

Amend. #1 - 4-181-6

Form AEC-313  
(2-57)

ATOMIC ENERGY COMMISSION

APPLICATION FOR BYPRODUCT MATERIAL LICENSE

Form approved.  
Budget Bureau No. 38-R027.3.

INSTRUCTIONS.—Complete Items 1 through 16 if this is an initial application. If application is for renewal of a license, complete only Items 1 through 7 and indicate new information or changes in the program as requested in Items 8 through 15. Use supplemental sheets where necessary. Item 16 must be completed on all applications. Mail two copies to: U. S. Atomic Energy Commission, P. O. Box E, Oak Ridge, Tenn. Attention: Isotopes Extension, Division of Civilian Application. Upon approval of this application, the applicant will receive an AEC Byproduct Material License. An AEC Byproduct Material License is issued in accordance with the general requirements contained in Title 10, Code of Federal Regulations, Part 30 and the licensee is subject to Title 10, Code of Federal Regulations, Part 20.

1. (a) NAME AND STREET ADDRESS OF APPLICANT. (Institution, firm, hospital, person, etc.)

Veterans Administration Center  
Wilshire and Sawtelle Blvds  
Los Angeles 25, Calif.

(b) STREET ADDRESS(ES) AT WHICH BYPRODUCT MATERIAL WILL BE USED. (If different from 1 (a).)

Same

DUPLICATED  
FOR DIV. OF ISEP

2. DEPARTMENT TO USE BYPRODUCT MATERIAL

Cardiology Section

3. PREVIOUS LICENSE NUMBER(S). (If this is an application for renewal of a license, please indicate and give number.)

4. INDIVIDUAL USER(S). (Name and title of individual(s) who will use or directly supervise use of byproduct material. Give training and experience in Items 8 and 9.)

E. Raymond Borun, Attending Phy. in Int. Medicine, V. A.; Asst. Prof. of Medicine in Residence, UCLA Med. Center and Radioisotope Service-Vets Admin. Hosp. W. H. Bland, M.D., Chief

5. RADIATION PROTECTION OFFICER (Name of person designated as radiation protection officer if other than individual user. Attach resume of his training and experience as in Items 8 and 9.)

W. H. Bland, M. D.  
Chief, Radioisotope Service

6. (a) BYPRODUCT MATERIAL. (Elements and mass number of each.)

Sodium 24

(b) CHEMICAL AND/OR PHYSICAL FORM AND MAXIMUM NUMBER OF MILLICURIES OF EACH CHEMICAL AND/OR PHYSICAL FORM THAT YOU WILL POSSESS AT ANY ONE TIME. (If sealed source(s), also state name of manufacturer, model number, number of sources and maximum activity per source.)

Na Cl in HCl - 2 mc maximum at any one time

7. DESCRIBE PURPOSE FOR WHICH BYPRODUCT MATERIAL WILL BE USED. (If byproduct material is for "human use," supplement A (Form AEC-313a) must be completed in lieu of this item. If byproduct material is in the form of a sealed source, include the make and model number of the storage container and/or device in which the source will be stored and/or used.)

The material will be used to study sodium exchange in vitro in erythrocyte specimens

A/30

3832

TRAINING AND EXPERIENCE OF EACH INDIVIDUAL NAMED IN ITEM 4 (Use supplemental sheets if necessary)

8. TYPE OF TRAINING	WHERE TRAINED	DURATION OF TRAINING	ON THE JOB (Circle answer)	FORMAL COURSE (Circle answer)
a. Principles and practices of radiation protection	Gen. Med. & Surg. Hosp. Vet. Admin. Center, L. A.	16 mos	<input checked="" type="radio"/> Yes No	Yes <input checked="" type="radio"/> No
b. Radioactivity measurement standardization and monitoring techniques and instruments	" " " " "		Yes No	Yes No
c. Mathematics and calculations basic to the use and measurement of radioactivity	" " " " "		Yes No	Yes No
d. Biological effects of radiation	" " " " "		Yes No	Yes No

9. EXPERIENCE WITH RADIATION. (Actual use of radioisotopes or equivalent experience.)

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
Cr <sup>51</sup>	less than 100 uc	GM&S HOSP., VAC, L.A.	16 mo.	In vitro
Iodine <sup>131</sup>	less than 100 uc	GM&S HOSP., VAC, L.A.	16 mo	In vitro
Fe <sup>59</sup>	less than 100 uc	GM&S Hosp., VAC, L.A.	16 mo-red cell	survival humans and dogs
K <sup>42</sup>	less than 100 uc	GM&S Hosp., VAC, L.A.	16 mo.	In vitro

10. RADIATION DETECTION INSTRUMENTS. (Use supplemental sheets if necessary.)

TYPE OF INSTRUMENTS (Include make and model number of each)	NUMBER AVAILABLE	RADIATION DETECTED	SENSITIVITY RANGE (mr/hr)	WINDOW THICKNESS (mg/cm <sup>2</sup> )	USE (Monitoring, surveying, measuring)
See License No. 4-181-2					

11. METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED ABOVE.

See License No. 4-181-2

12. FILM BADGES, DOSIMETERS, AND BIO-ASSAY PROCEDURES USED. (For film badges, specify method of calibrating and processing, or name of supplier.)

See License No. 4-181-2

INFORMATION TO BE SUBMITTED ON ADDITIONAL SHEETS

13. FACILITIES AND EQUIPMENT. Describe laboratory facilities and remote handling equipment, storage containers, shielding, fume hoods, etc. Explanatory sketch of facility is attached. (Circle answer) Yes No  
See License No. 4-181-2

14. RADIATION PROTECTION PROGRAM. Describe the radiation protection program including control measures. If application covers sealed sources, submit leak testing procedures where applicable, name, training, and experience of person to perform leak tests, and arrangements for performing initial radiation survey, servicing, maintenance and repair of the source.  
See License no. 4-181-2

15. WASTE DISPOSAL. If a commercial waste disposal service is employed, specify name of company. Otherwise, submit detailed description of methods which will be used for disposing of radioactive wastes and estimates of the type and amount of activity involved.  
See License No. 4-181-2

CERTIFICATE (This item must be completed by applicant)

16. 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 THAT ALL INFORMATION CONTAINED HEREIN, INCLUDING ANY SUPPLEMENTS ATTACHED HERETO, IS TRUE AND CORRECT TO THE BEST OF OUR KNOWLEDGE AND BELIEF.

Date March 21, 1958

Veterans Administration Hospital  
Applicant named in item  
By: W. H. Bland  
W. H. Bland, M. D.

Title of certifying official  
Chief, Radioisotope Service

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.

**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)	
			Yes	No	Yes	No
1. Principles and practices of radiological health safety. . . . .	Gen. Med. & Surg. Hosp., Vet. Adm. Center, L.A.	16 months	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Radioactivity measurement standardization and monitoring techniques and instruments . . . . .	" " " " " " " " " "	" "	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Mathematics and calculations basic to the use and measurement of radioactivity. . . . .	" " " " " " " " " "	" "	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Biological effects of radiation. . .	" " " " " " " " " "	" "	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Actual use of radioisotopes in the types and quantities for which application is being made, or equivalent experience . . . . .	" " " " " " " " " "	" "	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**13. ISOTOPE HANDLING EXPERIENCE**

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
Cr <sup>51</sup>	less than 100 uc	GM&S Hosp., V.A. Center,	L.A. 16 mo.	In vitro
Iodine <sup>131</sup>	less than 100 uc	GM&S Hosp., V.A. Center,	L.A. 16 mo.	In vitro
Fe <sup>59</sup>	less than 100 uc	GM&S Hosp., V.A. Center,	L.A.; 16 mo.;	red cell survival humans and dogs
K <sup>42</sup>	less than 100 uc	GM&S Hosp., V.A. Center,	L.A. 16 mo.	In Vitro

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/cm <sup>2</sup> )	USE (Monitoring, surveying, measuring)
See License No. 4-181-2					

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

See License No. 4-181-2

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

See License No. 4-181-2

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

See License No. 4-181-2

(b) SKETCHES OF SUCH FACILITIES ARE ATTACHED (Circle answer)

Yes No

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

See License No. 4-181-2

ATOMIC ENERGY COMMISSION APPLICATION FOR BYPRODUCT MATERIAL LICENSE

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.

1. (a) NAME AND SHIPPING ADDRESS OF APPLICANT: Veterans Administration Center, Wilshire and Sawtelle Blvds., Los Angeles 25, Calif. (b) ADDRESS(ES) AT WHICH BYPRODUCT MATERIAL WILL BE USED: Same. 2. DEPARTMENT TO USE BYPRODUCT MATERIAL: Cardiology Section. 3. INDIVIDUAL USER: A. E. Raymond Borun, Attending Physician in Internal Med., V.A., Residence, UCLA Med. Center. 4. RADIOLOGICAL SAFETY OFFICER: William H. Blahd, M.D. 5. PREVIOUS LICENSE OR AUTHORIZATION NUMBER: 36019

BYPRODUCT MATERIAL OR IRRADIATION SERVICE DESIRED

6. BYPRODUCT MATERIAL (Element and mass number): Potassium 42. 7. CHEMICAL AND/OR PHYSICAL FORM (Or catalog number): K2CO3. 8. MAXIMUM AMOUNT OF RADIOACTIVITY IN MILLICURIES THAT YOU WILL POSSESS AT ANY ONE TIME: 10 mc. 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: In vitro studies of uptake and exchange of K42 by incubated red blood cell specimens. (b) DESCRIBE PROCEDURES WHICH WILL BE OBSERVED TO MINIMIZE HAZARD FROM HANDLING, STORAGE, AND DISPOSAL OF THE BYPRODUCT MATERIAL: See Licence No. 4-181-4

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 California, County of Los Angeles. Subscribed and sworn to before me this 6th day of September, 1956. By Wm. H. Blahd, M.D., Acting Ch., Radioisotope Service. Date SEP 6 - 1956. My Commission Expires Sept. 21, 1957.

WARNING

18 U. S. C., Section 1601; Act of June 25, 1948; 62 Stat. 749; makes it a criminal offense to make a willful and false representation to any department or agency of the United States as to any matter within its jurisdiction.

GRAHAM MCALLEY, JR. Chief, Radioisotope Service, Veterans Administration

Date Recd. APR 2 1958 Ex. Date Issue Date Tech. Rev. REB.  
 Control No. 5832 Ref. No. License No. 4-181-6 Amend. No. 7

Isotope	Form	Possession Limit
A. <u>Na 24</u>	A. <u>any</u>	A. <u>2mc</u>
B.	B.	B.
C.	C.	C.
D.	D.	D.
E.	E.	E.
F.	F.	F.
G.	G.	G.
H.	G.	H.

Authorized Use

A. In accordance with application dated March 21, 1958, Serial No. 4-181-6 is amended to add the following

Na 24: in vitro studies of sodium exchange in erythrocyte spinines.

**APPROVED**  
 APR 28 1958

*Handwritten initials*

4-313 to M. M. M. M.

SOHA Review Yes  No

Type User (Circle One) 1 2 3 4 5 6 7 Other

Mail to B. Lab

Remarks, letters, phone calls, visits, exemptions, etc. (Use reverse side if necessary)

Call to M. M. M. 4/24/58  
endorsed by Chapman REB

APR 10 1958

- Conditions
- 1. A B C
  - 2. A B C
  - 3. A B C
  - 4.
  - 5.
  - 6.
  - 7.
  - 8. A B C
  - 9. A B C
  - 10.
  - 11.
  - 12.
  - 13.
  - 14. A B C
  - 15.
  - 16. (over)

Approve  Void

Tech. Rev. REB Date 4/24/58

Chief SRM/REB Date 4/25/58

79 NB

Date Received		No. Copies	Application No. 4-181-6
Company Confidential		Expiration Date 9-30-58	Reference No.
Isotope	Form	Possession Limit	Use: <i>in vitro</i> studies of uptake and exchange of K42 by incubated red blood cell specimens
K42	any	10 mc	

Service Irradiation

*amended F1 4/28/58 RSB*

Special Conditions: (Circle)	Comments:	Letters:
<ul style="list-style-type: none"> <li>1. A B C</li> <li>2. <u>C</u></li> <li>3.</li> <li>4.</li> <li>5. <u>A</u> B C</li> <li>6.</li> <li>7.</li> <li>8.</li> <li>9.</li> <li>10. A B C</li> <li>11.</li> <li>12.</li> <li>13.</li> <li>14.</li> <li>15.</li> <li>16.</li> <li>17. A B</li> <li>See reverse side</li> </ul>	<p><i>See 4-181-4 for instruments, facilities, etc.</i></p>	

New Application	<input checked="" type="radio"/> Yes <input type="radio"/> No	SCHA Review	Yes <input checked="" type="radio"/> No	Quimby		
313-A Reviewed	Yes <input checked="" type="radio"/> No	Items Reproduced:		Jacobson		
313-B Reviewed	Yes <input checked="" type="radio"/> No			Robbins		
Preceptor Statement	Yes <input checked="" type="radio"/> No	Reviewer	Date	Action	Date	Chief
Instrumentation Checked	Yes <input checked="" type="radio"/> No	NB	9/15/56	Approve	9-26-56	PCA/RSB
Telephone Call	Yes <input checked="" type="radio"/> No			Disapprove		
RSB Files Checked	Yes <input checked="" type="radio"/> No			Cancelled		
RSB Review	Yes <input checked="" type="radio"/> No			Revised		