

Form AEC-313
(2-73)
10 CFR 30

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: Materials Branch, Directorate of 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, and the license fee provisions of Title 10, Code of Federal Regulations, Part 170. The license fee category should be stated in Item 16 and the appropriate fee enclosed. (See Note in Instruction Sheet).

1. (a) NAME AND STREET ADDRESS OF APPLICANT. (Institution, firm, hospital person, etc. Include ZIP Code and telephone number.) DHEW/FOOD AND DRUG ADMINISTRATION LOS ANGELES DISTRICT 1521 West Pico Blvd. Los Angeles, CA 90015		(b) STREET ADDRESS(ES) AT WHICH BYPRODUCT MATERIAL WILL BE USED. (If different from 1(a). Include ZIP Code.)	
2. DEPARTMENT TO USE BYPRODUCT MATERIAL LABORATORY BRANCH/FDA		3. PREVIOUS LICENSE NUMBER(S). (If this is an application for renewal of a license, please indicate and give number.) 04-09763-01 (Application for 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.) By-product material will be used by or under the supervision of the Laboratory Director or Pesticide Specialist.		5. RADIATION PROTECTION OFFICER. (Name of person designated as radiation protection officer if other than individual user. Attach resume of his training and experience. Individual user is on-site RPO Neil Gaeta, Certified Health Physicist EDRO/FSB/WEAC is consultant.	
6. (a) BYPRODUCT MATERIAL. (Elements and mass number of each.) (A) Hydrogen - 3 (B) Hydrogen - 3		(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.) (A) Titanium Tritide Foils (U.S. Radium Corp. LAB 508-1 or LAB 508-3). The number of foils on hand will be equal to twice (2x) the number of titanium tritide gas chromatography units (a working foil plus a spare or used foil, 4 foils maximum). Maximum activity on each foil not to exceed 300 m Ci. (B) Scandium Tritide Foils on hand will be equal to twice the number of scandium tritide gas chromatography units (a working foil plus a spare or used foil, 2 foils maximum). Maximum activity on each foil not to exceed 1000 m Ci. Cell will be labeled, "Warning - This instrument not authorized for Ti ³ H Detectors." SEE ATTACHED SHEET	
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.) SEE ATTACHED SHEET			

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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)
a. Principles and practices of radiation protection	SEE ATTACHED SHEET		Yes No	Yes 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

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 ²)	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 ☐ SEE ATTACHED SHEET

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 ATTACHED SHEET

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 ATTACHED SHEET

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.

License Fee Category \$ 0

Fee Enclosed \$ 42

Date 12/12/77

U.S. Food and Drug Admin
Applicant named in item 1

By: John E. Weatherway

Title of certifying official

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.

ITEM NO.

6a.

6b.

(C) Nickel - 63

(C) Foils (Nuclear Radiation Dev., Inc., Model N-1001-6; or New England Nuclear Corp., Models NER-001, NER-002, or NER-003; or Hewlett Packard, Model 18713-80020). The number of cells on hand will be equal to twice (2x) the number of ^{63}Ni gas chromatography units (a working cell plus a spare or used cell, 8 cells total). Maximum activity on each foil in cell not to exceed 25 m Ci.

7.

All foils for ^3H and/or ^{63}Ni gas chromatography units to be used for chemical analysis in the laboratory in accordance with memo of September 23, 1975, Health Physicist, EDRO/WEAC to H. P. Eiduson, Director, Field Sciences Branch, DFO/EDRO (distributed to all FDA District laboratories; SOP for Handling Tritium Foils, May 1975; and Instructions for Swipe Test for ^{63}Ni Detectors, May 1975 (Reference Control No. 57254).

- A. Foils to be used for sample analysis can be removed for cleaning and/or shipment for disposal to EDRO/WEAC, 109 Holton St., Winchester, Massachusetts 01890. Cleaning shall be done according to manufacturer's specifications and procedures outlined in above memoranda.
- B. Foils to be used for sample analysis can be removed for cleaning and/or shipment for disposal to EDRO/WEAC, 109 Holton Street, Winchester, Massachusetts 01890. Cleaning shall be done according to manufacturer's specifications and procedures outlined in above memoranda.
- C.
 1. Foils to be maintained as integral part of detector cell. Cleaning shall be done according to manufacturer's specifications and procedures outlined in above memoranda.
 2. Swipe tests of cells shall be done according to procedures in above memoranda.
 3. Intact cell(s) shall be exchanged with EDRO/WEAC for clean unit (s).

8. - 12.

The By-product material shall be used by or under the supervision of the Laboratory Director or Pesticide Specialist. Each has attended a specialized course on Health Physics at Georgetown University and/or the 3-hour program for Pesticide Specialists given by N. A. Gaeta (copy of agenda enclosed). Any other individual designated to use ^3H and ^{63}Ni cells shall be instructed in the safe handling according to the attached references and manufacturer's procedures.

Cirriculum Vitae of N. A. Gaeta attached.

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13.

^3H and ^{63}Ni gas chromatographs are located in laboratory working areas. Where necessary the outputs are vented to a hood, window or exhaust duct.

14.

Covered in Item 7 and detailed in (Reference Control No. 57254).

15.

As covered in Item 7, foil and cells are shipped to WEAC.

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LICENSING AND SAFE
HANDLING OF RADIOACTIVE FOILS

(ICW, Buffalo, N.Y., June 9, 1975 - NAG)

I. License Requirements

A. Tritium Foils

- (1) Inventory records of receipt, use, and return of foils
- (2) Labeling of foil containers
- (3) Authorization to:
 - (a) Remove foils
 - (b) Clean foils
- (4) Model License (attached)
- (5) GLC Location
- (6) Exhaust System
- (7) Scandium vs. Titanium Foils
- (8) Posting requirements for 10 CFR 19,20; AEC Form 3, and copy of license, CRM

B. Nickel-63 Cells

- (1) Inventory records on receipt, use and return of cells
- (2) Authorization to clean cells
- (3) Swipe testing
- (4) Exchange with WEAC
 - (i) Amend license
 - (ii) Reduce downtime

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II. Mechanism for Obtaining ^3H Foils

- (a) Accountability Form
- (b) Distribution and Return Thru Post Office

III. Cleaning Foils - TRITIUM

- (a) Intact Cell - flush with solvent
- (b) Disassembled Cell - soak in KOH - 1-2 hours
- (c) Buffalo District - LIB for anode

IV. Cleaning Foils - Nickel-63

- (a) Thermal (350°C with normal carrier flow overnight or weekend)
- (b) Solvent cleaning - KOH, MeOH, Acetone, Benzene or Hexane

V. Swipe Testing - Nickel-63 Cells

- (a) Records
- (b) Frequency - every 6 months
- (c) Procedure (enclosed)
 - (i) Swab exit port and cell
 - (ii) Mail to WEAC

(MODEL LICENSE REQUEST)

Materials Branch, Div. of Materials and Fuel Cycle
Facility Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Sir:

The following information is provided to amend _____ District

License _____:

Item 6 - By-Product Material

- A. Tritium (^3H) foils of Titanium Tritide
- B. Nickel-63 Foils

Item 7 - Chemical and/or Physical Form

- A. Foils for Detector Cell
- B. Foils for Detector Cell

Item 8 - Maximum Amount of Radioactivity

- A. Not to Exceed 300 millicuries per cell
- B. Not to Exceed 15 millicuries per cell

Item 9 - Authorized Use

- A. (1) To be used with gas chromatography units for sample analysis.
- (2) Total number of foils on site to be equal to twice (2X) number of gas chromatography units.
- (3) Clean foils according to manufacturer's specifications and dispose liquid to sanitary sewer with continuous flush of H_2O .
- (4) Remove foils for cleaning and/or shipment for disposal to EDRO/WEAC, 109 Holton Street, Winchester, Mass., 01890, according to WEAC License Request, May 2, 1975.

- B. (1) To be used with gas chromatography units for sample analysis
- (2) Swipe test cells according to procedures outlined in EDRO/WEAC License Request of May 2, 1975.
- (3) Exchange intact cell(s) with WEAC for clean unit.

Item 12 - Ey Product Material shall be used by or under the supervision of the Laboratory Director or Pesticide Section Supervisor.

Health Physicist
EDRO/WEAC
109 Holton Street
Winchester, Mass.

May 1975

STANDARD OPERATING PROCEDURE (SOP)
for
HANDLING TRITIUM FOILS

- 1.1 PURPOSE AND SCOPE: A tritium foil is classified by the Nuclear Regulatory Commission as licensed radioactive material, and accountability is required. It is the purpose of this SOP to establish uniform guidelines for the procurement, possession, and disposal of tritium foils under an NRC license. Particularly applicable are sections 10CFR30.34 and 10CFR33.17(b).
- 2.1 PROCUREMENT: The Executive Director for Regional Operations (EDRO) of FDA purchases tritium foils in wholesale lots. The EDRO Districts may order foils by calling EDRO/WEAC at 617/729-5700 in Winchester, Mass. (Attn: Neil Gaeta). The order will be filled and shipped by this office. Users who work at the Bureau of Foods (BF-14) and have approval from the Isotopes Committee, may pick up foils at the Safety Office, FB-8.
- 3.1 ACCOUNTABILITY: EDRO/WEAC - This office will maintain a Log Book for the issuance of new foils; showing the vendor's serial number for each foil, the new location of the foil, the date of transfer, and the name of the new custodian. A copy of the Accountability Form will be mailed to EDRO, HRO-130, when the foils are shipped.

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3.2 ACCOUNTABILITY: DISTRICT LABORATORIES - Since District Offices maintain their own NRC licenses, the Districts are responsible for transferred material. To comply with the regulations, they must maintain records to show (a) the date of acquisition (b) the individual user, and (c) the disposition of the material. When District Offices receive foils, they will sign the pink copy of the Accountability Form (Appendix A) that will accompany the shipment, and return it to this Office, EDRO/WEAC (HFR-1300).

3.3 ACCOUNTABILITY OF SPENT FOILS: Spent foils will be returned to the Health Physicist, EDRO/WEAC. They are ultimately combined with other solid radioactive wastes, and shipped for land burial. The Health Physicist will issue a receipt when the foils are returned to him. Some 20% of the initial activity has been lost when foils are returned. Since each licensee is limited to 1 curie per year to the sewer, the distribution of this lost activity should be known.

3.4 TRITIUM FOIL ACCOUNTABILITY FORM: This form (Appendix A), in duplicate, will accompany shipments of new foils. The receiving officer will sign the pink copy and return it to this Office, EDRO/WEAC (HFR-1300) and retain the white copy for his files. In addition, white copies will be filed by this Office (until the pink copy is returned).

4.1 METHOD OF PACKAGING FOILS FOR SHIPMENT: Foils should be packed in a screw-top sample jar that displays the radiation symbol, listing the isotope as ^3H , the activity (number of foils times nominal activity per foil) and the date. The jar, in turn, should be suitably packed with wadding in a carton which is at least 4 by 4 by 4 inches. No radiation tag or symbol is required on the outer carton when tritium foils are shipped. However, the inner package must bear the words: Radioactive Material, No Outside Label Required.

4.2 METHOD OF SHIPMENT: Foils may be shipped as registered mail or by air express. The latter shipment cost the Government about \$9.00. The paperwork cost associated with a Government Bill of Lading (GBL) is estimated at \$25.00 which can be avoided by shipping via Railway or Federal Air Express. A special contract covering shipments makes the (GBL) unnecessary. Although a number of foils can be shipped as cheaply as one, field offices should not accumulate spent foils until their inventory exceeds their possession limit.

APPENDIX A

Food and Drug Administration
EDRO/WEAC
109 Holton Street
Winchester, Mass.

TRITIUM FOIL ACCOUNTABILITY FORM

INSTRUCTIONS:

1. Sign and date lower portion of pink copy and return upon receipt of your order.
2. Retain white copy for your records.

ISSUED TO:

PER REQUEST OF

DATE

FOIL #	RELATIVE INTENSITY	DATE OF SURVEY	INITIALS

RECEIPT:

THE TRITIUM FOILS DESCRIBED ABOVE WERE RECEIVED IN GOOD CONDITION.

SIGNATURE

DATE

RETURN TO:

NEIL GAETA, HEALTH PHYSICIST
EDRO/WEAC
109 HOLTON STREET
WINCHESTER, MASS. 01890

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MEMORANDUM

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

FOOD AND DRUG ADMINISTRATION
Winchester Engineering and Analytical Center
109 Holton Street, Winchester, Ma. 01890

TO : FDA Laboratories

DATE: May 1975

FROM : Neil Gaeta, Health Physicist
EDRO/WEAC

SUBJECT: Instructions for Swipe Test for Nickel-63 Detectors

General: Wipe tests are required at 6 month intervals on all ionization detectors containing ^{63}Ni sources.

The Certificate of Inspection supplied with the detector gives the initial wipe test results. This information should be maintained for inspection by NRC. Succeeding wipe tests must be performed at 6 month intervals from that date. All test results must be kept for NRC inspection.

Procedure:

1. Purchase cotton swabs for test; secure proper container for shipment.*
2. Moisten tip of the swab with solvent (methanol, acetone, benzene or hexane).
3. Grasp the holder; rub the moistened tip of the swab over the outside surfaces of the detector and all surfaces immediately adjacent to the detector. Be particularly careful to wipe the outlet tube terminus.

* Examples enclosed

Example of card to
be mailed with swipe Test
MAY 5/2/75

Nuclear 63 DETECTOR Certificate of Inspection	
District:	NRC License No.
Swipe Test	
Detector	
Type	
Model No.	
Serial No.	
Date of Swipe Test	By whom
Test Results	
Date of Test	microcuries
Amount of Contamination	
Next Swipe Test Required on	
Date Reported	Some
COMMENTS - PLACE ON BACK	

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CURRICULUM VITAE

NAME: Neil A. Gaeta
35 Grove Street
Medford, Massachusetts
(617) 488-7081

EDUCATION: B.S. Chemical Engineering - Tufts University, 1954
M.S. Chemical Engineering - MIT, 1956
M.S. Industrial Hygiene/Health Physics -
Harvard School of Public Health, 1961

EXPERIENCE: Badger Company, Cambridge, Mass. 6/54-9/55, 8/56-8/58
Process design of petroleum, chemical and petrochemical plants.

Petro-Chem. Dev. Co., New York City 10/58-2/59
Furnace and heater design for petroleum and chemical industries

Federal Power Commission, Charleston, W.Va. 2/59-9/60
Engineering analysis and cost-of-service for regulation of
natural gas industries. Preparation of testimony.

Public Health Service, Food & Drug Administration and
Bureau of Radiological Health, Winchester, Mass. 6/61-present
Health Physicist - Responsible activities over these past
16 years include the following:

- (a) Radiation Safety Officer at Winchester Laboratory and
seventeen (17) FDA District Labs; involves radio-
pharmaceuticals, x-ray facilities, non-ionizing radiation
units, (microwaves and lasers); electron captive detectors.
- (b) Chief, Technical Training Services for BRH, Winchester
Lab. - provided short courses in all phases of
radiation protection - basic radiation health, medical
x-ray, nuclear medicine, occupational radiation protection,
environmental gamma spectroscopy, emergency planning for
radition accidents. Provided training in nearly 100 courses
to over 2000 people.
- (c) Supervisor and Staff Engineer for the following programs:
 - (1) Analytical Quality Control Services - provided
quality assurance samples and radioactive standards to
the nuclear industry.
 - (2) Engineering Branch - compliance and survey testing
of x-ray machines, television receivers, microwave ovens.

SPECIAL QUALIFICATIONS AND SKILLS:

- (1) Certified Health Physicist, 1966, American Board of Health
Physics
- (2) Panel of Examiners, ABHP, 1974-1978
- (3) President, Board Directors, New England Chapter Health Physics
Society.

- (4) Chairman, Committee Education and Training
National Health Physics Society 1971-1974.
- (5) Industrial Advisory Panel, Nuclear Science Dept.
Wentworth Institute
- (6) Consultant on radiation protection to NASA,
Maritime Administration (nuclear ship N.S.
Savannah)
- (7) Evening School Professor, Nuclear Science and
Engineering Dept. University Lowell.
- (8) Consultant to hospitals in x-ray survey and nuclear
medicine radiation protection
- (9) Teaching Assistant, MIT and AEC Fellowship to Harvard
School Public Health
- (10) EEO Counselor, FDA/BRH
- (11) Member PHS, ACGIH, AAPM, SRE

PUBLICATIONS AND PRESENTATIONS:

Six (6) papers in radiation health field, numerous
presentations at professional society meetings.

SPECIAL COURSES:

Middle Management Courses, CSC
Fortran IV
Physics Diagnostic Radiology, Dr. Webster and AAPM
Microwave Theory and Measurement, Georgia Tech
Laser Theory and Measurement, BRH

OUTSIDE ACTIVITIES:

Manager/Coach Medford Little League and Youth Hockey
Assistant - St. Raphael Bingo Program
Area Representative - 1977 Tufts Alumni Fund Drive