluor. Read., sc. div.	Uranium present: Total μμ curies	Uranium present: μc/ml x 10⁻¹⁰
	Pm									
[illegible]	2:21	Sequent 4 1	7	60	~420		0.200	13.9	<0.3	<0.07
[illegible]	3:21							13.9		
[illegible]	4:21	Sampler						13.8		
[illegible]	5:21							13.1		
[illegible]	6:21	Sequence						13.1		
[illegible]	7:21							13.0		
[illegible]	8:21	R.E. Hydrate Dryer						13.1		
[illegible]	9:21							13.1		
[illegible]	10:21							13.1		
[illegible]	11:21							13.1		
[illegible]	12:21	Dust Line, # 2						13.3		
[illegible]	1:21							13.1		
								13.4		
								[illegible]		

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ID COMPLIANCE

Standard 55.2 c. div. per 0.5 μg Blank 15.8 c. div. Sensitivity 0.064 microgram/c. div.

Chief, Analysis Branch
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ID-130
(8-59)

U. S. ATOMIC ENERGY COMMISSION
IDAHO OPERATIONS OFFICE
HEALTH AND SAFETY DIVISION
SAMPLE RECORD

Serial No. 21724

Sample from: Lindsay Chemical Co
Address: West Chicago Illinois
Collected by: AWH
Date: 4/19
Analyzed by: AWJ
Date: 17 April 61

Sample No.	Hour	Sample Description	Sampling Rate L/M	Sampling Time Min.	Sampling Total Liters	Anal. No.	Quantity Used, ml.	Fluor. Read., sc. div.	Thorium present Total μμ curies	Thorium present μc/ml x 10⁻⁷
B 10	AM 4:30	TARE	1	60	240	1	.500	13.[illegible]	<0.15	<0.07
E -1	5:30					2	0.500	13.[illegible]		
B 90 W	6:30	SAMPLER				3		13.1		
B 90 3	7:30					4		13.[illegible]		
B 90 W	8:30	SECURE				5		13.[illegible]		
B 90 E	9:30					6		13.1		
B 90 E	10:30	R.E. DRIER AREA				7		13.1		
B 90 N	11:30	NORTH OF ELEVATOR				8		13.[illegible]		
B 90 W	PM 12:30	BUILDING NO 2.				1		13.[illegible]		

Standard 97.1 sc. div. per 2 μg. Blank 1.[illegible] sc. div. Sensitivity [illegible] microgram/sc. div.

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ID COMPLIANCE

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ID-730
(8-59)

U. S. ATOMIC ENERGY COMMISSION
IDAHO OPERATIONS OFFICE
HEALTH AND SAFETY DIVISION
SAMPLE RECORD

Serial No. 21726

Sample from: Lindsay Chemical Co

Address: West Chicago, Illinois

Collected by: LCK

Date: 4/20

Analyzed by: [illegible]

Date: 17 May 1961

Sample No.	Hour	Sample Description	Sampling: Rate L/M	Sampling: Time Min.	Sampling: Total Liters	Anal. No.	Quantity Used, ml.	Fluor. Read., sc. div.	Thorium present: Total μμ curies	Thorium present: μc/ml x 10⁻⁸
B 78		BZ. Thorium Nitrate Repack	35	7.5	262.5	19	040	2 x 750	120.	45.7
									15.2 x mpc	
									Acct	
3877		Cat. Thorium Nitrate Repack	35	30	475.	20	040	[illegible]	62.	6.4
										2.1 x mpc
										Acct

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ID COMPLIANCE

Standard 1.1 sc. div. per 5 ug. Blank 1 sc. div. Sensitivity ____ microgram/sc. div.

APPROVED [signature] Chief, Analysis Branch

ID-104
(R-1-55)

U. S. ATOMIC ENERGY COMMISSION
IDAHO OPERATIONS OFFICE
HEALTH AND SAFETY BRANCH

Serial No. [illegible]

ROUTINE ___ SPECIAL ___ IDO H & S SAMPLE RECORD SHEET

$BaSO_4$ ppted @ 1100 5/18/61 HWC

Sample from: Lindsay Chemical Co.
Collected by: AWA
Date submitted: 4/26/61

Samples Received: 4-27-61
Analysis Completed:
Method: End Window ___ ; Prop. counter ___ ; Spectrophotometric ___ ; Fluorometric ___ ; Polarographic ___ .

Analyzed by: HWC

Sample No.	Date	Hour	Sample Description	Anal. for	Quant. used, ml.	U+6 or K+ Trans.	Count time, min.	Total Count.	Gross Count, c/m	Bkgd., c/m.	Net count, c/m.	K40 corr., c/m.	Foreign activity c/m.	Foreign activity Total x 10^9
	4/20		Water sample	Ra^{226}	900	3-18 1405	30	36		8 7/30	28			
			from Slough			1300	20	18		7 1/3	11			<0.2
			Creek, at Bridge across State 59											
									instrument Reading				wg Th^{232} found	
				Th^{232}	500				16.2	14.1	2.1		6.4	1.4×10^{-9} uc/ml
			Blank						14.1					
			5 wg Standard						96.2					
				Th daughters if any									Th^{230} found $\times 10^8$	
				Th^{230}	100		30	75	2.5 ± 0.3	6 c/30 min	2.3 ± 1		2.3 ± 0.1	

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Notified: ___ Time: ___ Resampling recommended: Yes ___ No ___

Approved: [signature]
Chief, Analysis Section

ID-130
(8 - 59)

U. S. ATOMIC ENERGY COMMISSION
IDAHO OPERATIONS OFFICE
HEALTH AND SAFETY DIVISION
SAMPLE RECORD

Serial No. 21721

Sample from: Lindsay Chemical Co.

Address: West Chicago, Illinois

Collected by: A.U.D.

Date: 4/20

Analyzed by: [illegible]

Date: [illegible]

Sample No.	Hour	Sample Description	Sampling: Rate L/M	Sampling: Time Min.	Sampling: Total Liters	Anal. No.	Quantity Used, ml.	Fluor. Read., sc. div.	Thorium-Uranium present: Total μμ curies	Thorium-Uranium present: μc/ml x 10⁻¹⁰
B 6		Sand Roast Area - North of Reactor	35	30	1050	5	0.100	13.1	<0.7	<0.07
B 75		Sand Roast Area - East Door, South Side	35	30	1050	9	0.100	13.8	<0.7	
BK6.0		TAPE SAMPLER	4	60	240	10	0.400	14.0	<0.2	
BK6.1						11		13.3		
BK6.2		SEQUENCE				12		13.8		
BK6.3		Tech in Sand Roast				13		13.1		
BK6.4						14		12.8		
BK6.5		Area between Reactors,				15		13.8		
BK6.6						16		13.7		
BK6.7		South End.				17		13.3		

INDIVIDUAL SAMPLES

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ID COMPLEX

Standard 98.4 sc. div. per 5 μg. Blank 1.4 sc. div. Sensitivity [illegible] microgram/sc. div.

[illegible]
Chief, Analysis Branch

APPROVED

ID-130
(8-59)

U. S. ATOMIC ENERGY COMMISSION
IDAHO OPERATIONS OFFICE
HEALTH AND SAFETY DIVISION
SAMPLE RECORD

Serial No. 21720

Sample from: Lindsay Chemical Co
Address: West Chicago, Illinois
Collected by: Awt
Date: 4/20
Analyzed by: [illegible]
Date: [illegible]

Sample No.	Hour	Sample Description	Sampling: Rate L/M	Sampling: Time Min.	Sampling: Total Liters	Anal. No.	Quantity Used, ml.	Fluor. Read., sc. div.	Uranium present: Total μμ curies	Uranium present: μc/ml x 10¹²
13414	~~Am~~ 10:31	Sequential	8	60	240	1	0.400	15.1	<0.2	<0.07
1369	11.31					2		1.4		
13470	12 pm 31	Sampler				3		1.1		
13471	1:31					4		1.1		
13472	2:31	Sequence				5		1.1		
13473	3:31	Thorium ptg area				6		1.1		
13474	4:31	Working Q				7		1.1		

RECEIVED
MAY 10 1961
ID [illegible]

Standard 15 sc. div. per 5 μg. Blank 1 sc. div.; Sensitivity 0.33 microgram/sc. div.

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Chief, Analysis Branch