

ATOMIC ENERGY COMMISSION  
**APPLICATION FOR BYPRODUCT MATERIAL LICENSE**

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

**National Research Corporation**  
70 Memorial Drive  
Cambridge, Massachusetts

**National Research Corporation**  
Esso Research and Development  
Box 243  
Elizabeth, New Jersey

2. DEPARTMENT TO USE BYPRODUCT MATERIAL

**Applied Physics**

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

**20-1465-1 Renewal**

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.)

**J. R. Roehrig**

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.)

**A. W. Winston**

**DUPLICATED**  
FOR DIV. OF INSP.

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

**Krypton - 85**

(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.)

**1400 millicuries of Kr<sup>85</sup> gas - Sealed Sources**  
**United States Radium Corporation**  
**Source No. 9589                      160 millicuries**  
**Source No. 9590                      160 millicuries**  
**Source No. 8596                      550 millicuries**

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.)

**US Radium Source No. 9589 and 9590 used in experimental gas chromatography detector - US Radium Dwg. No. LAB 519**  
**US Radium Source No. 8596      US Radium Dwg. No. LAB 472**  
**installed in helium-in-air detector. This detector used by Esso Research and Development and is returned periodically for checking of electronics.**

14061

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**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)	
			Yes	No	Yes	No
a. Principles and practices of radiation protection	Same as 20-1465-2					
b. Radioactivity measurement standardization and monitoring techniques and instruments						
c. Mathematics and calculations basic to the use and measurement of radioactivity						
d. Biological effects of radiation						

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

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
		Same as 20-1465-2		

**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)
Same as on 20-1465-2					

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

Same as on 20-1465-2

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

Same as on 20-1465-2

**INFORMATION TO BE SUBMITTED ON ADDITIONAL SHEETS**

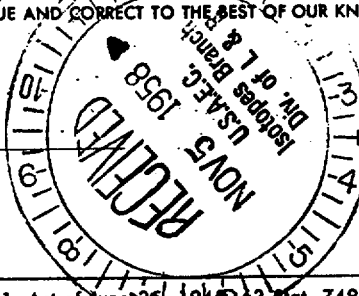
**13. FACILITIES AND EQUIPMENT.** Describe laboratory facilities and remote handling equipment, storage containers, shielding, fume hoods, etc. Explanatory sketch of facility is attached. (Circle answer) Yes No **Same as on 20-1465-2**

**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. **Same as on 20-1465-2**

**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. **Sources are sealed. If no longer used will return to US Radium or dispose through Crossroads Marine CERTIFICATE (This item must be completed by applicant) Disposal, Boston, Mas**

**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 **October 23, 1958**



**National Research Corporation**

Applicant named in item 1  
*John V. E. Hansen*

**Contracts Manager**  
Title of certifying official

**WARNING.—18 U. S. C., Section 1001; Act of June 25, 1948, 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.**