

UNITED STATES ATOMIC ENERGY COMMISSION  
APPLICATION FOR BYPRODUCT MATERIAL LICENSE

Form approved  
Budget Bureau No. 38-R0027

INSTRUCTIONS. - Complete Items 1 through 16 if this is an initial application or an application for renewal of a license. Information contained in previous applications filed with the Commission with respect to Items 8 through 15 may be incorporated by reference provided references are clear and specific. Use supplemental sheets where necessary. Item 16 must be completed on all applications. Mail two copies to U.S. Atomic Energy Commission, Washington, D.C., 20545, Attention: Isotopes Branch, Division of Materials Licensing. 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.

*L + L 17152*

<p>1. (a) NAME AND STREET ADDRESS OF APPLICANT (Institution, firm, hospital, person, etc. Include ZIP Code.)</p> <p>Ryckman/Edgerley/Tomlinson &amp; Assocs. Inc. 12161 Lackland Road St. Louis, Missouri 63141</p>	<p>(b) STREET ADDRESS(ES) AT WHICH BYPRODUCT MATERIAL WILL BE USED (If different from 1 (a). Include ZIP Code.)</p> <p>036-12280</p> <p>Ryckman/Edgerley/Tomlinson &amp; Assocs. Inc. 12161 Lackland Road St. Louis, Missouri 63141</p>
<p>2. DEPARTMENT TO USE BYPRODUCT MATERIAL</p> <p>Laboratory</p>	<p>3. PREVIOUS LICENSE NUMBER(S) (If this is an application for renewal of a license, please indicate and give number)</p>
<p>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.)</p> <p>D. C. Kennedy, Dir. of Laboratories J. A. Jurgiel, Dir. of Ind. Hygiene C. A. Hammer, Sr. Env. Scientist</p>	<p>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.)</p> <p>John A. Jurgiel</p>

<p>6. (a) BYPRODUCT MATERIAL (Elements and mass number of each)</p> <p>Nickel 63</p>	<p>(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.)</p> <p>Hewlett-Packard Linear E C Detector Model 18713-A contain Hewlett-Packard Source #18713-80020 30 millicuries</p>
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Date	7-8-76
Time	11:30am
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Action Compl.	File 76

<p>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.)</p> <p>Hewlett-Packard 5830-A For laboratory analysis</p>	<p>Applicant <i>M. O. C.</i></p> <p>Check No. <i>14589</i></p> <p>Amount <i>50 - 3L</i></p> <p>Date of Check <i>8-12-76</i></p> <p>Date Check Rec'd <i>8-10-76</i></p> <p>Received By <i>W. S. S.</i></p>
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INSPECTION AND ENFORCEMENT

82626

(Continued on reverse side)

July 76 P-3

## 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	D.C. Kennedy, AEC, Ames Lab.	3 yrs.	Yes No	Yes No
b. Radioactivity measurement standardization and monitoring techniques and instruments	C.A. Hammer, Savannah River Lab. D.C. Kennedy, AEC, Aiken, SC	3 mos.	Yes No	Yes No
c. Mathematics and calculations basic to the use and measurement of radioactivity	C.A. Hammer D. C. Kennedy	6 mos.	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

## 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)
None required with this instrument					

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

None required with this instrument

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

None required with this instrument

## INFORMATION TO BE SUBMITTED ON ADDITIONAL SHEETS IN DUPLICATE

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 Effluent gas will be piped into a fume hood

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. Perform leak test with Hewlett-Packard Model P6761 leak test kit at 6-month intervals.

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. Return to supplier, Hewlett-Packard Co., Rt. 4, and Starr Road, Avondale, PA 19311

## 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.

Ryckman/Edgerley/Tomlinson &  
Associates, Inc.

Applicant named in item

Date July 2, 1976

By:

President

Title of certifying official

82626

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.

# 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)
John A. Jurgiel				
a. Principles and practices of radiation protection	Harvard University	1 yr.	Yes No	<input checked="" type="radio"/> Yes <input type="radio"/> No
b. Radioactivity measurement standardization and monitoring techniques and instruments	Taft Center, Public Health Service, Cincinnati, OH	2 wks.	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Yes <input type="radio"/> No
c. Mathematics and calculations basic to the use and measurement of radioactivity	Harvard University	1 yr.	Yes No	<input checked="" type="radio"/> Yes <input type="radio"/> No
d. Biological effects of radiation	Harvard University	1 yr.	Yes No	<input checked="" type="radio"/> Yes <input type="radio"/> 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
Pm	165,000 curies	Holloman Air Force Base, NM	3 mos.	Heat sources in research projects.
<sup>3</sup> H	trace levels	Holloman Air Force Base, NM	6 mos.	Tracer element in animal experimentation.

## 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)

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

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

## INFORMATION TO BE SUBMITTED ON ADDITIONAL SHEETS IN DUPLICATE

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
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.
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.

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Date \_\_\_\_\_

Applicant named in item 1

By: \_\_\_\_\_

Title of certifying official

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

B. TYPE OF TRAINING	WHERE TRAINED	DURATION OF TRAINING	ON THE JOB (Circle answer)	FORMAL COURSE (Circle answer)
D. C. Kennedy				
a. Principles and practices of radiation protection	AEC Laboratory, Iowa State University	3 yrs.	Yes No	<input checked="" type="radio"/> Yes <input type="radio"/> No
b. Radioactivity measurement standardization and monitoring techniques and instruments	AEC Laboratory, Iowa State University	3 yrs.	Yes No	<input checked="" type="radio"/> Yes <input type="radio"/> No
c. Mathematics and calculations basic to the use and measurement of radioactivity	AEC Laboratory, Iowa State University	3 yrs.	Yes No	<input checked="" type="radio"/> Yes <input type="radio"/> No
d. Biological effects of radiation	AEC Laboratory, Iowa State University	3 yrs.	Yes No	<input checked="" type="radio"/> Yes <input type="radio"/> 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
Various isotopes at trace levels associated with activation analysis. (Ph.D. minor in inorganic and nuclear chemistry)				

**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)

**11. METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED ABOVE.**
**12. FILM BADGES, DOSIMETERS, AND BIO-ASSAY PROCEDURES USED.** (For film badges, specify method of calibrating and processing, or name of supplier.)

**INFORMATION TO BE SUBMITTED ON ADDITIONAL SHEETS IN DUPLICATE**

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
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.
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.

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Date \_\_\_\_\_

Applicant named in item 1

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8. TYPE OF TRAINING		WHERE TRAINED	DURATION OF TRAINING	ON THE JOB (Circle answer)	FORMAL COURSE (Circle answer)
Carol A. Hammer				Yes No	Yes No
a. Principles and practices of radiation protection				Yes No	Yes No
b. Radioactivity measurement standardization and monitoring techniques and instruments		Savannah River Laboratory, Aiken, SC	3 mos.	(Yes) No	Yes No
c. Mathematics and calculations basic to the use and measurement of radioactivity		Savannah River Laboratory, Aiken, SC	3 mos.	(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
All trans-uranium elements	trace levels	Savannah River Laboratories, Aiken, SC	3 mos.	Research project in the ion exchange separation of trans-uranium elements

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Date _____	By: _____ Applicant named in item 1
	Title of certifying official _____ 82626

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