

40-1940

HO 9401  
(9.66)

INTERMEDIATE ACTION FORM

Source & SNM Licenses

01. PROC. CODE 6	02. DOCKET NO. 40-920	09. ST. NO. 379	42. PURPOSE OF TASK Renewal	12. CONTROL NO. 319	15. LICENSE NUMBER SMB-920
18. APPLICANT <b>Kawacki Chemical Company</b>				54. AM. NO. RESULTING FROM TASK	
21. STREET & BUILDING			45. CLASSIFICATION <b>U</b>	63. ASG. TO:	
24. CITY <b>New York</b>	27. STATE <b>NY</b>	30. ZIP <b>10017</b>	33. RECEIVED YR. MO. DAY <b>67 10 06</b>		36. ISSUED YR. MO. DAY
57. APPLICANT'S COMMUNICATION DATED YR. MO. DAY <b>67 10 06</b>			59. ENCLOSURES <b>(3 cys.)</b>		
58. DESCRIPTION (MUST BE UNCLASSIFIED) <b>Ltr. trans:</b>			ABC-2 dated 10-3-67 for renewal of SMB-920.. Attachments I thru 4 and Appendices I thru III		
			60. DISTRIBUTION <b>1-FDR Copy</b>		
INTERMEDIATE ACTIONS				OTHER REFERRALS	
TYPE	ON			ACTIV.	RETURNED
	YR.	MO.	DAY	92	YR. MO. DAY 93
ADDL. INFO. REQUESTED FROM APPLICANT	91				
				1	
REFERRED TO:	94			95	96
				2	
REFERRED TO:					
				DATE YR. MO. DAY	
				Missbauer: 67 10 09 w/file cy. & 1 compliance cy.	

DO NOT REMOVE

ACKNOWLEDGED

# KAWECKI CHEMICAL COMPANY

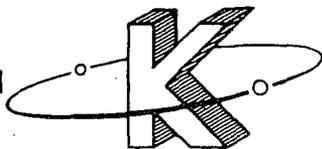
Regulatory Suppl File Cys

Manufacturers of Chemicals, Metals and Alloys

BOYERTOWN • PENNSYLVANIA

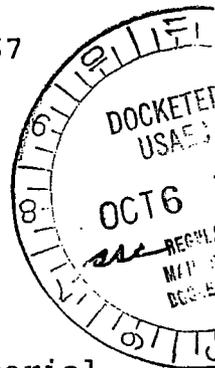
Telephone: Area Code 215, 3 6 7 - 2 1 8 1

CABLE ADDRESS: KAWECKIKEM NEWYORK



October 4, 1967

Mr. Don Harmon  
Source & Special Nuclear Materials Branch  
Division of Materials Licensing  
United States Atomic Energy Commission  
Washington, D. C. 20545



Dear Mr. Harmon:

Attached is the application for renewal of our Source Material License #SMB-920 which has been completed in accordance with the recommendations made during our meeting October 2, 1967. We are enclosing Health Physics Report #1 covering the first six months of operation at the Reading Plant as part of this application (see Attachment 3).

We regret that it was impossible for us to furnish the health physics report by June 30 because of difficulties we encountered in the construction of the plant which prevented the required survey from being made as scheduled. As I mentioned in my telegram of September 6 and during our meeting this week, we are several months behind schedule in the construction and shake-down of this plant and are not expecting to be in full operation until November. However, the enclosed health physics report does include results of initial monitoring of our smelting operations and indicates that these operations are conducted well within the accepted radiological safety limits. Further health physics analyses and surveys will be made by Applied Health Physics, Inc. We plan to submit another health physics report covering the next 6 months operation which will be more representative of our processing technique.

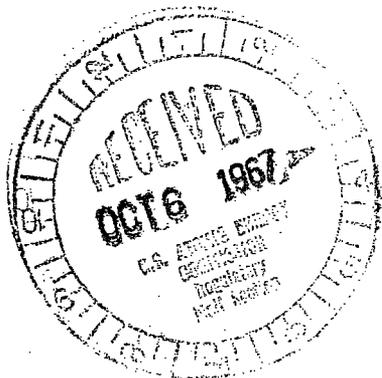
We appreciate your cooperation and assistance in issuing the renewal of this license. Please contact Mr. Gallagher or me if you need any additional information or if we can be of any assistance.

Sincerely,

KAWECKI CHEMICAL COMPANY

*Robert A. Gustison*

Robert A. Gustison, Manager  
Chemical Operations



RAG/f  
Enc.

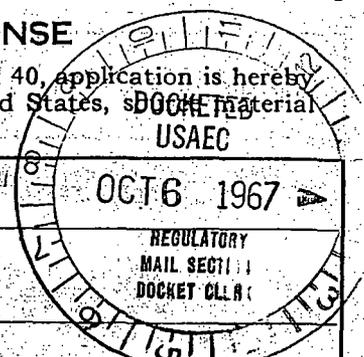
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*10/10/67*

ACKNOWLEDGED

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APPLICATION FOR SOURCE MATERIAL LICENSE

Pursuant to the regulations in Title 10, Code of Federal Regulations, Chapter 1, Part 40, application is hereby made for a license to receive, possess, use, transfer, deliver or import into the United States, source material for the activity or activities described.



1. (Check one) <input type="checkbox"/> (a) New license <input checked="" type="checkbox"/> (b) Amendment to License No. _____ <input checked="" type="checkbox"/> (c) Renewal of License No. <u>SMB-920</u> <input type="checkbox"/> (d) Previous License No. _____		2. NAME OF APPLICANT <b>Kawecki Chemical Company</b>	
4. STATE THE ADDRESS(ES) AT WHICH SOURCE MATERIAL WILL BE POSSESSED OR USED <b>Canton Railroad Pier, B-1 Yard, Baltimore, Md. Kawecki Chemical Company, Tulpehocken Street - Lehigh Valley RR, Reading, Pennsylvania Kawecki Chemical Company, Boyertown, Pennsylvania</b>		3. PRINCIPAL BUSINESS ADDRESS <b>220 East 42nd Street New York, New York 10017</b>	
5. BUSINESS OR OCCUPATION <b>Manufacturers of Chemicals, Metals and Alloys</b>		6. (a) IF APPLICANT IS AN INDIVIDUAL, STATE CITIZENSHIP	(b) AGE
7. DESCRIBE PURPOSE FOR WHICH SOURCE MATERIAL WILL BE USED <b>Recovery of rare metals from various slags and ore residues containing natural thorium and uranium as unwanted contaminates.</b>			
8. STATE THE TYPE OR TYPES, CHEMICAL FORM OR FORMS, AND QUANTITIES OF SOURCE MATERIAL YOU PROPOSE TO RECEIVE, POSSESS, USE, OR TRANSFER UNDER THE LICENSE			
(a) TYPE	(b) CHEMICAL FORM	(c) PHYSICAL FORM (Including % U or Th.)	(d) MAXIMUM AMOUNT AT ANY ONE TIME (in pounds)
NATURAL URANIUM	Any	Any up to 0.05% U	
URANIUM DEPLETED IN THE U-235 ISOTOPE			
THORIUM (natural)	Any	Any up to 0.3% Th.	1.2 X 10 <sup>6</sup> as Th (nat.)
(e) MAXIMUM TOTAL QUANTITY OF SOURCE MATERIAL YOU WILL HAVE ON HAND AT ANY TIME (in pounds) <b>60,000,000% in slags (0.2 - 0.3% Th) or approximately 1.2 X 10<sup>6</sup> to 1.8 x 10<sup>6</sup></b>			
9. DESCRIBE THE CHEMICAL, PHYSICAL, METALLURGICAL, OR NUCLEAR PROCESS OR PROCESSES IN WHICH THE SOURCE MATERIAL WILL BE USED, INDICATING THE MAXIMUM AMOUNT OF SOURCE MATERIAL INVOLVED IN EACH PROCESS AT ANY ONE TIME, AND PROVIDING A THOROUGH EVALUATION OF THE POTENTIAL RADIATION HAZARDS ASSOCIATED WITH EACH STEP OF THOSE PROCESSES <b>Metallurgical processing of tin slags in electric furnace to be evaluated for radiological safety by qualified personnel from Applied Health Physics, Inc.</b>			
10. DESCRIBE THE MINIMUM TECHNICAL QUALIFICATIONS INCLUDING TRAINING AND EXPERIENCE THAT WILL BE REQUIRED OF AP- PLICANT'S SUPERVISORY PERSONNEL INCLUDING PERSON RESPONSIBLE FOR RADIATION SAFETY PROGRAM (OR OF APPLICANT IF APPLICANT IS AN INDIVIDUAL). <b>40 hour radiation safety orientation course or equivalent. Company RSO will be assisted by R. G. Gallagher and/or other consultant health physicists from Applied Health Physics, Inc.</b>			
11. DESCRIBE THE EQUIPMENT AND FACILITIES WHICH WILL BE USED TO PROTECT HEALTH AND MINIMIZE DANGER TO LIFE OR PROPERTY AND RELATE THE USE OF THE EQUIPMENT AND FACILITIES TO THE OPERATIONS LISTED IN ITEM 9; INCLUDE: (a) RADIATION DETECTION AND RELATED INSTRUMENTS (including film badges, dosimeters, counters, air sampling, and other survey equipment as appropriate. The description of radiation detection instruments should include the instrument characteristics such as type of radiation detected, window thickness, and the range(s) of each in- strument). <b>Air sampling equipment, survey instruments as required by Applied Health Physics, Inc. and leased or used by Kawecki as part of radiological safety program recommended by consultants from Applied Health Physics, Inc. following their study of these processes.</b>			
(b) METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED IN (a) ABOVE, INCLUDING AIR SAMPLING EQUIPMENT. (for film badges, specify method of calibrating and processing, or name supplier). <b>Air samplers calibrated annually, survey meters quarterly by Applied Health Physics, film badges obtained from AHP, processed by Radiation Detection Company Radiation calibrations traceable to National Bureau of Standards sources.</b>			

11(c). VENTILATION EQUIPMENT WHICH WILL BE USED IN OPERATIONS WHICH PRODUCE DUST, FUMES, MISTS, OR GASES, INCLUDING PLAN VIEW SHOWING TYPE AND LOCATION OF HOOD AND FILTERS, MINIMUM VELOCITIES MAINTAINED AT HOOD OPENINGS AND PROCEDURES FOR TESTING SUCH EQUIPMENT.

To be determined on basis of results of air sampling during initial test runs; however, results of similar processing of tin slags have not indicated a need for special ventilation.

12. DESCRIBE PROPOSED PROCEDURES TO PROTECT HEALTH AND MINIMIZE DANGER TO LIFE AND PROPERTY AND RELATE THESE PROCEDURES TO THE OPERATIONS LISTED IN ITEM 9; INCLUDE: (a) SAFETY FEATURES AND PROCEDURES TO AVOID NONNUCLEAR ACCIDENTS, SUCH AS FIRE, EXPLOSION, ETC., IN SOURCE MATERIAL STORAGE AND PROCESSING AREAS.

Specific operating procedures will be prepared as a part of this research and development program for the processing of tin slags.

(b) EMERGENCY PROCEDURES IN THE EVENT OF ACCIDENTS WHICH MIGHT INVOLVE SOURCE MATERIAL.

See 12 (a)

(c) DETAILED DESCRIPTION OF RADIATION SURVEY PROGRAM AND PROCEDURES.

Radiation survey program will be under the direction of a certified health physicist and will conform to the recommendation of the National Council Radiation Protection & Measurement (NCRP).

13. WASTE PRODUCTS: If none will be generated, state "None" opposite (a), below. If waste products will be generated, check here  and explain on a supplemental sheet:

- (a) Quantity and type of radioactive waste that will be generated.
- (b) Detailed procedures for waste disposal.

14. IF PRODUCTS FOR DISTRIBUTION TO THE GENERAL PUBLIC UNDER AN EXEMPTION CONTAINED IN 10 CFR 40 ARE TO BE MANUFACTURED, USE A SUPPLEMENTAL SHEET TO FURNISH A DETAILED DESCRIPTION OF THE PRODUCT, INCLUDING:

- (a) PERCENT SOURCE MATERIAL IN THE PRODUCT AND ITS LOCATION IN THE PRODUCT.
- (b) PHYSICAL DESCRIPTION OF THE PRODUCT INCLUDING CHARACTERISTICS, IF ANY, THAT WILL PREVENT INHALATION OR INGESTION OF SOURCE MATERIAL THAT MIGHT BE SEPARATED FROM THE PRODUCT.
- (c) BETA AND BETA PLUS GAMMA RADIATION LEVELS (Specify instrument used, date of calibration and calibration technique used) AT THE SURFACE OF THE PRODUCT AND AT 12 INCHES.
- (d) METHOD OF ASSURING THAT SOURCE MATERIAL CANNOT BE DISASSOCIATED FROM THE MANUFACTURED PRODUCT.

### CERTIFICATE

(This item must be completed by applicant)

15. The applicant, and any official executing this certificate on behalf of the applicant named in Item 2, certify that this application is prepared in conformity with Title 10, Code of Federal Regulations, Part 40, and that all information contained herein, including any supplements attached hereto, is true and correct to the best of our knowledge and belief.

**KAWECKI CHEMICAL COMPANY**  
(Applicant named in Item 2)

Dated October 3, 1967

BY: John A. Cenerazzo  
(Print or type name under signature)

Vice President - Operations  
(Title of certifying official authorized to act on behalf of the applicant)

WARNING: 18 U.S.C. Section 1001; Act of June 25, 1948; 62 Stat. 749; makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

APPLICATION FOR RENEWAL OF  
SOURCE MATERIALS LICENSE SMB-920

SUPPLEMENTAL INFORMATION TO FORM AEC-2

Item 4 Location of Source Materials

- Present locations: (1) B-1 Yard  
Canton Railroad Pier  
(Storage only) Baltimore, Md.
- (2) { Kawecki Chemical Company  
Tulpehockin St., and Lehigh Valley  
Railroad  
(Storage & Processing) Reading, Pa. 19600
- (3) { Kawecki Chemical Company  
County Line Road  
Boyertown, Pa. 19512

Item 5 Description of Business and Products

See Attachment 1. "Product List".

Item 7 Use of Source Materials

Source materials (natural thorium and uranium) are contained in tin slags as unwanted contaminates. These slags are obtained from various sources throughout the world to be processed by Kawecki Chemical Company for recovery of rare metals (eg. tantalum and columbium).

Item 8 (a) Description of Source Materials

Natural uranium (30,000 lbs. maximum) in concentrations up to 0.05% is requested as addition to License SMB-920.

Item 8 (c) Analyses of tin slags purchased thus far have shown thorium concentrations of about 0.3% and about 0.02% natural uranium. However, it is conceivable that these concentrations

might change slightly, but probably not exceed 0.2% thorium and 0.04% uranium.

Item 8 (d) At the above concentrations the maximum amount of thorium (0.3%) available for processing at any location would be 60 million pounds of tin slags containing no more than 180,000 pounds natural thorium and about 24,000 pounds of natural uranium.

Item 9 Description of Metallurgical Processing of Tin Slags

The tin slags are shipped to our storage locations in Baltimore (Location #1). These slags are stored in an open stock pile. The tin slags purchased thus far consist of glassy flakes, 6 mesh by down with less than 2% below 100 mesh and contain 0.3% thorium as  $\text{ThO}_2$  plus about 0.02% uranium as  $\text{U}_3\text{O}_8$ .

A. Mix and Charge System

The tin slags are shipped from Baltimore to Reading by rail in hopper cars. The slag is dumped from the hopper cars into large concrete storage bins which hold about 250,000 pounds per bin. Slag is carried in a closed conveyer system to the mix-system hoppers where automatic weighing of the tin slags, coke and recycled non-magnetic alloys is accomplished. The mixture flows from feed hoppers into a traveling weigh larry that discharges into a rake type mixer. Attachment 2 contains a diagramatic outline of the mixing and smelting operations showing estimated maximum concentrations of source materials involved in each phase of the process.

After mixing, the materials are discharged into bottom discharge hopper cars that are moved by crane to the furnace feed hoppers which charge the furnace via two vibratory feeders.

B. Smelting Operation

The arc furnace is a 116 cubic foot 3-phase, 3000 KVA nose pour electric furnace manufactured by Universal Machinery Corporation. The furnace is operated at about 2800 degrees F. The waste slag is poured into a silica lined Whiting type bucket and placed on a pouring cradle mounted on a truck. After the molten slag has cooled, the bucket is up-ended and the slag dumped and broken into one to two foot chunks by a large iron drop ball. These chunks are a black glassy mass containing most of the source materials. The waste slag is deposited on the slag dump.

After the hearth has cooled sufficiently, the ladle is up-ended and the alloy button removed and smashed by a cast iron drop ball operated from an overhead crane. The alloy is further reduced in size using a Blake-type jaw crusher. From the jaw crusher, the product flows in a closed system to a hydrocone crusher and magnetic separator. The magnetic fraction is further crushed in a vibratory ball mill and sized on a closed Gyratory screen. This ground product is chemically processed by Kawecki Chemical Company for recovery of the tantalum and columbium. The non-magnetic fraction is recycled to the furnace.

C. Health Physics

Attachment 3 contains a copy of a report by Applied Health Physics, Inc. of health physics surveys made during the first six months of our operations at the Reading Plant.

Results of radiological surveys conducted throughout various phases of these studies showed air and surface contamination levels were below the current maximum permissible limits. When these data are adjusted for time of

occupancy by personnel and the actual work schedules for the smelting and crushing operations, the average air contamination levels will fall well below the mpc's for thorium.

Applied Health Physics, Inc. will continue to monitor each step in the smelting operations described above. Samples will be taken of the products, wastes, and surface contamination. The concentrations of radioactivity in the air will be determined during various phases of the operations. Analyses and interpretation of the results of these samples will be made by Applied Health Physics, Inc. and reviewed with Mr. Robert Gustison. Based upon previous radiological surveys, we do not anticipate finding any concentration of radioactivity that will be in excess of maximum permissible limits, however, we intend to thoroughly analyze any operation that creates levels of 1/10 of the limits specified in 10-CFR-20, Appendix B.

Item 10 Radiological Safety Qualifications and Training

A 40-hour radiological safety orientation course will be presented by Applied Health Physics, Inc. for selected supervisory and safety personnel of Kawecki Chemical Company. Attachment 4 contains a typical outline of this training program that is being presented to Kawecki personnel and has been used by Applied Health Physics, Inc. in training radiological safety officers for Du Pont, General Electric, Pittsburgh Testing Laboratories and other licensees.

Francis T. Coyle has been given the responsibility and authority to serve as corporate radiological safety officer. He will be assisted by Robert G. Gallagher and/or other consultant health physicists from Applied Health Physics, Inc.

Item 11 Radiological Safety Instrumentation & Equipment

The following instrumentation and equipment will be available for use in evaluating and controlling radiation risks:

Radiation Survey Meters:

(a) Alpha-beta: Eberline Model PAC-3 G alpha, beta survey meter  
0-250,000 cpm 0.09 mg/cm<sup>2</sup>

(b) Beta-gamma:

<u>Mfg.</u>	<u>Model</u>	<u>Sensitivity</u>	<u>Window (mg/cm<sup>2</sup>)</u>	<u>Range (mRad/hr)</u>
Victoreen	Thyac	beta-gamma	2	0-20
Picker		beta-gamma	2	0-20
Nuclear Measurements Corp.	SGM	beta-gamma	2	0-20

Air Sampling Equipment:

Nuclear Measurements Corp. "Windjammer" 1 cfm  
Staplex High Volume air sampler 30 cfm.  
Gelman Low Volume air sampler 0.5 cfm.

Air Filter Media:

- (a) Gelman membrane
- (b) Hurlburt HV-70

Smear Sampling Media:

- (a) self-adhesive WP-1 from Applied Health Physics, Inc.

Lab. Analyses Instrumentation for Air, Product, Smears, etc.

Nuclear Measurements Corp. PC-1A gas proportional counter.  
Also Eberline alpha scintillation counter (modified by Applied Health Physics, Inc.) will be used for analyses of samples.

Film badges will not be required routinely since the concentration and type of source materials cannot be accurately monitored by existing dosimetry techniques.

Item 11 (c) Ventilation

The roof ventilated furnace system has an estimated exhaust capacity of 100,000 cfm. and will be operated during all smelting operations.

Item 12

Applied Health Physics, Inc. has prepared a Radiological Safety Procedures Manual covering uranium rolling at Kawecki Chemical Company. This manual will be modified to include safety procedures for routine and emergency conditions for all operations involving radiation. Copies of this manual will be issued to personnel and submitted to AEC and the Pennsylvania Health Dept.

Any proposed changes in procedures involving source materials will be reviewed in detail with our consultants from Applied Health Physics, Inc. and will be thoroughly evaluated and approved by them prior to being put into routine operation. Quarterly radiation surveys will be performed by Applied Health Physics, Inc. of all operations involving radiation.

COPY

Form AEC-410  
(1-61)

UNITED STATES  
ATOMIC ENERGY COMMISSION

SOURCE MATERIAL LICENSE

Pursuant to the Atomic Energy Act of 1954, and Title 10, Code of Federal Regulations, Chapter 1, Part 40, "Licensing of Source Material," and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, possess and import the source material designated below; to use such material for the purpose(s) and at the place(s) designated below; and to deliver or transfer such material to persons authorized to receive it in accordance with the regulations in said Part. This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954 and is subject to all applicable rules, regulations, and orders of the Atomic Energy Commission, now or hereafter in effect, including Title 10, Code of Federal Regulations, Chapter 1, Part 20, "Standards for Protection Against Radiation," and to any conditions specified below.

Licensee 1. Name Kawecki Chemical Company 2. Address 220 East 42nd Street New York, New York 10017		3. License No. SMB-920, as renewed 4. Expiration Date October 31, 1972 5. Docket No. 40-6940
6. Source Material Thorium and Uranium	7. Maximum quantity of source material which licensee may possess at any one time under this license 210,000 pounds	

CONDITIONS

8. Authorized use (Unless otherwise specified, the authorized place of use is the licensee's address stated in Item 2 above.)  
 Thorium and uranium as contained in tin slag for processing in accordance with the procedures described in the licensee's application dated October 3, 1967.
9. Authorized places of use: The licensee's facility  
 Tulpehockin Street and Lehigh Valley Railroad  
 Reading, Pennsylvania and  
 For storage only at  
 B-11 Yard, Canton Railroad Pier  
 Baltimore, Maryland
10. This license does not authorize disposal of tin slag residues containing by weight 0.05% or more source material other than as authorized by Section 20.301 of 10 CFR 20.

CSM  
10-31-67

DA  
10/31/67

For the U. S. ATOMIC ENERGY COMMISSION

Date of issuance OCT 31 1967

\* U. S. GOVERNMENT PRINTING OFFICE : 1962 O - 632985 Don F. Harmon

Division of Materials Licensing

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