

ATOMIC ENERGY COMMISSION  
APPLICATION FOR BYPRODUCT MATERIAL LICENSEForm 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.)Joe Harpster  
Solid State Dept.  
Harshaw Chemical Co.  
2240 Prospect Ave.  
Cleveland 15, Ohio(b) ADDRESS(ES) AT WHICH BYPRODUCT MATERIAL WILL BE USED  
(If different from shipping address)

same

2. DEPARTMENT TO USE BYPRODUCT MATERIAL

Solid State Research Department

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

J. W. Harpster

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

J. W. Harpster

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 radiolabeling)

None

## BYPRODUCT MATERIAL OR IRRADIATION SERVICE DESIRED

6. BYPRODUCT MATERIAL (Element and mass number)

Americium 241  
Curium 244

7. CHEMICAL AND/OR PHYSICAL FORM (Or catalog number)

To be determined by Oak Ridge personnel.

8. MAXIMUM AMOUNT OF RADIOACTIVITY IN MILLICURIES THAT YOU WILL POSSESS AT ANY ONE TIME

2 micro curie  
2 micro curie

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

None

## 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 be used for calibration and resolution measurements on solid state alpha detectors.

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

Isotopes will be plated on a metal backing and mounted in a plastic holder by personnel at Oak Ridge. These will be stored in a 1/8" lead lined cabinet. Disposal will be carried out at Oak Ridge.

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 Ohio

County of Cuyahoga

Subscribed and sworn to before me this

day of July 1961

Notary Public

LEWIS H. JONES, Notary Public

By

Title of Certifying Official

Date

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

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34-6558-2  
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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. . . . .	Geneva College Western Reserve U.	1 month 1½ years	<input checked="" type="radio"/> Yes    No	<input checked="" type="radio"/> Yes    No
2. Radioactivity measurement standardization and monitoring techniques and instruments . . . . .	Geneva College Western Reserve U.	1 month ½ year	<input checked="" type="radio"/> Yes    No	<input checked="" type="radio"/> Yes    No
3. Mathematics and calculations basic to the use and measurement of radioactivity. . . . .	Geneva College Western Reserve U.	2 months 1½ years	<input checked="" type="radio"/> Yes    No	<input checked="" type="radio"/> Yes    No
4. Biological effects of radiation. . . . .	Geneva College	1 month	Yes <input checked="" type="radio"/> No	Yes    No
5. Actual use of radioisotopes in the types and quantities for which application is being made, or equivalent experience . . . . .	Western Reserve U.	1½ years	<input checked="" type="radio"/> Yes    No	Yes    No

**13. ISOTOPE HANDLING EXPERIENCE**

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
RaBe	100 mg	Western Reserve Univ.	6 months	Calibration
Na <sup>22</sup>	1 mc	Western Reserve Univ.	1 year	Research
Ra	1 μc	Harshaw Chemical Co.	1 year	Research

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)
Harshaw Solid State radiation detector	5	α	0 - to max. dose from these sources	0	measuring

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

Film badges - Nuclear Chicago

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

The above detectors are absolute and need no calibration

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

None.

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

Yes    No

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

No disposal anticipated. If so, Oak Ridge will dispose of these sources. Monthly calibrations using a standard geometry will be made to determine if accidental loss of source material has occurred.