

UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON 25, D.C.

SEP 27 1963

IN REPLY REFER TO:

DLR:JUL  
40-768  
70-139

*J.H. Roeder*  
*Wh...*  
*G. Gilbert*  
*sd*

*F.I.I.*

Engelhard Industries, Inc.  
Pine and Dunham Streets  
Attleboro, Massachusetts

Attention: Mr. N. M. Weiss

Gentlemen:

The information contained in your letter of June 27, 1963, regarding the levels of uranium contamination remaining in your facility after completion of decontamination of the facilities and equipment, has been reviewed in connection with the activities performed under licenses SNM-185 and SUB-172.

*AA!*

As a result of this review, we have concluded that due to the insignificance of the contamination which may be present on equipment in this particular instance, no hazard to health and safety is involved and no license would be required for any person receiving or possessing such equipment or facilities.

Sincerely yours,

Director  
Division of Licensing and Regulation

DIV. OF COMPLIANCE  
REG. 1, USAEC, N. Y.  
RECEIVED

OCT 11 4 45 PM '63

Information in this record was deleted  
in accordance with the Freedom of Information  
Act, exemptions 6  
FOIA- 208-0214

*B*

*Compliance*

*J/12*

~~AA 1 AA 22 30 277~~

UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON 25, D. C.

IN REPLY REFER TO:

47-314  
141120

Engelhard Industries Inc.  
S. E. Hesperus Division  
Andover, Massachusetts

SOURCE MATERIAL LICENSE

License No. ~~0-1237~~

Dated: ~~UE~~ 19 1958

Continued:

Pursuant to the Atomic Energy Act of 1954 and Section 40.21 of the Code of Federal Regulations, Title 10 - Atomic Energy, Chapter 1, Part 40 - Control of Source Material, you are hereby licensed to receive possession of and title to ~~through importation, miscellaneous aluminum, zirconium beryllium and stainless steel clad natural uranium extractions containing approximately ten (10) pounds of uranium.~~

You are further licensed to transfer and deliver possession of and title to refined source material to any person licensed by the Atomic Energy Commission, within the limits of his license.

This license is subject to all the provisions of the Atomic Energy Act of 1954 now or hereafter in effect and to all valid rules and regulations of the U. S. Atomic Energy Commission, including 10 CFR 20, "Standards For Protection Against Radiation."

Neither this license nor any right under this license shall be assigned or otherwise transferred in violation of the provisions of the Atomic Energy Act of 1954.

This license shall expire ~~August 31, 1959.~~

FOR THE ATOMIC ENERGY COMMISSION

J. C. Delaney  
Chief, Materials Section  
Licensing Branch  
Division of Licensing and Regulation

**TWX INCOMING**

DOCKET NO. 44-3144

*Reed*

I AM CALING 566 IS THIS 566 PLS ACK

SAME PLSACE AEC GERMANTOWN RE CA PLS

ENGELHARD IND INC NK 625 AUG 15 1958

1958 AUG 15 PM 2 49

LYALL JOHNSON

U.S. ATOMIC ENERGY COMM.  
TWX UNIT  
SOURCE

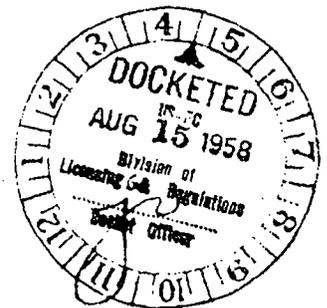
ENGELHARD INDUSTRIES INC B E MAKEPEACE DIVISION ATTLEBORO MASS  
MATERIA/ LICENSE C 3719 REQUESTS PERMISSION TO EXPORT MISCELLANEOUS  
SAMPLES OF FUEL ELEMENT TYPES CONTAINING NATURAL URANIUM TO ENGELHARD  
INDUSTRIES EXHIBIT GENEVA ATOMIC ENERGY CONFERENCE GEEVA XXX GENEVA  
SWITZERLAND AND IMPORT LICESNE TO RETURN ALL OF THE EXHIBIT MATERIA  
TO THE U S . EXHIBIT CONSISTS OF MISCELLANEOUS ALUMINUM, ZIRCONIUM  
BERYLIUM AND STAINLESS STEEL CLAD NATURAL URAIUM EXTRUSIONS CONTAINING  
APPROX TEN POUNDS URANIUM . PLEASE RETURN LICESNE ATTN L C BURMA 113  
ASTOR STREET NEWARK N J LICENSE REQUIRED WEB AUG 20

L C UBURMAN

END MB

RECB OK RB TNKS

**TWX INCOMING**



Richard B. Chitwood, Inspection Specialist  
(Criticality) Division of Compliance, HQ

August 13, 1963

Walter R. Lorenz, Radiation Specialist  
Region I, Division of Compliance

ENGELHARD INDUSTRIES, INC., MAKEPEACE DIVISION, ATTLEBORO, MASSACHUSETTS  
LICENSE NO. SNM-185 AND SUB-172 - REQUEST FOR CLOSE-OUT INSPECTION

CO:I:WRL

This refers to your memo route slip dated 7/18/63 reference the above subject.

Upon reviewing the licensee's close-out survey report dated 6/27/63, my final survey report made from 10/23 - 25/62 and the suggested contamination levels set forth in L&R's letter to the licensee dated 8/15/62, the following is apparent:

1. The fixed beta-gamma survey results of both the licensee's survey and my survey are within suggested limits;
2. The removable beta-gamma survey results for both the licensee's survey and my survey are within suggested limits;
3. The fixed alpha survey results of both the licensee's survey and my survey are predominantly identical and, when averaged, are within the suggested limits; and
4. The removable alpha survey results of both the licensee's survey and my survey are within the suggested limits, except for two wipes of my survey in which I reported results of 2000 and 3100 d/m/100 cm<sup>2</sup>. The licensee's corresponding survey results are reported as 125 and 127 d/m/100 cm<sup>2</sup>.

In view of the above, we do not feel that a close-out inspection of the subject facility to confirm that the levels of contamination are within the values suggested, is necessary. We recommend that the subject licenses be canceled.

C O M P L I A N C E  
LORENZ:maz      KIRKMAN

8/13/63

*REC* *Devel...*  
*W.D. Leary*

Donald A. Musbauer, Chief  
Source and Special Nuclear Materials Branch  
Division of Licensing and Regulation

DEC 28 1962

Original  
Leo Dubinski, <sup>no</sup> Assistant Director for Materials  
Division of Compliance

*s.d.*

ENGLEHARD INDUSTRIES, INC., (D. E. MAKEPEACE DIVISION) -  
REQUEST FOR CANCELLATION OF LICENSE SRM-185 AND SUB-172

CO:WBJ

Attached for your information and appropriate action is a memorandum report from Region I, Division of Compliance, dated December 21, 1962, subject as above. This is in response to your memorandum dated October 17, 1962, concerning Englehard Industries' request for cancellation of License SRM-185 and SUB-172.

Attachment:

Cy memo fm Kirkman to Dubinski w/exhibits  
"A", "B", "C", & "D" dtd 12/21/62

→ cc: R. W. Kirkman, Region I, CO, w/o att

DIV. OF COMPLIANCE  
REG. I, USAEC, N. Y.  
RECEIVED

Dec 31 9 40 AM '62

CO

CO

WBJohnston

LDubinaki

12/27/62

12/ /62

Leo Dubinski, Assistant Director for  
Materials, Division of Compliance, HQ

DEC 1962

Robert W. Kirkman, Director  
Region I, Division of Compliance

ENGELHARD INDUSTRIES, INC., (D. E. MAKEPEACE DIVISION)  
REQUEST FOR CANCELLATION OF LICENSE SNM-185 AND SUB-172

CO:I:WRL

The licensee's facilities were visited by Walter R. Lorenz, Radiation Specialist, CO:I, from October 23 through 25, 1962, as requested by L&R in their memo dated 10/17/62 to Division of Compliance, which was forwarded to this office on 10/19/62. Mr. Norton Weiss, Nuclear Health Physics Manager and Production Control Manager, and Mr. Arthur Schulte, Engineering Manager, were contacted. This visit was made to determine the status of the licensee's facility and their equipment with respect to their request for termination of their SNM-185 and SUB-172 licenses. The licensee's equipment contained in the facility was sold on contract to the Comitato Nazionale Per L'Energia Nucleare, an agency of the Italian Government.

According to Weiss, Engelhard Industries possesses the following instruments which were used for a final survey of their equipment to determine the levels set forth in L&R's letter dated August 15, 1962, to Engelhard Industries:

Nuclear Chicago Model 2112 survey meter with an  
AP-4 alpha probe

Eberline PAC-30 gas flow portable survey meter

3 Nuclear Chicago 2612 GM survey meters

Technical Associates juno and outie pie

NMC gas flow proportional counter and scaler

C O M P L I A N C E

LORENZ:ehr      CLEVELAND      KIRKMAN  
12-18-62

A review of the licensee's survey records indicated that a complete survey of all equipment to be sold to the agency of the Italian Government was not made. The limited records available of their final survey did indicate that the limits specified in IAR's letter to the licensee dated August 15, 1962, were adhered to for the equipment surveyed.

An equipment list of items to be transferred to the agency of the Italian Government is enclosed as Exhibit "A". Items crossed out will not be shipped. Items noted with an asterisk (\*) were used in processing natural and depleted uranium only. Items marked with a cross (+) were used in processing enriched material only. Items marked with a double asterisk (\*\*) were not located within the nuclear exclusion area, but were used on contained-uranium products. A layout diagram of their nuclear exclusion area is enclosed as Exhibit "B". The results of the inspector's survey of the equipment and facility are indicated in Exhibit "C" and "D". Exhibit "C" contains the results of the inspector's survey of the licensee's equipment to be shipped to Italy and may be cross-referenced to Exhibit "A" by use of the item numbers. The survey was made of areas on the equipment where the inspector felt contamination would most likely be present. It should be noted that equipment had been repainted recently prior to the inspector's visit. Exhibit "D" contains the results of a floor and wall survey of the licensee's facility as shown in Exhibit "B". Although 2½ days were spent by the inspector surveying the facility, a complete survey of the facility could not be made due to the licensee's painting of the equipment and inaccessibility of some equipment, such as duct works and crated items.

The inspector used a Samson Model 3-12 alpha survey meter (Serial #911 calibrated on 10/22/61) having a range of 0-25000 dpm and a window area of 98 cm<sup>2</sup>. Beta-gamma activities were measured using an KEC GS-2 end window survey meter (NY ARC #5584 calibrated on 9/20/62). The effective window area was 1.22 in<sup>2</sup>. The window thickness of the GM tube is 1.4 mg/cm<sup>2</sup>, and it was covered with a 6.6 mg/cm<sup>2</sup> polystyrene, effecting a total window thickness of 8 mg/cm<sup>2</sup>. Smear samples taken by the inspector were analyzed by HASL. Smear samples were taken of areas of approximately 100 cm<sup>2</sup> each.

Leo Dubinski

- 3 -

On 11/5/62, Mr. Weiss telephoned this office and reported that approximately 5.5 grams of U-235 were fused in a vacuum induction melting furnace listed as Item 1 on Exhibit "A". He also estimated that the total U-235 contained on equipment to be shipped to the agency of the Italian Government was 13.02 grams (including the 5.5 grams noted above). Weiss also estimated that a total of 90.7 grams of U-238 were contained on the equipment.

It should be noted that items underlined in the inspector's survey, Exhibit "C", exceeded the levels set forth by L&R in their letter dated August 15, 1962, to Engelhard Industries. Two areas where high alpha removable contamination was noted exceeded the limits specified by L&R in the above mentioned reference.

To summarize, it is our opinion that a complete survey of the equipment was not performed by the licensee to comply with L&R's letter dated August 15 to the licensee; that a thorough survey of the equipment could not be made since the equipment had been repainted and other equipment was still installed or inaccessible; that, as per the inspector's survey of accessible equipment, levels of activity were in excess of the limits set by L&R in their August 15 letter to the licensee; that, as per the inspector's survey of the facility, levels exceeded that stipulated by L&R in their August 15 letter to the licensee; and that, although the licensee has made an estimate of the quantity of uranium on equipment, an accurate estimate is impossible on the basis of the available data.

Enclosure:

Exhibits "A", "B", "C", and "D"

## EXHIBIT "A"

Page 1 Of 10

EQUIPMENT LIST

<u>Item No.</u>	<u>Item</u>	<u>Capacity</u>	<u>Dimensions</u>	<u>Weight</u>	<u>Price</u>
1 +	Vacuum Induction Melting Furnace and air melting stand Manufacturer - <del>W</del> NRC	1000 lb. steel 350 lb. uranium 100 KW Bottom pouring and tilt pouring			
2 *	Vacuum Arc Furnace Manufacturer - NRC	100 lb. steel Consumable and none- consumable 3 molds 2.3" dia. 2.8" dia. 3.8" dia.			
3	Forge Press Manufacturer - Lake Erie	300 Ton			
4 *	Sodium Bonding Equipment Manufacturer - Vacuum Specialties	50 elements $\frac{1}{2}$ " dia. X 6" long			
5	Rolling Mill Manufacturer - Farrel & Onia	18" X 22" 75 H. P.			
6	Punch Press Manufacturer - Niagara	75 ton 6" stroke - $7\frac{1}{2}$ H.P.			
7	Shear Manufacturer - Steelwaid	6' long $\frac{3}{8}$ mild steel			
8 +	Vacuum Annealing Horizontal Furnace Manufacturer - Hevi Duty	6" I.D. - 10" hot zone - 1000°C.			
9	Salt Bath Manufacturer - Holden	1700°F. 10" X 20" X 5" Brick Pot 1 Extra Pot			
10	Rolling Mill	8 X 8			

EQUIPMENT LIST

<u>Item No.</u>	<u>Item</u>	<u>Capacity</u>	<u>Dimensions</u>	<u>Weight</u>	<u>Price</u>
11	Vapor Degreaser Manufacturer - Ramco	36" X 6'			
12*	Rod Straightener Manufacturer - Anderson	10 ton			
13	Horizontal Milling Machine Manufacturer - B & S No. 12	Rise & fall type Table size 12" X 60" Table travel 24"			
14	Horizontal Milling Machine Manufacturer - B & S No. 12	Table size 12" X 60" Table travel 24"			
15	Horizontal Milling Machine Manufacturer - B & S No. 12	Table size 12" X 60" Table travel 24"			
<del>16</del>	<del>Horizontal Milling Machine Manufacturer - B &amp; S No. 12</del>	<del>Table size 12" X 60" Table travel 24"</del>			
<del>17</del>	<del>Horizontal Milling Machine Manufacturer - B &amp; S No. 12</del>	<del>Table size 12" X 60" Table travel 24"</del>			
18	Zygo Unit	Type ZA-26			
19	Industrial Clothing Washing Machine - Two (2) Industrial Clothing Drying Machines	50 lb. electric Gas Gas			
20	Industrial Clothing Spinner	50 lbs.			
21	3 Laundry Trucks				
21-A	X-Ray and Film Development Film Dryer	250 KVA			
22	Ultrasonic Test Tank	Tank 24" X 19"			
23+	Planer Bed Milling Machine Fitchburg	Table travel 58" Table size 24" X 72"			
24	Autoclave	3000 psi 250 gal			

<u>Item No.</u>	<u>Item</u>	<u>Capacity</u>	<u>Dimensions</u>	<u>Weight</u>	<u>Price</u>
25	Autoclave Manufacturer - Erie	1 gallon 3200 PSI 750°F. 5" I.D. 10" deep			
26	Vacuum Glove Box Manufacturer - Venco	42" I.D. X 6½"			
27	Alligator Shear Manufacturer - Canton No. 00	½ X 6" plate			
28	Mass Spectro Leak Detector	Vesco MS-9			
<del>29</del>	<del>Mass Spectro Leak Detector</del>	<del>Vesco MS-9</del>			
30	Level Roller Manufacturer - Waterbury	9 roll - 30 H.P. 15" wide ½" thick			
31 *	Ingot Arc Surface Conditioner Manufacturer - Vacuum Specialties	6" dia. X 24" long Ingot			
32 **	Vacuum & Atmosphere Weld Box Manufacturer - Vacuum Specialties	6" capacity 20" swing			
33 *	Cone Blender Manufacturer - Genco	2 cubic ft. approx.			
34	Oven - circulating hot air Manufacturer - Despatch	800°F. 7.6 KW 24" X 36" X 20"			
35 +	Hot Oil Bath Furnace	For rolling uranium 10' long			
36	Con Evacuation Station - 4" Vacuum Pumps Manufacturer - King	10 nipples			
37	Con. for Con Evacuation Manufacturer - Despatch	800°F. 7.6 KW 24" X 26" X 6"			

## EQUIPMENT LIST

Page 4

<u>Item No.</u>	<u>Item</u>	<u>Capacity</u>	<u>Dimensions</u>	<u>Weight</u>	<u>Price</u>
38	Hot Air Furnace Manufacturer - Grieve-Kendry	1100 <sup>o</sup> F.			
39	Swager Manufacturer - Torrington	3/8" dia. max.			
40	Induction Heater	2.5 KW			
41	Sieve Shaker				
42 +	Bending Brake Manufacturer - Cyril-Bath	80 ton - 6'			
43	Ceramic Spray Gun & Lathe Manufacturer - Metco	For spraying graphite crucibles with ZrO <sub>2</sub>			
44 *	Sintering Furnace H <sub>2</sub> Atmos- phere. Manufacturer - C. I. Hayes	2050 <sup>o</sup> F. 3" dia. X 12"			
45 *	H <sub>2</sub> Manifold for above furnace				
46 +	Electro-Magnet				
47	Four-point Temperature Recorder	M-H Brown 1200 <sup>o</sup> C.			
48 **	Stokes Vacuum Pump	32 CFM Mechanical			
49 **	Air Marking Glass	For very small marking stamping			
50 +	C <sup>o</sup> Vacuum System	For use on vacuum annealing			
51 **	Water Demineralizer	Model M-200			

EQUIPMENT LIST

<u>Item No.</u>	<u>Item</u>	<u>Capacity</u>	<u>Dimensions</u>	<u>Weight</u>	<u>Price</u>
52 **	Large Circumferential Welding Machine Manufacturer - Airco	7" swing 24" long Automatic wire feeder			
53 **	Small Circumferential Welding Machine	1/2" swing for welding .010 tubing			
54	Dye Check Hood	Equipped with ducts and blower			
55 **	Centerless Grinding Machine	Grind uranium rods .400 dia. & .002			
56	Baitograph Portable X-Ray	300 KVA			
57 **	X-Ray Viewing Screen in X-Ray Room	14 X 18			
58 †	Ball Mill	2 stone lugs 10" I.D. 10" deep			
59	Two crucible cleaning hoods (ONE *) (ONE †)	Approx. 3' X 3' X 3'			
60	Two general purpose hoods	Approx. 3' X 3' X 3'			
61 *	Leak Test Pressure Chamber	8" I.D. 7' long 2 atmosphere			
62 *	Felker Di-Met Cutoff Saw Precision cutting	1/2" uranium			
63	Level Roll	3" diam			
64 **	X-Ray Viewer Manufacturer - Keloket	High Intensity			

EQUIPMENT LIST

<u>Item No.</u>	<u>Item</u>	<u>Capacity</u>	<u>Dimensions</u>	<u>Weight</u>	<u>Price</u>
65	Radiation Survey Meter				
66	CP3 Cutlopie Survey Meter				
67	Two air Samplers				
68	Count Rate Meter				
69	Gas Proportional Counter				
70	NMC Model PC-3 Proportional Counter				
71	Alner Velometer				
72	Three (3) Laboratory Monitors & Three (3) Alpha Scintillation Probes				
73	Portable Count Rate Meter				
74	Portable Alpha Probe				
75	Four (4) RM-2 Radiation Monitors				
76	Two (2) Portable Air Samplers				
77	Survey Meter				
78	NMC Radiation Monitor & Probe				
79	Fairbanks - Morse Scale	50 kg.			

EQUIPMENT LIST

<u>Item No.</u>	<u>Item</u>	<u>Capacity</u>	<u>Dimensions</u>	<u>Weight</u>	<u>Price</u>
80	Mettler Micro-Balance	Precision balance			
81	Mettler Balance	800 gms.			
82	Torsion Balance (competeqram)	500 gms.			
83 *	Toledo Platform Scale	5 kg.			
84 **	Cleaning Room Equipment				
	(a) 2 stainless steel tanks	10" X 10" X 9"			
	(b) 2 stainless steel tanks with heaters	10" X 10" X 9"			
	(c) 1 stainless steel tank	11" X 10" X 12"			
	(d) 1 filtered hot air dryer	5" X 6" X 8"			
	(e) 1 filtered hot air dryer	8" X 8" X 5"			
85	Large Pickle Room Equipment				
	(a) 4 PVC pickling tanks with hoods & blowers	6" wide 12" deep 14" long			
	(b) 7 stainless steel tanks	12" X 12" X 7"			
	1 stainless steel tank with heater	10" X 19" X 9"			
	2 stainless steel hoods, blower & stacks				
86	Three (3) vacuum cleaners (Two *) (ONE †)	15 gal.			
87	Three (3) Scott Air Pack Masks				
88 ***	Two (2) Gas Masks				
89 ***	Granite Surface Plate & Stand				
90 ***	Granite Surface Plate & Stand				

## EQUIPMENT LIST

Page 8

<u>Item No.</u>	<u>Item</u>	<u>Capacity</u>	<u>Dimensions</u>	<u>Weight</u>	<u>Price</u>
91 **	#763 Bench Centers - Inspection				
92 *	Double Jar Blender	For SS-UO <sub>2</sub>			
93 *	Powder Metal Die	For SS-UO <sub>2</sub>			
<del>94</del>	<del>_____</del>	<del>_____</del>			
95 +	Racks for storage of enriched scrap material				
96	Oil Fume Exhaust System	Exhaust vacuum pumps			
97 **	Pulvett Pulverizer	For powder metal			
98 *	South Bend Lathe & Turnostat	For machining 1/2" dia. Ur-moly rack			
99	Fluoroscopes (homs built)				
100 **	Welder Power Source	300 amps			
101 **	Breakboard	10 ft.			
102 **	M I G Welder	100 amp.			
103	T I G Welder	100 amp.			
<del>104</del>	<del>_____</del>	<del>_____</del>			

EQUIPMENT LIST

<u>Item No.</u>	<u>Item</u>	<u>Capacity</u>	<u>Dimensions</u>	<u>Weight</u>	<u>Price</u>
<del>105</del>	<del>Case Cabinet</del>	<del>11" wide</del>			
<del>106</del>	<del>...</del>	<del>12" ...</del>			
107 **	Warner & Swasey Turret Lathe				
108 **	Bench Saw				
<del>109</del>	<del>...</del>				
<del>110</del>	<del>...</del>	<del>20" ...</del>			
111	1/2 Ton Trolley System				
112	Forge Press Furnace	18" X 20" X 40"			
113 **	Pako Temp. Refrigerator Unit				
114 **	Wire Wrap Machine				
115 **	XRay Film Cabinet				
200	Contaminated Water Disposal System	5 - 400 gal. settling tanks etc. to 5000 ft.			

EQUIPMENT LIST

<u>Item No.</u>	<u>Item</u>	<u>Capacity</u>	<u>Dimensions</u>	<u>Weight</u>	<u>Price</u>
201	Air Filtration System - 3 Large Blowers & Filter Boxes	Sufficient for 25,000 sq. ft. shop			
202 **	Oil fired Hot Air Make-Up System	3,750,000 BTU			
203	Steam heated hot air make-up blowers (2 units) Manufacturer - Nesbitt	1,190,000 BTU ea.			
204	Kinney Vacuum Pump - figured with furnace				
205	Fire Extinguisher				
<del>206</del>	<del>Rolling Machine</del>				
<del>207</del>	<del>Rolling Machine</del>				
<del>208</del>	<del>Rolling Machine</del>				
209	Three (3) lines of Internal air ducts				
210 **	Hot Wax Bath				
<del>211</del>	<del>Rolling Machine</del>				
212 **	W.T.R. Assembly Fixture				
213 **	Tooling as shown - including VTR Bend Brake Dies and Draw Board Dies				
214 **	400 amp. Welder				
215	Peerless Saw				
216	Internal Storage Racks				
217 **	Bridgeport Milling Machine				
<del>218</del>	<del>Rolling Machine</del>				

EXHIBIT "C"

Item No.	Direct Survey Results				Smear Survey Results		Remarks
	Alpha D/M		Beta Gamma RR/HR		Alpha D/M	Beta Gamma D/M	
	Maximum	Average	Maximum	Average			
1	>25,000	>25,000	.05	.05	4,500	52	Inside
	4,500	1,000	.05	.05	1,400	34	Outside
2	400	< 400	.05	.05	20	15	
3	1,500	1,000	.05	.05	230	130	
4	1,500	800	.05	.05	19	12	
5	1,500	800	.05	.05	55	14	
6	200	< 200	.05	.05	58	53	
7	800	500	.05	.05	190	47	
8	4,000	1,000	.05	.05	230	37	
9	800	800	.5	.1	210	56	Beta gamma measured from Brick Pot
10	300	< 300	.05	.05	33	26	
11	14,000	8,000	.1	.1	1,100	330	
	8,000	5,000 1,000			63	5.3	5,000 on degreaser coils 1,000 on inside surface

EXHIBIT "C"

- 2 -

Item No.	<u>Direct Survey Results</u>				<u>Shear Survey Results</u>		<u>Remarks</u>
	<u>Alpha D/M</u>		<u>Beta Gamma BR/BR</u>		<u>Alpha D/M</u>	<u>Beta Gamma D/H</u>	
	<u>Maximum</u>	<u>Average</u>	<u>Maximum</u>	<u>Average</u>			
12	500	300	.06	.06	54	72	
13	500	300	.05	.05	48	45	Serial No. 502-12-93
14	1,000	300	.05	.05	8.2	16	Property No. 567
15	3,500	500	.1	.05	62	14	No. 4172
18	200	200	.05	.05	8.6	6.0	
19	4,000	1,000	.1	.05	98	44	
20	100	100	.05	.05	34	19	
21							In use
21A	< 100	< 100	.05	.05	62	18	
22	1,000	400	.05	.05	320	71	
23	< 100	< 100	.05	.05	2.9	7.9	
24	150	150	.05	.05	8.6	3.7	
25	800	400	.05	.05	68	31	

EXHIBIT "C"

- 3 -

Item No.	<u>Direct Survey Results</u>				<u>Smear Survey Results</u>		<u>Remarks</u>
	<u>Alpha D/M</u>		<u>Beta Gamma MB/MB</u>		<u>Alpha D/M</u>	<u>Beta Gamma D/M</u>	
	<u>Maximum</u>	<u>Average</u>	<u>Maximum</u>	<u>Average</u>			
26	200	100	.05	.05	18	8.5	
27	1,000	600	.15	.05	100	77	
28	500	100	.05	.05	190	330	
30	5,000	1,000	.05	.05	51	99	
31	100	100	.05	.05	60	43	
33	100	100	.05	.05	7.7	6.7	
34	1,000	500	.05	.05	1,000	260	
35	1,500 400	1,500 200	.05	.05	69	83	1,500 on oil filters (will not be shipped)
36	100	100	.05	.05	55	12	
37	4,500	1,000	.05	.05	82	29	
38	> 25,000	10,000	.05	.05	160	16	> 25,000 on inside steel lip
					260	8.1	
39	900	100	.05	.05	248	37	

EXHIBIT "C"

- 4 -

Item No.	<u>Direct Survey Results</u>				<u>Smear Survey Results</u>		<u>Remarks</u>
	<u>Alpha D/M</u>		<u>Beta Gamma NR/RR</u>		<u>Alpha D/M</u>	<u>Beta Gamma D/M</u>	
	<u>Maximum</u>	<u>Average</u>	<u>Maximum</u>	<u>Average</u>			
40	2,000	900	.05	.05	97	56	
41	5,000	1,000	.05	.05	960	64	
42	100	100	.05	.05	20	13	
43	5,000	1,500	.05	.05	<u>3,100</u>	460	
44	1,000	400	.05	.05	180	30	
45	3,000	1,500	.05	.05	800	130	
46	1,500	300	.05	.05	4.1	8.8	
47							Out for repair
50	3,000	1,000	.05	.05	340	140	
54	100	100	.05	.05	140	32	
56	100	100	.05	.05	13	12	
58	> 25,000 5,000	3,000 1,000	.1	.05			<u>Rubber rollers &gt; 25,000, will replace</u>
59	5,000	1,500	.3	.1	43	0	

EXHIBIT "C"

- 5 -

<u>Iten No.</u>	<u>Direct Survey Results</u>				<u>Smear Survey Results</u>		<u>Remarks</u>
	<u>Alpha D/E</u>		<u>Beta Gamma NR/NR</u>		<u>Alpha D/E</u>	<u>Beta Gamma D/E</u>	
	<u>Maximum</u>	<u>Average</u>	<u>Maximum</u>	<u>Average</u>			
60	5,000	3,000	.15	.1	126	64	
61	300	150	.05	.05	170	43	
62	1,000	1,000	.3	.1	700	430	
63	100	<100	.05	.05	33	38	
65							Nuclear Safety Instrumentation
66							"
67							"
68							"
69							"
70							"
71							"
72							"
73							"
74							"

EXHIBIT "C"

- 6 -

<u>Item No.</u>	<u>Direct Survey Results</u>				<u>Area Survey Results</u>		<u>Remarks</u>
	<u>Alpha D/M</u>		<u>Beta Gamma MR/HR</u>		<u>Alpha D/M</u>	<u>Beta Gamma D/M</u>	
	<u>Maximum</u>	<u>Average</u>	<u>Maximum</u>	<u>Average</u>			
75							Nuclear Safety Instrumentation
76							"
77							"
78							"
79	7,000	5,000	.1	.05	180	2.4	
	100	100	.05	.05			After painting
80	200	200	.05	.05	5.8	1.2	
81	400	200	.05	.05	110	24	
82	200	200	.05	.05	13	9.5	
83							Not decontaminated
85 (a)	4,000	3,000	.05	.05	500	45	
					95	27	After decontamination
(b) 7	800	600	.05	.05	170	39	
(b) 1	>25,000	25,000	.05	.05	3,600	230	
	400	200	.05	.05			After painting
(b) 2	4,000	2,000	.05	.05	1,200	150	

EXHIBIT "C"

- 7 -

<u>Item No.</u>	<u>Direct Survey Results</u>				<u>Shear Survey Results</u>		<u>Remarks</u>
	<u>Alpha D/M</u>		<u>Beta Gamma MR/HR</u>		<u>Alpha D/M</u>	<u>Beta Gamma D/M</u>	
	<u>Maximum</u>	<u>Average</u>	<u>Maximum</u>	<u>Average</u>			
86							In use
87	400	200	.05	.05	340	44	
92	600	200	.05	.05	210	35	
95	800	400	.05	.05	290	210	
95/200/201/203 216 A.	400	100	.1	.05	280	64	Items crated and stored in fenced yard
95/200/201/203 216 B.	5,000	3,000	.05	.05			"
200/201 C.	1,000	600	.05	.05	290	350	"
200/201 D.	1,500	1,000	.05	.05	500	280	"
200/201 E.	1,200	300	.05	.05	150	41	"
201 F.	15,000	8,000	.05	.05	710	680	"
	5,000	2,500	.05	.05	5.9	0	After painting

EXHIBIT "C"

- 8 -

<u>Item No.</u>	<u>Direct Survey Results</u>				<u>Scrap Survey Results</u>		<u>Remarks</u>
	<u>Alpha D/M</u>		<u>Beta Gamma MB/HR</u>		<u>Alpha D/M</u>	<u>Beta Gamma D/M</u>	
	<u>Maximum</u>	<u>Average</u>	<u>Maximum</u>	<u>Average</u>			
201 G.	25,000	9,000	.05	.05	1,200	150	Item crated and stored in fenced yard
	1,000	500	.05	.05	7.0	0	After painting
201 H.	15,000	3,000	.05	.05	160	65	Item crated and stored in fenced yard
	5,000	1,000	.05	.05	4.7	0	After painting
200 I.	1,500	900	.05	.05	210	240	Item crated and stored in fenced yard
200 J.	300	200	.05	.05	29	6.7	"
200 K.	300	200	.05	.05	32	8.3	"
200 L.	300	200	.05	.05	8.4	2.8	"
96	600	200	.05	.05	130	68	
98	1,000	400	.05	.05	600	160	
99	200	100	.05	.05	85	11	

EXHIBIT "C"

- 9 -

<u>Item No.</u>	<u>Direct Survey Results</u>				<u>Smear Survey Results</u>		<u>Remarks</u>
	<u>Alpha D/M</u>		<u>Beta Gamma MR/HR</u>		<u>Alpha D/M</u>	<u>Beta Gamma D/M</u>	
	<u>Maximum</u>	<u>Average</u>	<u>Maximum</u>	<u>Average</u>			
103	600	600	.05	.05	<u>1,600</u>	10	
111	1,000	700	.05	.05	71	30	
112	5,000	1,000	.05	.05	220	43	
204	700	450	.05	.05	<u>1,200</u>	140	
205	5,000	3,000	.05	.05	<u>1,400</u>	200	
209	1,500	1,000	.05	.05	89	22	Duct work in place hung from ceiling
215	3,000	2,000	.05	.05	320	100	

EXHIBIT "D"

FLOOR AND WALL SURVEY

<u>Location</u>	<u>Direct Survey Results</u>		<u>Smear Survey Results</u>	
	<u>Alpha D/M</u>	<u>Beta Gamma MB/GB</u>	<u>Alpha D/M</u>	<u>Beta Gamma D/M</u>
A	400	.05	140	35
B	600	.05	100	26
C	500	.05	380	25
D	450	.05	120	25
E	600	.05	480	35
F	500	.05	210	42
G	600	.05	150	36
H	550	.05	290	40
I Sheet Metal Floor	1000	.05	460	120
J	1000	.05	110	25
K	700	.05	120	28
L	350	.05	59	12
M	350	.05	78	15
N	600	.05	190	42
O	1000	.05	390	75
P	2000	.05	520	64
Q	5000	.05	510	59
R	1000	.05	150	37
S	1000	.05	120	34
T	1200	.05	150	24
U	1000	.05	220	51
V	900	.05	210	45
W	4000	.05	2000	240
X	5000	.05	3100	180
Y	7000	.05	950	93
Z	2500	.05	610	120
AA	1000	.05	280	83
BB	2000	.05	330	150

EXHIBIT "D"

FLOOR AND WALL SURVEY (CONT'D)

<u>Location</u>	<u>Direct Survey Results</u>		<u>Smear Survey Results</u>	
	<u>Alpha D/M</u>	<u>Beta Gamma MD/Hh</u>	<u>Alpha D/M</u>	<u>Beta Gamma D/M</u>
CC	400	.05	200	41
DD	1000	.05	250	29
W-1	< 100	.05	17	0
W-2	< 100	.05	15	4.7
W-3	< 100	.05	20	11
W-4	< 100	.05	30	5.3
W-5	100	.05	34	0
W-6	150	.05	43	15
W-7	< 100	.05	2.3	0
W-8	< 100	.05	32	7.5
W-9	200	.05	5.5	0

X

X

OCT 17 1962

DONALD A. NUSSBAUMER, CHIEF  
SOURCE AND SPECIAL NUCLEAR MATERIALS BRANCH  
DIVISION OF LICENSING AND REGULATION  
GERMANTOWN, MARYLAND

ENGELHARD INDUSTRIES, INC.  
D. E. MAKEPEACE DIVISION  
PINE & DUNHAM STREETS  
ATTLEBORO, MASSACHUSETTS

ATTENTION: MR. N. M. WEISS  
HEALTH & SAFETY MANAGER

THE INFORMATION CONTAINED IN YOUR OCTOBER 10, 1962 LETTER REGARDING SURVEYS FOR RADIOACTIVE CONTAMINATION OF EQUIPMENT AND FACILITIES IS UNDER REVIEW IN CONNECTION WITH YOUR REQUEST FOR CANCELLATION OF LICENSES SNM-185 AND SUB-172, AND WE ANTICIPATE THAT AN AEC INSPECTION OF YOUR FACILITIES WILL BE CONDUCTED IN THE NEAR FUTURE. HOWEVER, YOUR OCTOBER 10, LETTER INDICATES AN INTENT TO EXPORT CONTAMINATED EQUIPMENT FROM THE UNITED STATES. YOU ARE HEREBY ADVISED THAT AN EXPORT OF SPECIAL NUCLEAR MATERIAL MAY BE MADE ONLY ON THE BASIS OF A GOVERNMENT-TO-GOVERNMENT AGREEMENT BETWEEN THE UNITED STATES AND THE FOREIGN GOVERNMENT RECEIVING THE MATERIAL, OR UPON AEC DETERMINATION THAT THE AMOUNT OF SPECIAL NUCLEAR MATERIAL PRESENT ON THE CONTAMINATED EQUIPMENT IS INSIGNIFICANT.

REFERENCE DOCKETS: 40-768 AND 70-139 IR:JGD

Distribution:

Compliance (Hdqs) 2 w/2c ltr dtd 10/10/62  
Compliance Field (1)

DIV. OF COMPLIANCE  
REG. 1, USAEC, N. Y.  
RECEIVED

OCT 19 11 51 AM '62



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON 25, D.C.

IN REPLY REFER TO:

LR:JCD  
40-768  
70-139

SEP 10 1962

Engelhard Industries, Inc.  
D. E. Makepeace Division  
Pine and Dunham Streets  
Attleboro, Massachusetts

Attention: Mr. W. F. Altendorf

Gentlemen:

Reference is made to your letter of August 27, 1962, requesting cancellation of licenses SM-185 and SUB-172.

By our letter of August 15, 1962, we requested that you submit to us a report indicating the levels of fixed and removable contamination existing in your facilities. On receipt of this information consideration will be given to cancelling the licenses. Please note that pipes, columns, ducts or other areas difficult to survey for built up contamination must be treated as containing special nuclear material and should be disposed of prior to termination of the special nuclear material license. Further, if you are unable to provide the previously requested report by September 15, 1962, you should request temporary renewal of SM-185 to authorize your continued possession of the enriched uranium present as contamination.

Distribution:

✓ Compl. Hdqrs (2)

L. Dubinski, w/cy ltr dtd 8/27/62 (2)

Very truly yours,

Donald A. Nussbaumer, Chief  
Source and Special Nuclear Materials Branch  
Division of Licensing and Regulation

SEP 11 11 51 AM '62

DIVISION OF LICENSING AND REGULATION  
RECEIVED

From CO - Hdqrs.

NY

*W. M. Klevin*  
*W. M. Bartlett*

**Eber R. Frica, Assistant Director  
Division of Licensing and Regulation**

MAY 28 1962

**Leo Dubinski, Assistant Director for Materials  
Division of Compliance**

Original Signed by  
Leo Dubinski

**RICHARD INDUSTRIES, INC., ATTLEBORO, MASSACHUSETTS;  
LICENSE NO. C-5161 - REPORTED EXPOSURES**

**CO:100**

In a letter dated April 24, 1961, subject licensee informed L&R of film badge exposures for employees

(b)(6)

The licensee further advised L&R regarding these exposures, in a letter dated May 10, 1961.

Attached is a copy of a memorandum dated May 11, 1962, setting forth the results of an inquiry of this matter by Region I, Division of Compliance, during an inspection of the licensee on April 25, 1961.

Based on the information provided, it appears that the film badges for the two employees were contaminated and that the indicated exposures were not valid. The licensee reportedly has taken action to prevent contamination of film badges in the future.

We believe that no further inquiry is required.

Attachment:  
Copy memo in CO:1  
dat 5/11/62

→ cc: R. W. Kirkman, CO:1, w/o

DIV. OF COMPLIANCE  
REC'D IN COMPLIANCE I. USAC, W. Y.  
RECEIVED  
MAY 28 4 30 PM '62

ALBANY DISTRICT OFFICE  
ALBANY, NEW YORK  
MAY 1 1963

TO: SAC, ALBANY (100-100000)  
FROM: SAC, ALBANY (100-100000)  
SUBJECT: [REDACTED]

Reference is made to the information in the  
above captioned report which was received from  
[REDACTED] on May 1, 1963, in which  
[REDACTED] advised that no further inquiry of this  
nature is necessary.

The copy of Form 100-591 relative to  
this matter is being furnished to [REDACTED]

DATE: 5/1/63  
BY: [REDACTED]  
FORM 100-591  
ALBANY DISTRICT OFFICE, COPIED

Leo Subinski, Assistant Director for  
Materials, Division of Compliance, HQ

MAY 11 1962

Robert W. Kirkman, Director  
Region I, Division of Compliance

INGELSHAM INDUSTRIES, INC. - ATTLEBORO, MASS.,  
C-5161 - REPORTED EXPOSURE (REF OUR MEMO DATED  
MAY 4, 1961)

CO:1:PKK

The reported exposures to (b)(6)  
and (b)(6) of 1540 hr and 1020 hr,  
respectively, for the first quarter ending 3/5/61  
were reviewed by P. S. Klevin of this office  
during a regularly scheduled inspection conducted  
at the subject facility on April 25, 1962.

Mr. Horton H. Weiss, Manager, Health & Safety,  
reported essentially the same information as noted  
in his letter to BUREAU dated April 24, 1961.  
Review of film badge records of (b)(6) and (b)(6)  
indicated spotty contamination on film badges  
worn by them. Other salt operators film badge  
during the same period were also noted to be  
contaminated by uranium dusts produced at the  
salt furnace operation. The licensee has  
instituted controls to prevent recurrence of  
badge contamination by covering the badges with  
plastic film.

Weiss reported that (b)(6)  
is no longer working  
with any radioactive materials and that (b)(6)  
has left the employ of the company. As noted in  
our memo to you dated May 7th, this company had  
ceased fuel production operations on October 11,  
1961 and limited uranium metal scrap to oxide  
operations are presently being performed.

We concur with the licensee that no overexposure  
occurred and recommend that this case be closed.

OFFICE ▶	COMPLIANCE				
SURNAME ▶	KLEVIN <i>PKK</i>	KIRKMAN			
DATE ▶	5/11/62				

MAY 11 1962

Leo Dubinski, Assistant Director for  
Materials, Division of Compliance, HQ

Robert W. Kirkman, Director  
Region I, Division of Compliance

ENGELHARD INDUSTRIES, INC. - ATTLEBORO, MASS.,  
C-5161 - REPORTED EXPOSURES (REF OUR MEMO DATED  
MAY 4, 1961)

CO:I:PEK

The reported exposures to (b)(6)  
and (b)(6) of 3540 MR and 3020 MR,  
respectively, for the first quarter ending 3/5/61  
were reviewed by P. B. Klevin of this office  
during a regularly scheduled inspection conducted  
at the subject facility on April 25, 1962.

Mr. Norton M. Weiss, Manager, Health & Safety,  
reported essentially the same information as noted  
in his letter to DLSR dated April 24, 1961.

Review of film badge records of (b)(6)  
indicated spotty contamination on film badges  
worn by them. Other melt operators film badge  
during the same period were also noted to be  
contaminated by uranium dusts produced at the  
melt furnace operation. The licensee has  
instituted controls to prevent recurrence of  
badge contamination by covering the badges with  
plio film.

Weiss reported that (b)(6) is no longer working  
with any radioactive materials and that (b)(6)  
has left the employ of the company. As noted in  
our memo to you dated May 7th, this company had  
ceased fuel production operations on October 11,  
1961 and limited uranium metal scrap to oxide  
operations are presently being performed.

We concur with the licensee that no overexposure  
occurred and recommend that this case be closed.

COMPLIANCE

KLEVIN:bm KIRKMAN

5/11/62

SUB 172

material  
on hand

~~SECRET~~

April 25 1962

Exposes to 2 melts

3540

(b)(6)

3020

wore glass

1st quarter 61 less than 7 1/2 Rems  
no incident

letter May 4 1961 -

May 10 1961 - no incident

We're supplied information as contained  
in above letter

with -  
not working with radioactivity

Both

(b)(6)

terminated

employment.

Only 5 production workers remain  
out of total of 200 plant personnel on  
rolls at time of Dec 1961 inspection  
going out of nuclear industry

Other furnace operators had slightly contaminated  
by accident -

Pls for covering part on fumes to reduce the spotty  
contaminants

MAY 7 1962

Leo Dubinski, Assistant Director for  
Materials, Division of Compliance, HQ

Robert W. Kirkman, Director  
Region I, Division of Compliance

ENGELHARD INDUSTRIES, INC., ATTLEBORO, MASSACHUSETTS,  
LICENSE NOS. SNM-185 (DOCKET 70-139) AND SUB-172  
ALLEGED DEFICIENCIES IN WASTE DISPOSAL SYSTEM (OUR  
MEMO DATED 10/3/61)

CO:I:PEK

During the course of a regularly scheduled in-  
spection of the licensee's facilities on April  
25, 1962, a review of the subject matter was  
made.

Mr. Norton M. Weiss, Health & Safety Manager,  
reported that the Division of Sanitary Engineering,  
Commonwealth of Massachusetts had made several  
inspections of the waste disposal system since  
August 1961 and that they are satisfied with the  
disposal system. Weiss reported that he had  
installed a high water alarm as per recommendations  
from the State in August 1961. He reported that  
no overflow of the leaking pits occurred since  
that time and that the high water alarm has never  
been actuated.

Records of disposals to the leaking pit areas were  
reviewed. The records indicated that a total of  
17,637 uc U was released to the pits during the  
period January 1 to December 31, 1961. The highest  
daily release was found to be  $1.89 \times 10^{-5}$  uc/l  
and the average,  $0.6 \times 10^{-5}$  uc/l. These waste  
disposal records were well documented in the  
H. P. files.

Weiss reported that on April 29, 1961 one of the  
pits was pumped out and a total of 14,000 gallons  
of liquid effluent containing 477.9 uc U was  
released into the north Attleboro sewerage

COMPLIANCE

KLEVIN:bm KIRKMAN

5/7/62

treatment plant system. On August 14-15, a total of 17,000 gallons of liquid waste containing a total of 201.8 uc U was similarly discharged. No other similar discharges from the pits were made to date.

Both C. A. Canham, Plant Manager, and Herton Weiss reported that fuel production operations ceased at the facility on October 11, 1961 and, therefore, the amount of contaminated liquid wastes flowing into the hold up tanks have been greatly reduced. In addition, the plant personnel have been decreased from 200 to 11 personnel. Of the eleven plant personnel, only 3 persons require shower facilities and that their work clothing be laundered periodically. Therefore, the major problem of laundry detergents and lint causing blockage and eventual overflow of waste waters from the pits has been minimized. Canham stated that Engelhard does not contemplate any future work involving nuclear materials other than their present operation which involves the burning of U metal to  $UO_2$ . This is the operation that this five production workers are and will be involved in.

No further action will be taken by this office relative to the waste disposal system.

Transmitted herewith are clear inspection report forms, AEC-591, for License Nos. SHM-185 and SUB-172.

Enclosure:  
3 cys - 591 Form  
2 cys - DLSR

INSPECTION FINDINGS AND LICENSEE ACKNOWLEDGMENT

5/1/62

<b>1. LICENSEE</b> <b>ENGELHARD INDUSTRIES, INC.</b> <b>D. E. Makepeace Division</b> <b>Attleboro, Mass.</b>	<b>2. REGIONAL OFFICE</b>  <b>REGION I, DIVISION OF COMPLIANCE</b> <b>U. S. ATOMIC ENERGY COMMISSION</b> <b>376 HUDSON STREET</b> <b>NEW YORK 14, NEW YORK</b>
<b>3. LICENSE NUMBER(S)</b> <b>SUB-172</b>	
<b>4. INSPECTION FINDINGS</b> <p style="text-align: right;">Date of Inspection <u>April 25, 1962</u></p> <p><input checked="" type="checkbox"/> A. No item of noncompliance was found.</p> <p><input type="checkbox"/> B. Rooms or areas were not properly posted to indicate the presence of a RADIATION AREA. 10 CFR 20.203(b)</p> <p><input type="checkbox"/> C. Rooms or areas were not properly posted to indicate the presence of a HIGH RADIATION AREA. 10 CFR 20.203(c)(1)</p> <p><input type="checkbox"/> D. Rooms or areas were not properly posted to indicate the presence of an AIRBORNE RADIOACTIVITY AREA. 10 CFR 20.203(d)</p> <p><input type="checkbox"/> E. Rooms or areas were not properly posted to indicate the presence of RADIOACTIVE MATERIAL. 10 CFR 20.203(e)</p> <p><input type="checkbox"/> F. Containers were not properly labeled to indicate the presence of RADIOACTIVE MATERIAL. 10 CFR 20.203(f)(1) or (f)(2)</p> <p><input type="checkbox"/> G. Storage containers were not properly labeled to show the quantity, date of measurement, or kind of radioactive material in the containers. 10 CFR 20.203(f)(4)</p> <p><input type="checkbox"/> H. A current copy of 10 CFR 20, a copy of the license, or a copy of the operating procedures was not properly posted or made available. 10 CFR 20.206(b)</p> <p><input type="checkbox"/> I. Form AEC-3 was not properly posted. 10 CFR 20.206(c)</p> <p><input type="checkbox"/> J. Records of the radiation exposure of individuals were not properly maintained. 10 CFR 20.401(a)</p> <p><input type="checkbox"/> K. Records of surveys or disposals were not properly maintained. 10 CFR 20.401(b)</p> <p><input type="checkbox"/> L. Records of receipt, transfer, disposal, export or inventory of licensed material were not properly maintained. 10 CFR 30.41, 40.61 or 70.51</p> <p><input type="checkbox"/> M. Records of leak tests were not maintained as prescribed in your license.</p> <p style="text-align: right;"><b>Paul B. Klevin</b> AEC Representative</p>	
<b>5. LICENSEE'S ACKNOWLEDGMENT</b> <p>The AEC representative has explained and I understand the items of noncompliance listed above, if any. The items of noncompliance will be corrected within the next 30 days.</p> <p style="text-align: center;"> <span style="margin-right: 150px;">_____</span> <span>_____</span>  Date Licensee Representative </p>	

Eber Price, L&R

RE: EUGELHARD INDUSTRIES, INC., ATTLEBORO,  
MASSACHUSETTS; LICENSE NO. SSM-185 AND  
(SUB-172) ALLEGED DEFICIENCIES IN WASTE  
DISPOSAL SYSTEM

By memorandum dated September 22, 1961, we transmitted to L&R a copy of a memorandum from Region I, Division of Compliance, and dated September 19, 1961. The Region I memorandum contained information relative to the subject licensee's waste disposal system. Attached is a copy of a memorandum dated October 3, 1961, in which Region I, Division of Compliance, reports further on this matter and states that a review thereof will be made during the next regularly-scheduled inspection of the licensee. We believe no further inquiry at this time is necessary.

Leo Dubinski, CO

Attachment:  
Cpy memo fm R/O I  
to Co dtd 10/3/61

cc: CO-NY w/o attach.

*JBK Kevin*  
*ed*

∞

∞

Outten:bl1 Dubinski

10/6/61

Marched 25.67% DE Make peace Dec 13  
Norton M. Weiss - Controlling health physics  
chat. List accountability

3 shift operation  
3rd shift 6-10

Clean Area - PRDC - all receiving & finished inspection done here

Benchmarks  
Rockwell hardness tester  
Stainless steel wrapper tubes  
no bare uranium

PRDC Non-destructive Testing area - Ed by current test to test for voids in the barrel

Gamma-ray Spectrometer - To check for proper enrichment on completed  
Final non-destructive  
Test type assembly  
isotopic & homogeneous

Welding area

Assembly area - Partitioned area - storage & assembly of both core & blanket  
at present just - blanket

Inspection of Assembly Fixtures

Blanket 'depleted' uranium in each shipping container  
~ 200# / blanket

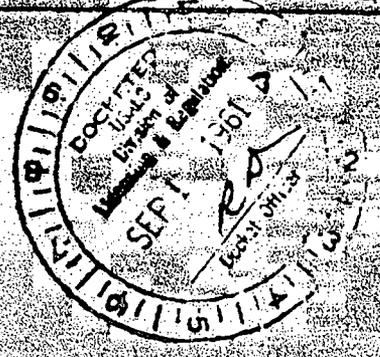
Shipped by Common Carrier supplied by PRDC

Area  
12-6-60. M813, 814, 815 ~ 200# uranium depleted not labeled

5 or 6 containers stored prior to shipment  
area coated with lead  
Container Radiation Area & sign  
no containers

70-139  
40-768

**ENCLOSURE INDUSTRIES, INC.**



**D. E. HAREPEACE DIVISION**  
1000 E. BOWMAN STREET  
ATLANTA, GA 30308  
OUR NEW TELEPHONE  
NUMBER IS  
AREA CODE 404 - CASTLE 2-5500  
August 30, 1961

U. S. Atomic Energy Commission  
Division of Licensing and Regulation  
Washington 25, D. C.

ATTENTION: Mr. Eber R. Price, Assistant Director

REFERENCE: 20-5216-1; 40-768; 70-139

Gentlemen:

With reference to your letter of August 4, 1961, pertaining to several instances of non-compliance with respect to our Source Material and Special Nuclear Material Licenses, we wish to offer the following information:

As indicated in your letter, whole body exposure of (b)(6) exceeded 3000 milliroentgens in two quarters of the year 1960. This occurred due to the fact that the source of exposure was misinterpreted as a skin dose only, in accordance with Appendix A of 10 CFR 20, which would allow a maximum dose of 6000 milliroentgens per quarter. We now recognize that due to exposure to the lens of the eye, the 3000 milliroentgen limit should have been applied. As of January 1, 1961, we have issued, and required the use of protective glasses to personnel most likely to receive high external exposures, and used as a shield against exposures to the lens of the eye. In this manner we are able to interpret all beta exposures from uranium as skin doses, and now use the appropriate limits as specified in the amended 10 CFR 20 Par. 20.101 (a).

Our incineration procedures called for sampling of the effluent discharged from the incinerator stack and also for downwind air sampling. We note that this was in accordance with par. 20.103 (b) and (c). The incineration has been performed since December, 1960 due to replacement of the stack and modifications to our stack sampling equipment. We propose to begin incineration within a short period of time and will sample the stack effluent as before. Our downwind sampling, however, will now be done at the perimeter of our

property, which will allow us to more closely approximate the concentration of radioactive material released from our restricted area. We trust that this procedure will comply with par. 20.106 (b) and (c) of amended 10 CFR 20.

The exposure of the furnace operators to airborne concentrations of uranium is controlled by means of air samples which are taken to establish atmospheric conditions, and by frequent urinalyses to indicate the extent of internal exposure. Since January 1, 1961, we have increased the number of air samples taken in our processing areas, including the furnace area, breathing zone as well as general air samples are taken in an attempt to more truly approximate actual exposure. The frequency of urinalyses on some of our personnel including the furnace operators has also been increased in order to prevent the internal accumulation of excessive amounts of uranium.

In general, we feel that our present program of air sampling and urinalysis is adequate to meet the requirements of par. 20.103 (a) and (b).

With respect to the containers which were not labeled in accordance with par. 20.203 (f) (1), (f) (2), and (f) (4), they have since been properly labeled, and instructions have been issued to maintain this condition throughout all processing and storage areas.

We trust that the actions as described above will serve to bring us in full compliance with requirements as outlined in Part 20, Title 10, Code of Federal Regulations, and thank you for bringing these matters to our attention.

Very truly yours,

D. E. MAKEPEACE DIVISION

Norton Weiss  
Health & Safety Officer

Eber R. Price, Assistant Director  
Division of Licensing and Regulation

Leo Dubinski, Assistant Director  
for Materials

Division of Compliance  
ENGLIARD INDUSTRIES, INC. (DOCKET 70-139)  
ATTLEBORO, MASSACHUSETTS  
LICENSES NOS. 828-185 AND 828-172  
ALLEGED DEFICIENCIES IN WASTE DISPOSAL SYSTEM

CO:LD

In a memorandum dated August 23, 1961 from R. Losenstein to L. D. Low, in connection with the above subject, a request was made to check on the situation indicated in the letter by Dr. W. H. Taylor, Department of Public Health, Boston, Massachusetts. This has been done by the NY Compliance Area and attached is a copy of the memo from R. W. Kirkman to me dated September 19, 1961, furnishing preliminary information on the basis of telephone inquiries. You will note that Dr. Taylor was contacted and Mr. Kirkman expects to hear further from him. When we get additional information it will be forwarded to you.

An enforcement letter requiring a 30-day reply was sent to the licensee on August 4, 1961. Presumably enforcement action should be completed at an early date. It is quite possible that a followup of enforcement action, reinspection and the need for any further looking into the matter raised by the Health Department could all be accomplished at the same time within the near future.

Attachment:

Copy memo NY to CO  
dated 9/19/61

cc: R. W. Kirkman, NY

CO

Dubinski:em

9/22/61

9/22/61

RECEIVED

12:08  
48-748  
70-120

Engelhard Industries, Inc.  
U. S. Marine Corps Division  
Pine and Sumner Streets  
Attleboro, Massachusetts

Attention: Mr. W. F. Kittendorf  
Senior Vice-President

Continued:

Thank you for your letter dated August 23, 1961, and your enclosed report by Mr. Deins, informing us that you have accepted, or will correct those deficiencies in your AEC licensed program which we brought to your attention in our letter of August 4, 1961.

These matters will be reviewed during the next inspection of your facilities.

Your cooperation with us is appreciated.

Very truly yours,

Earl A. Price  
Assistant Director  
Division of Licensing  
and Regulation

cc: Compliance Division, HQ )  
Compliance Division, NYOO) w/cpy ltr 8/30/61  
Public Document Room

LR:ED                      LR  
COW:lrm:REC              EA:Price

9-15-61

40-76

**BINGHAM INDUSTRIES, INC.**

**D. E. WAREPEACE DIVISION**

FINE & DUNN STREETS

ATLANTA, GA 30303

ATTENTION: 10580

DUR

ONE

NO. 3

AREA CODE 617 - CA-114 2-5500

August 30, 1961

Mr. Eber P. Price  
Assistant Director  
Division of Licensing and Regulation  
United States Atomic Energy Commission  
Washington 25, D. C.

Dear Mr. Price:

We are enclosing, herewith, a report of our  
Mr. Norton Weiss, Health and Safety officer.

We believe and trust that this report answers  
the questions which you have raised in your letter of  
August 8th and that you are in agreement with the steps  
which have been taken.

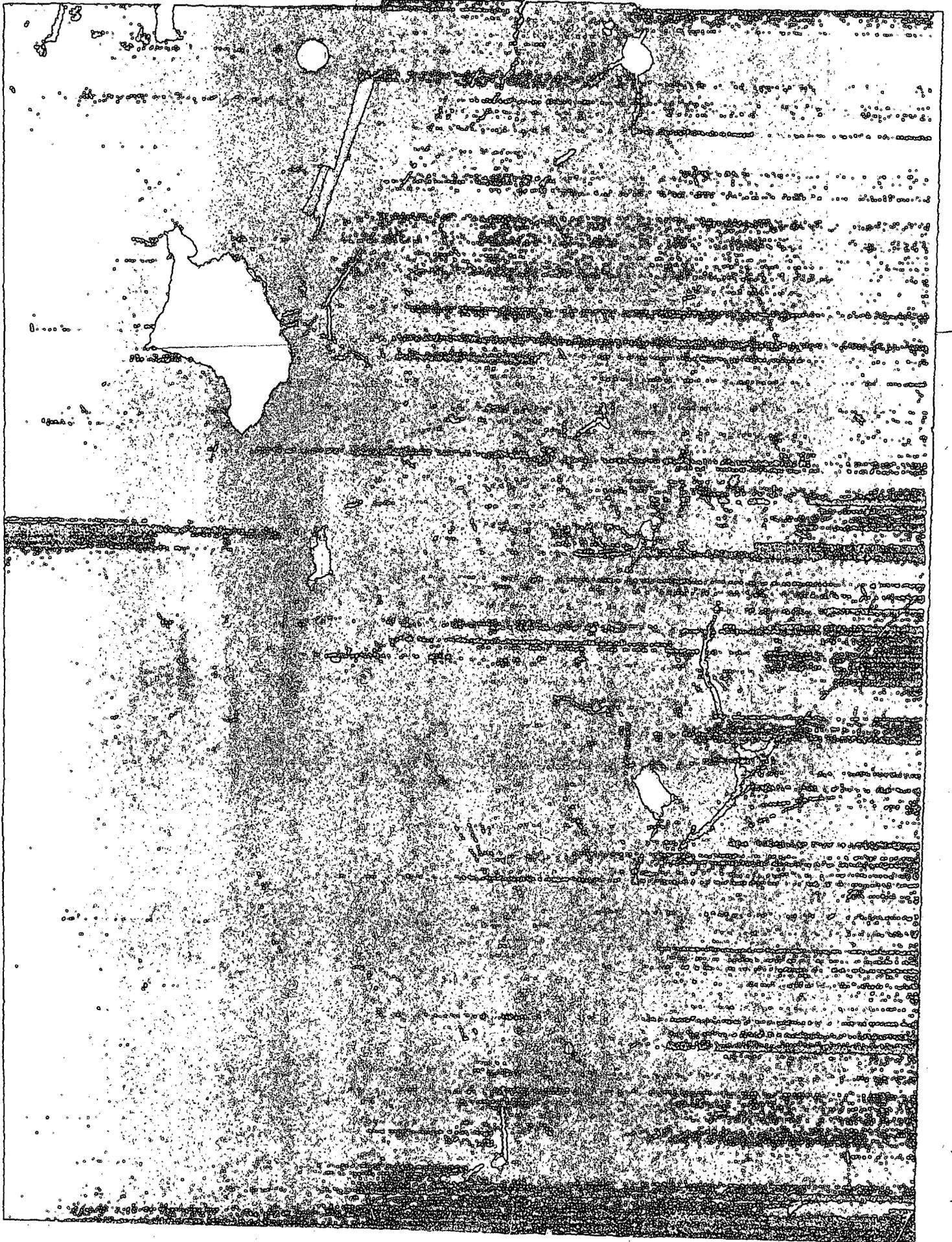
Very truly yours,

**D. E. WAREPEACE DIVISION**

*[Handwritten Signature]*  
W. F. Alveendorf  
Senior Vice-President

WFM/ms  
Enclosure





12-000  
70-5214-1  
44-783  
70-130

PHU  
Klein  
sd

**General, Inc.  
an Atomic  
enterprise**

**Account: Mr. E. E. Mitchell,  
General Manager**

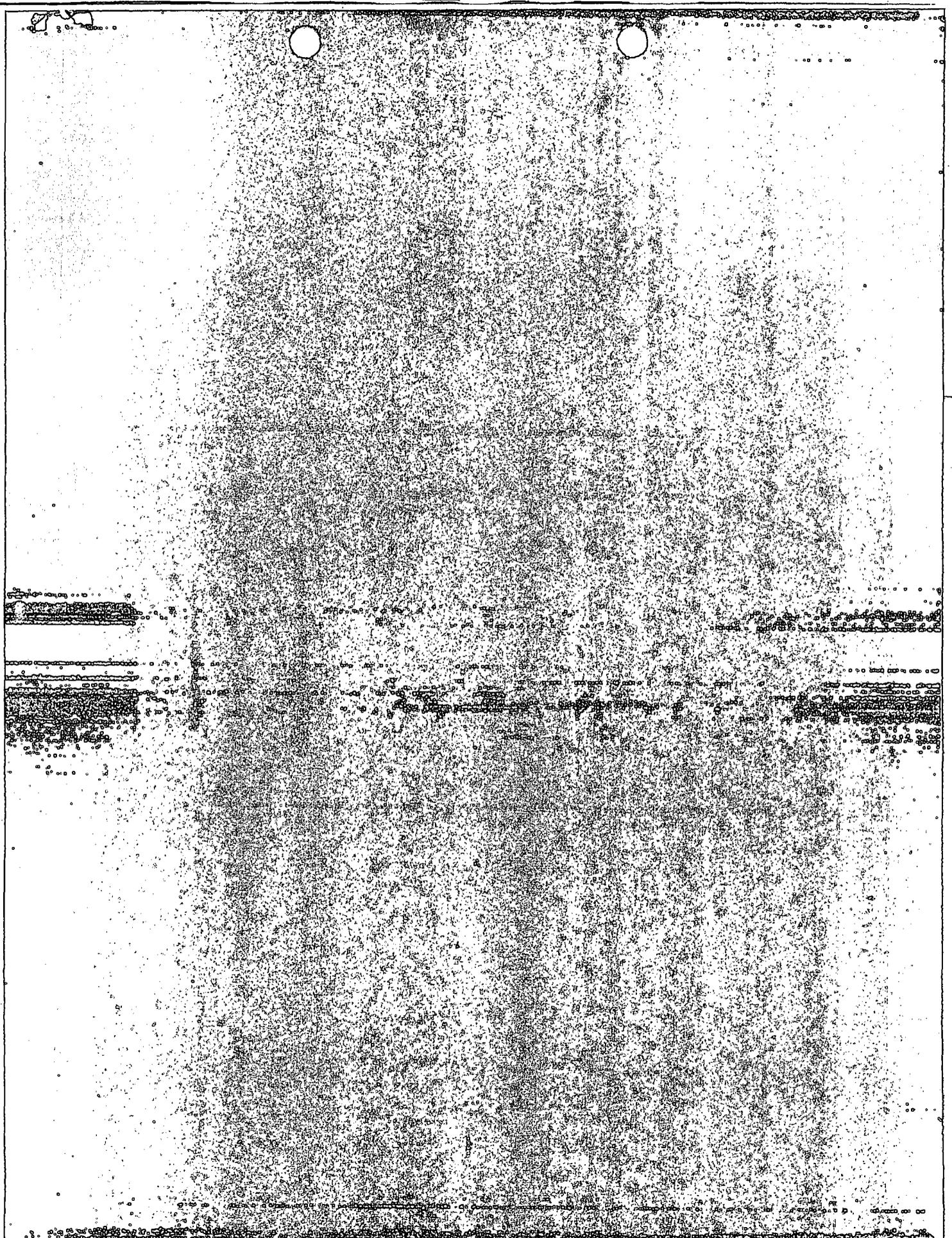
**Complaint:**

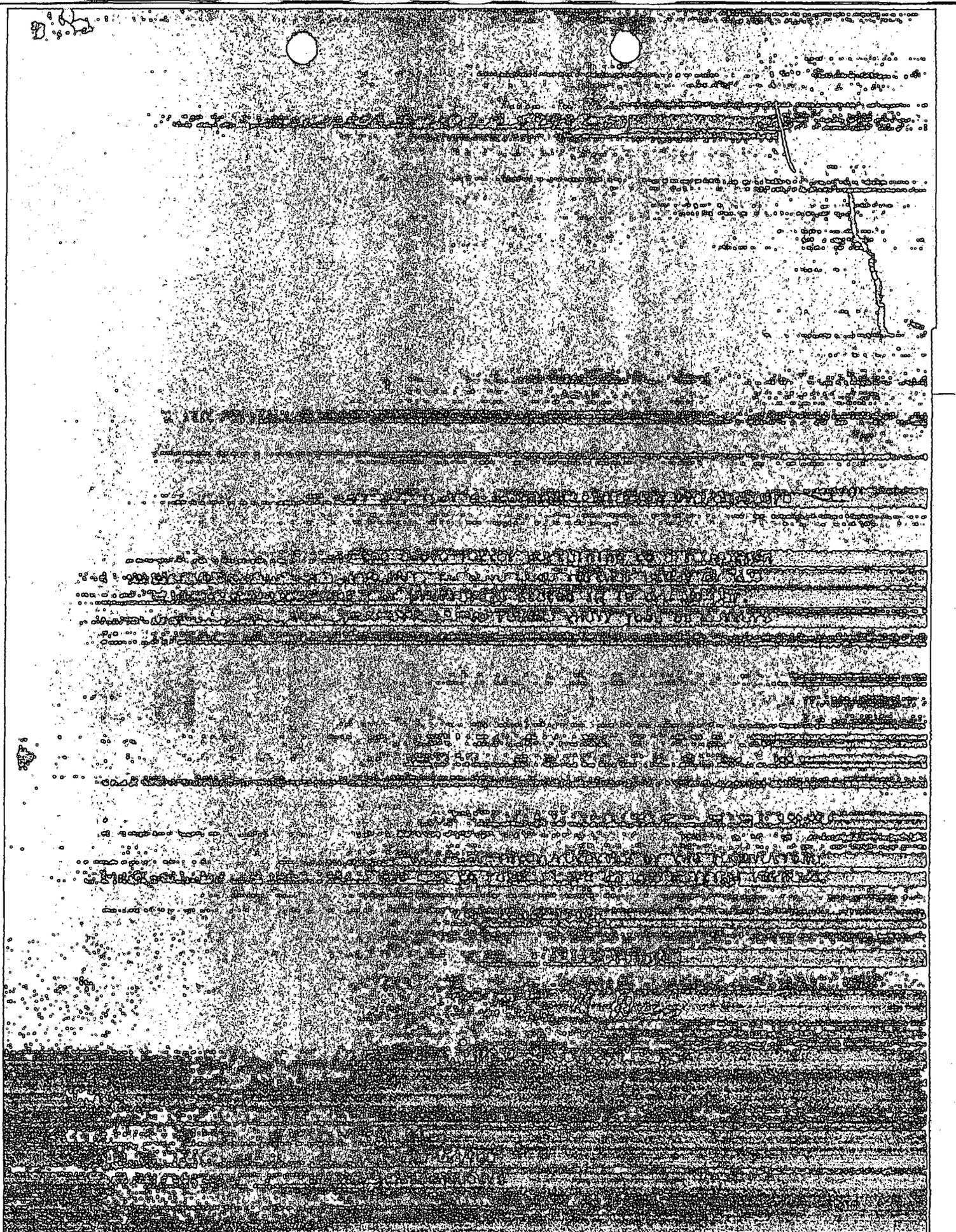
This notice is in connection with the inspection conducted on October 12 and 13, 1953, of your enterprise conducted under Atomic Energy Control License No. 12-5214-1, by your Atomic License No. (C-5214) and Special Nuclear Material License No. 125-125.

There were no signs of non-compliance noted for License No. 12-5214-1, with respect to License Nos. C-5214 and 125-125, in regard to certain of your activities were not conducted in full compliance with the requirements of the AEC, "Standards for Protection Against Radiation," Part 19, Title 10, Code of Federal Regulations, in that:

1. Your 5214 badge records indicate that during the period of January 1, 1953 through November 13, 1953, (b)(6) whole body exposure to beta and gamma radiation was in excess of 1000 millirem-hours in any one of several parts of 13 consecutive weeks. This is in violation of Section 19.101(a)(1)(A), "Exposure of individuals in restricted areas."
2. Cleanup performed pursuant to Section 19.101(b), "Cleanup," were not adequate in that:
  - a. You have not demonstrated compliance with Section 19.101(b), "Concentration in effluents to unrestricted areas," with respect to objective criterion related to unrestricted areas during transportation of wastes which contained license materials, and

**RESTRICTED AREA  
EXPOSED PERSONNEL**





E. R. Price, L&R

RE: ENGLEHARD INDUSTRIES INC., AFFELBORO,  
MASS., C-5161 - REPORTED EXPOSURES

Attached is a copy of a memo dated 5/4/61 from  
the NY Compliance Division concerning two film  
badge exposures reported by the licensee in a  
letter to your office dated 4/24/61.

It is to be noted that NY will investigate  
this matter during the next scheduled inspection.

Additional information will be forwarded as  
received.

Attachment  
NY memo to CO dtd 5/4/61

✓ cc: R. W. Kirkman, NY w/o

*John Kevin*

*sd*

Dubinski, CO

JUN 22 1961

Original Signed by  
D. E. Warner

*[Handwritten signature]*

*Investigate during  
next inspection*

RECEIVED

JUN 23 1961

MADE COPIES

NY 00

MAY 10 1961

*J.M. Klein*

*J*

70-130  
48-768

**Wegillard Industries, Inc.  
S. E. McKeown Division  
Pine and Bushon Streets  
Attleboro, Massachusetts**

**Attention: Mr. Horton H. Wise  
Health and Safety Manager**

**Gentlemen:**

Thank you for your letter of April 24, 1961, reporting film badge overexposure for two employees. We will advise you if further information is required.

Sincerely yours,

**Stan E. Price  
Assistant Director  
Division of Licensing  
and Regulation**

cc: Compliance Division, HQ - w/cpy ltr 4-26-61  
Compliance Division, NYOO  
Compliance USAEC - Chicago, Illinois - Mr. D. M. Gardiner

Signed concurrence copy in Docket No. 48-768

DLR:KB                      DLR  
RECunningham:hgs        ERPrice

5-3-61

RECEIVED

MAY 15 1961

ALSO COMPLIANCE DIVISION



Donald B. Warner, Act. Asst. Dir. for  
Materials, Division of Compliance, HQ.

MAY 4 1961

Robert W. Kirkman, Director  
Compliance Division, BYOG

ENGELHARD INDUSTRIES, D. E. MAKEPEACE DIVISION,  
ATTLEBORO, MASSACHUSETTS - LICENSE NO. C-5161 -  
REPORT OF OVEREXPOSURES

CMP:PBK

Transmitted herewith is (1) a letter dated 4/18/61 from Controls for Radiation to the subject licensee concerning excessive quarterly doses for two employees as evidenced by their film badge exposures for the first quarter ending 3/5/61, and (2) a letter dated 4/24/61 from the licensee to DL&R, together with two forms AEC-5. The forms AEC-5 for the two Engelhard employees show cumulative radiation exposures for the first quarter to be 3540 mr for (b)(6) and 3020 mr for (b)(6)

A study of the film badges by ConRad, as revealed in their letter, indicates that high film badge readings found for both men, who were engaged in melting of depleted uranium ingots, were due to film badge contamination.

Norton M. Weiss, Health and Safety Manager, D. E. Makepeace, reported in his letter to DL&R that to prevent a recurrence of film badge contamination, he has issued protective coverings and new badge holders to all personnel.

No further action is contemplated by this office with regard to the incident at this time. However, we intend to investigate this film badge contamination incident during the next-scheduled inspection of this licensee.

Enclosures:

1. ltr dtd 4/18/61
2. ltr dtd 4/24/61 w/2 forms AEC-5

COMPLIANCE

KLEVIN:eg

5/4/61



April 24, 1961

area are taken quite frequently and beta levels as high as 5,000  $\mu\text{m/hr}$ . have been noted on crucibles used in melting 350 pound depleted uranium ingots. Exposure to personnel is effected by the handling of crucibles and molds, and also by entrance into the furnace chamber for short periods of time. It is evident that film badges become highly contaminated during the performance of normal melting operations, and therefore, the values which are reported are not true indications of actual exposure.

In an effort to eliminate the contamination problem, we have covered all of our film badges with polyethylene, which is changed bi-weekly along with the film. Also, as of April 17, new badge holders have been put into use by all personnel. We feel that these measures will insure that any future film badge report will be indicative of a true exposure and not contamination.

Summary:

It is our opinion that the high readings reported on the films of the two (2) men were mainly due to contamination rather than a true exposure. To prevent a recurrence, we have issued protective coverings and new badge holders to all personnel. The two (2) men have been transferred from the melting furnace to other jobs which will allow them to receive little or no radiation exposure for a period of three (3) months, at which time their cumulative exposures will be within allowable limits.

In addition, new handling procedures are being instituted which will minimize the handling time in crucible cleaning and other furnace maintenance operations, in an effort to reduce direct exposure of personnel. The two (2) men have been notified in accordance with 20.405 (b.) of 10 CFR 20.

We trust that the information as stated is sufficient in nature and scope to conform with requirements. Should further data be required, it will be transmitted upon request.

Very truly yours,

*Norton M. Weiss*  
Norton M. Weiss  
Health & Safety Manager

Copy to: (1) Manager, N.Y. Operations Office, N.Y.C. RECEIVED  
(1) USAEC - Chicago, Ill., Mr. D. M. Gardiner  
(1) Commonwealth of Mass., Dept of Labor & Industries  
Mr. T. F. Kelly

NMW/sal

RECEIVED - NAOO

U.S. ATOMIC ENERGY COMMISSION

**CURRENT OCCUPATIONAL EXTERNAL RADIATION EXPOSURE**

See Instructions on the Back

IDENTIFICATION

1. NAME (PRINT—Last, first, and initials)	2. SOCIAL SECURITY NO.
3. DATE OF BIRTH (Month, day, year)	4. AGE IN FULL YEARS (M)

OCCUPATIONAL EXPOSURE

5. DOSE RECORDED FOR (Specify: Whole body, skin of whole body, or hands and forearms, feet and ankles.)	6. PERMISSIBLE DOSE AT BEGINNING OF PERIOD COVERED BY THIS SHEET	7. METHOD OF MONITORING (e.g., Film badge—FB, Pocket Chamber—PC, Calorimeter—Calc.)
Skin of whole body	137.3	GAMMA <u>FB</u> BETA <u>FB</u> NEUTRONS _____

8. PERIOD OF EXPOSURE (From—to)	DOSE FOR THE PERIOD (mR)				13. RUNNING TOTAL FOR CALENDAR QUARTER (mR)
	9. GAMMA	10. BETA	11. NEUTRON	12. TOTAL	
12/26/60-1/8/61	10-	10		20	20
1/9/61-1/22/61	190	640		830	850
1/23/61-2/5/61	* No evaluation given				
2/6/61-2/19/61	*1100	0		1100	1950
2/20/61-3/5/61	*1300	290		1590	3540

\*Spotting indicates contamination

14. PREVIOUS TOTAL 12.7	15. TOTAL DOSE RECORDED ON THIS SHEET	16. TOTAL ACCUMULATED DOSE	17. PERM. ACC. DOSE 5(M-18)=	18. PERMISSIBLE DOSE
----------------------------	---------------------------------------	----------------------------	---------------------------------	----------------------

19. NAME OF LICENSEE  
Transferred from furnace 3-28-61  
ENGELHARD INDUSTRIES, INC.  
D. E. MAKEPEACE DIVISION

# U.S. ATOMIC ENERGY COMMISSION

## CURRENT OCCUPATIONAL EXTERNAL RADIATION EXPOSURE

See Instructions on the Back

### IDENTIFICATION

1. NAME (PRINT—Last, first, and middle)	2. SOCIAL SECURITY NO.
3. DATE OF BIRTH (Month, day, year)	4. AGE IN FULL YEARS (M)

### OCCUPATIONAL EXPOSURE

5. DOSE RECORDED FOR (Specify: Whole body; skin of whole body; or hands and forearms, feet and ankles.)  <b>Skin of whole body</b>	6. PERMISSIBLE DOSE AT BEGINNING OF PERIOD COVERED BY THIS SHEET  <b>139.5</b>	7. METHOD OF MONITORING (e.g., Film badge—FB; Pocket Chamber—PC; Calculation—Calc.)  GAMMA <u>FB</u> BETA <u>FB</u> NEUTRONS _____
--	--	---

8. PERIOD OF EXPOSURE (From—to)	DOSE FOR THE PERIOD (rem)				13. RUNNING TOTAL FOR CALENDAR QUARTER (rem)
	9. GAMMA	10. BETA	11. NEUTRON	12. TOTAL	
12/26/60-1/8/61	* No evaluation given				
1/9/61-1/22/61	210	130		330	340
1/23/61-2/5/61	380	400		780	1120
2/6/61-2/19/61	* 900	0		900	2020
2/20/61-3/5/61	*1000	0		1000	3020

\*Spotting indicates contamination

### LIFETIME ACCUMULATED DOSE

14. PREVIOUS TOTAL (rem)	15. TOTAL DOSE RECORDED ON THIS SHEET (rem)	16. TOTAL ACCUMULATED DOSE (rem)	17. PERM. ACC. DOSE (M-10) (rem)	18. PERMISSIBLE DOSE (rem)
10.470			5(N-10)	

19. NAME OF LICENSEE

Transferred from furnace 3-28-61  
ENGELHARD INDUSTRIES, INC.  
D. E. MAKEPEACE DIVISION



## controls for radiation

INC.

130 ALEWIFE BROOK PARKWAY · CAMBRIDGE 40 · MASSACHUSETTS

April 18, 1961

UNIVERSITY 4-9280

Mr. Horton Weiss  
Engelhard Industries, Inc.  
D. E. Makepeace Division  
Route 152  
Plainville, Massachusetts

Dear Mr. Weiss:

As you requested during your recent visit, we have examined in detail films which lead to the reporting of high doses for certain exposure periods covered by your film badge service.

The study of these films indicates that all of the films were grossly contaminated with what appears to be a beta emitter. The amounts of contamination noted on the film would cause localized high densities so that the density measured utilizing routine densitometer techniques would probably not be representative of the overall dose received by the film. We therefore attempted to measure the minimum density present on each film, and, assuming this represents that density reflecting the least effects calculated a maximum gamma dose based on these densities. The results of this approach are presented below.

<u>Wear Period</u>	<u>Badge Number</u>	<u>Maximum Possible Gamma Dose (mrem)</u>
1/23/61	(b)(6)	330
		320
		140
2/6/61		700
		1000
		350
		310
		800
		800
2/20/61		140

Mr. Nerton Weiss

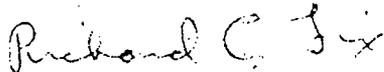
-2-

April 18, 1961

In evaluating the validity of this method of determining maximum doses it should be noted that for many of the above films it was not possible to locate a film area larger than that seen by the densitometer which was uncontaminated. This would cause a bias in the direction of high doses.

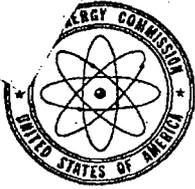
It is our opinion, based on the density patterns clearly seen on the films in question, that these densities were caused by beta contamination present on the covering of the film pellicle. Therefore, neither the doses calculated above nor those previously reported to you are necessarily indicative of the dose received by the film from a source other than the material contaminating the film packet. Any such other dose would in all cases be substantially lower than the reported dose.

Very truly yours,



Richard C. Fix  
Assistant Technical Director

RCF:jz



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON 25, D. C.

April 6, 1961

IN REPLY REFER TO:

40-768

**Engelhard Industries**  
Pine and Dunham Streets  
Attleboro, Massachusetts

**Attention: Mr. C. A. Canham, Plant Manager**

LICENSING REQUIREMENTS FOR PERSONS POSSESSING URANIUM OR THORIUM SOURCE MATERIAL

Gentlemen:

Records of the Atomic Energy Commission indicate that, under a license which has expired, you were authorized to receive and transfer uranium and/or thorium source material. Under former regulations, a license to possess source material was not required.

Under revised regulation 10 CFR 40, "Licensing of Source Material," effective February 13, 1961, a copy of which is attached, any person who possesses source material must now be specifically licensed unless the material is possessed pursuant to a general license or an exemption established in the regulations.

Accordingly, if you possess uranium or thorium source material that is not exempted from the licensing requirement (see Section 40.13 of the regulation for details) or if you possess such material and you are not generally licensed (see Section 40.22), you are required to obtain a license in order to retain possession of the material. Under the provisions of Section 40.47 of the regulation you have until May 14, 1961, to obtain a specific license.

In the event a specific license is required, your application should be submitted in letter form in quadruplicate indicating the quantity of material you possess, describing the activities you wish to perform using the material and your procedures for assuring that your possession and use of the material will not endanger the health and safety of the public, in full compliance with the requirements of §40.32.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "Lyell Johnson".

Lyell Johnson  
Assistant Director for Facilities  
and Materials Licensing  
Division of Licensing & Regulation

Enclosure:  
10 CFR 40

Donald E. Warner, Act. Asst. Dir. for  
Materials, Division of Compliance, DE.

FEB 21 1961

Robert W. Kirkman, Director  
Compliance Division, NRC

**TRANSMITTAL OF LICENSE COMPLIANCE INSPECTION REPORT-10 CFR 20,  
40 AND 70**

CMP:FBK:JES

Transmitted herewith is the following inspection  
report involving noncompliance:

**ENGLEARD INDUSTRIES, INCORPORATED**  
D. E. Mahogany Division  
Attleboro, Massachusetts

License Nos.: **SM-125** as amended

**C-5161**

20-5215-1 w/amends. 1 & 2 (Clear report)

The following items of noncompliance were discussed  
with Mr. C. A. Carham, Plant Manager, and Horton M.  
Weldon, Health and Safety Manager, who volunteered to  
take the necessary action to comply with the regu-  
lations:

SM-125 and C-5161

**20.105 "Measures to be Taken After Excessive Exposures"**

- in that the licensee failed to limit the exposure  
of the melt operator to 10% of the permissible  
weekly dose after the operator had received a 13  
week exposure in excess of the permissible limits  
established in 20.101. (See item 150 of Part 70  
report details.)

**20.101(a)(2)(ii) "Exposure of individuals in restricted  
areas"**

- in that film badge records of (b)(6) melt  
operator, showed that he has exceeded 3 rads for  
several 13 week periods during 1960. (See item  
150 of Part 70 report details.)

**C O M P L I A N C E**

KLEVIN:eg SEARS KIRKMAN

2/17/61

20.201 (b) "Surveys"

- in that no physical evaluations or air sampling were made to determine the extent of uranium airborne contamination in the unrestricted areas adjacent to the plant during incineration of uranium-contaminated waste. (See item 152(2) of Part 70 report details.)

- in that no breathing zone samples were taken during the furnace operation to adequately evaluate the furnace melt operator's exposure to radioactive aerosols. (See item 155 of Part 70 report details.)

20-155

20.203 "Caution signs, labels and signals"

(d) "Containers" (4) - in that a shipping container, which contained 5 lbs U-235, was not labeled as to type and amount of material. (See item 18 of Part 70 report details.)

(f) "Containers" (1) and (4) - in that a one gallon can containing 1162 grams of uranium, 25% enriched, was not labeled with any "Caution - Radioactive Materials" sign or symbol or enrichment. (See item 18 of Part 70 report details.)

20-161

20.203 "Caution signs, labels and signals"

(g) "Containers" (2) and (4) - in that six containers each containing 600 pounds of depleted uranium were not labeled with the proper radiation caution sign and symbol or the type and amount of material. (See item 9.1 of Part 40 report details.)

It was pointed out to both Condon and Weisz that the items of noncompliance under 20.203(a) (1), (2) (2), and (2) (4), "Containers", were found in the previous inspection. It was also pointed out that most of the containers, with the exception of those found during this inspection, were properly labeled. Weisz said that he would try to prevent a recurrence of this citation.

With regard to the other citations found under Licenses SM-183 and C-5161 jointly, Condon was informed that the 20.201(b) citation, "Surveys", although not exactly the same as that reported in the previous inspection, indicated a lack of adequate evaluation of air samples for the melting operation. Condon was informed that the melting operation has appeared to be a source of trouble as evidenced by the noncompliance items noted during the November 19, 1959 inspection and our Class "B" investigation of July 19, 1960. Both Weisz and Condon stated that they would take all necessary action to correct these items of noncompliance and to minimize exposures to personnel. Weisz also stated that he would arrange to have glasses worn by the melt operators and other individuals who may receive an exposure to the eyes as a result of working directly with or close to special nuclear and source materials.

The citations under 20.101 and 20.103 were discussed with both Condon and Weisz. It was pointed out to Weisz that he completely overlooked several excessive directly doses to the melt operator, and that he did not reduce exposures to 10% of the permissible limit set forth in Appendix A (old Part 20) after the melt operator received 13 week exposures in excess of 1 rads. Weisz said that he would be more careful in his review of the records so that he could take immediate appropriate action when necessary to keep the personnel exposures within the permissible levels as set forth in Part 20.

It was pointed out to both Canham and Weiss that all of the aforementioned citations were being made under the old Part 28.

No significant hazard exists from the above items of noncompliance, and no follow-up inspection will be made.

Both Canham and Weiss appeared to be sincere in their desire to operate in a safe manner in accordance with the Federal regulations. We recommended that a letter be sent to Mr. F. Mittendorf, with copies to C. A. Canham, Plant Manager, and Horton H. Weiss, Health and Safety Manager, setting forth the items of noncompliance and requiring corrective action to the satisfaction of the Commission.

There were no items of noncompliance noted during the inspection as far as criticality control is concerned. However, we do feel there are many areas for improving criticality control in this plant. We observed two areas in which fairly simple changes could be made, so that the control would be by an always-safe geometry rather than by batch control. One of these areas was noted in the body of the report as being the trough under the power hacksaw; the other area is the trough under the loths. The graphite crucibles which are used in the furnaces are not of always-safe geometry. In some other plants we have visited, such crucibles are of 5" inside diameter. We feel that this is also an area that could stand exploration for making it always geometrically safe.

Our general impression of the management and operation of this plant is that the top management does not have a keen appreciation of the possibility and extent of a nuclear catastrophe. There seems to be a tendency in this plant to burden the Health and Safety Department members with a multitude of jobs. This is unfortunate

because we feel that there are areas, as noted before, where safe geometry could be studied, and we also note that there are areas in the keeping of health physics records which might be simplified if time were available to study the method of record keeping. We feel that Weiss, the Criticality Engineer, does an adequate job of indoctrination of new employees on criticality and health physics. However, as one tours the complete plant, that is, first the non-nuclear plant where ordinary materials are being processed, and then the section of the plant where uranium is being processed, there is very little to make one aware in the nuclear plant that there is always the possibility of a major catastrophe. Since control depends strictly on discipline, because safe geometry is not employed, there is a need for this discipline to be reaffirmed by the top management of the organization. We feel that, by a definite statement of the top management that no violations of safe criticality control procedures will be countenanced, the job of the criticality engineer in enforcing these procedures would be considerably lightened. We discussed these points briefly with Mr. C. A. Canham, the present Plant Manager, and Canham seemed quite receptive and cooperative.

As noted above, we requested that letters be sent to Mr. J. Mittendorf, Vice President of Engelhard Industries, and General Manager of D. E. Manganese Division. This office had contacted Mittendorf immediately after the inspection and at least half a dozen times during the months of December and January in attempts to set up a suitable meeting date so that the items of noncompliance and our impressions of his plant operations and organization could be fully discussed with him. We have not been successful in getting up a meeting because of Mittendorf's other company appointments and travel. This office feels that there should be no further delay in submitting this report or in taking enforcement action. We still hope to set up a suitable date

Donald H. Warner

- 6 -

for discussing the aforementioned points with Mr. Mitterhoff. When this meeting takes place, any additional information resulting from our meeting will be forwarded to Headquarters.

Enclosure:  
4 cya lpc.