Ref to Stern

Form AEC-313 (9-55)

ATOMIC ENERGY COMMISSION

APPLICATION FOR BYPRODUCT MATERIAL LICENSE

Form approved Budget Bureau No 38-R027 3

INSTRUCTIONS Complete Items 1 through 19 if this is a new application If renewal is requested, complete only Items 1 through 11 provided that with respect to the other items there has been no change in the information previously submitted Mail two copies to U S Atomic Energy Commission, P O Box E, Oak Ridge, Tennessee, Attention Isotopes Extension, Division of Civilian Application Upon approval of this application, the applicant will receive an AEC Byproduct Material License General requirements for issuance of an AEC Byproduct Material License are contained in Title 10, Code of Federal Regulations, Part 30

1 (a) NAME AND SHIPPING ADDRESS OF APPLICANT (*Institution, firm, hospital, person, etc*)

Metals Research Laboratories
Electro Metallurgical Company
4625 Royal Ave., Niagara Falls, New York

(b) ADDRESS(ES) AT WHICH BYPRODUCT MATERIAL WILL BE USED (*If different from shipping address*)

2 DEPARTMENT TO USE BYPRODUCT MATERIAL

Chemical and Metallurgical Research

3 INDIVIDUAL USER (*Name and title of individual(s) who will use or directly supervise use of byproduct material*)

Dr. Milton Stern

4 RADIOLOGICAL SAFETY OFFICER (*Name of person qualified in radiological safety, if other than individual user*)

5 PREVIOUS LICENSE OR AUTHORIZATION NUMBER (*If this is an application for renewal of a license for byproduct material obtained under a prior license or authorization for radioisotope procurement*)

30588, 30589, 33349, 33350, 34718, 35397, 39124, 39178

BYPRODUCT MATERIAL OR IRRADIATION SERVICE DESIRED

6 BYPRODUCT MATERIAL (*Element and mass number*)	7 CHEMICAL AND/OR PHYSICAL FORM (*Or catalog number*)	8 MAXIMUM AMOUNT OF RADIOACTIVITY IN MILLICURIES THAT YOU WILL POSSESS AT ANY ONE TIME
See separate sheet	See separate sheet	See separate sheet

9 IF IRRADIATION SERVICE IS DESIRED STATE PERTINENT DETAILS SUCH AS CHEMICAL COMPOSITION AND WEIGHT IN GRAMS OF TARGET MATERIAL RADIOACTIVITY IRRADIATION TIME IN DAYS AND NEUTRON FLUX

STATEMENT OF USE

10 (a) DESCRIBE PURPOSE FOR WHICH BYPRODUCT MATERIAL WILL BE USED (*If material is for "human use" complete Supplement A in lieu of this item If material is to be used in or manufactured as a "sealed source" complete Supplement B in addition to this item*)

To study the effect of the distribution of radiomaterial on the chemical and physical properties of various metals and alloys. Tritium will also be used in the laboratory to trace the path of hydrogen through certain metal reduction processes.

(b) DESCRIBE PROCEDURES WHICH WILL BE OBSERVED TO MINIMIZE HAZARD FROM HANDLING STORAGE AND DISPOSAL OF THE BYPRODUCT MATERIAL

Adequate storage and handling equipment is available including lead storage containers, remote tongs and pipetting devices, a glove box, hoods, film badge service, and survey meters. All equipment is properly labeled and the individuals handling the isotopes understand the various methods necessary to eliminate hazards.

CERTIFICATE

11 The applicant and any official executing this certificate on behalf of the applicant named in Item 1, certify that this application is prepared in conformity with Title 10, Code of Federal Regulations, Part 30, and do solemnly swear (or affirm) that all information contained herein, including any supplements attached hereto, is true and correct to the best of our knowledge and belief

State of New York
County of Niagara
Subscribed and sworn to before me this 22nd day of August 1956

Margaret Manker
Notary Public

MARGARET MANKER
Notary Public, State of New York
Residing in Niagara Co at time of appointment
My Commission Expires [illegible]

Metals Research Laboratories
Applicant named in Item 1

By Burnham E. Field
Manager
Title of Certifying Official

August 22, 1956
Date

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

(*Continued on reverse side*)

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Form AEC-313

ATOMIC ENERGY COMMISSION

APPLICATION FOR BYPRODUCT MATERIAL LICENSE

INSTRUCTIONS. Complete Items 12 through 19 if this is a new application. This information may be omitted from subsequent applications provided there is no change in the information previously submitted, and reference is made in Item 5 to the application on which this information appears.

TRAINING AND EXPERIENCE WITH RADIOACTIVITY OF INDIVIDUAL USER NAMED IN ITEM 3

12 TYPE OF TRAINING	WHERE TRAINED	DURATION OF TRAINING	ON THE JOB (Circle answer)	FORMAL COURSE (Circle answer)
1 Principles and practices of radiological health safety	Mass. Inst. Tech.	4 months	(Yes) No	(Yes) No
2 Radioactivity measurement standardization and monitoring techniques and instruments	Mass. Inst. Tech.	4 months	(Yes) No	(Yes) No
3 Mathematics and calculations basic to the use and measurement of radioactivity	Mass. Inst. Tech.	4 months	(Yes) No	(Yes) No
4 Biological effects of radiation			Yes (No)	Yes (No)
5 Actual use of radioisotopes in the types and quantities for which application is being made, or equivalent experience	Mass. Inst. Tech. & Metals Research Labs.	2 years	(Yes) No	(Yes) No

13 ISOTOPE HANDLING EXPERIENCE

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
See separate sheet				

14 If Radiological Safety Officer named in Item 4 is different from individual user named in Item 3, use supplementary sheet to provide equivalent information on "Training and Experience With Radioactivity of Radiological Safety Officer." Supplementary sheet is attached (Circle answer) Yes (No)

PHYSICAL FACILITIES, EQUIPMENT, AND RADIATION INSTRUMENTATION

15 RADIATION DETECTION INSTRUMENTS (Use separate sheet if necessary)

TYPE OF INSTRUMENTS (Include make and model number of each)	NUMBER AVAILABLE	RADIATION DETECTED	SENSITIVITY RANGE (mr/hr)	WINDOW THICKNESS (mg/cm²)	USE (Monitoring, surveying, measuring)
See separate sheet					

16 FILM BADGES, DOSIMETERS, AND OTHER PERSONNEL MONITORING DEVICES INCLUDING BIO-ASSAY PROCEDURES

Film Badge Service from Nuclear-Chicago Company
6 Landsverk Dosimeters, Model L-29, Serial 17803-8, 0-200 mr.
[illegible], Model L-11, Serial 1229, 0-[illegible] R.

17 METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED ABOVE (For film badges specify method of calibration and processing, or name supplier)

Film badge service from Nuclear-Chicago Company
Instruments calibrated when necessary using appropriate Co^{60} or Po^{210} source

18 (a) DESCRIBE BRIEFLY REMOTE HANDLING EQUIPMENT, STORAGE CONTAINERS, SHIELDING, AND LABORATORY FACILITIES (Working areas, fume hoods, etc.)

3-ft. remote handling tongs; remote pipet; 2 steel 1-inch containers; 2 lead 1-inch containers; 2-inch steel bricks; purse hoods, filtered glove box; working areas covered with metal trays.

(b) SKETCHES OF SUCH FACILITIES ARE ATTACHED (Circle answer) Yes (No)

19 DESCRIBE BRIEFLY RADIATION SURVEYING PROCEDURES AND METHODS OF DISPOSING OF RADIOACTIVE WASTES

A survey is conducted after each operation. A general laboratory survey is made monthly. All waste is stored in a labeled barrel for subsequent disposal by an authorized agency when this becomes necessary.

U. S. GOVERNMENT PRINTING OFFICE 16—57264

UCCNHT0003412

Attachment
Form AEC-313

METALS RESEARCH LABORATORIES
Electro Metallurgical Company
4625 Royal Avenue
Niagara Falls, New York

Byproduct Material or Irradiation Service Desired

6. Byproduct Material	7. Form	8. Possession Limit
Cobalt - 60	Metal or salt	5 millicuries
Carbon - 14	Carbonate	5 millicuries
Chromium - 51	Metal or salt	50 millicuries
Nickel - 63	Metal or salt	15 millicuries
Iron - 55 and/or 59	Metal or salt	15 millicuries
Bismuth - 210	Metal	30 millicuries
Polonium - 210	Electrodeposit or salt	3 millicuries
Hydrogen - 3	Any	2 curies

Date 8/16/56

METALS RESEARCH LABORATORIES
Electro Metallurgical Company
4625 Royal Avenue
Niagara Falls, New York

Attachment
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(13) Isotope Handling Experience

Isotope	Maximum Amount	Where Experience Gained	Duration of Experience and Type of Use
Radium	~1 milligram	Mass. Inst. Tech.	4 months Radioisotope Laboratory Course
Co^{60}	~0.5 mc.	" " "	" " " " "
Sr^{90}-Y^{90}	~10 μc	" " "	" " " " "
Pb^{210}-Bi^{210}	~1 μc	" " "	" " " " "
Ce^{144}-Pr^{144}	~5 μc	" " "	" " " " "
I^{134}	<1 μc	" " "	" " " " "
Ba^{140}	<1 μc	" " "	" " " " "
Mn^{56}	<1 μc	" " "	" " " " "
Cr^{51}	~15 mc.	Metals Research Laboratories	2 years research including counting and autoradiography
Ni^{63}	~2 mc.	" " "	" " " " "
Po^{210}	~0.5 mc.	" " "	" " " " "
H^3	250 mc.	" " "	" " " " "

Date 8/16/56

UCCNHT0003414