

NRC Form 313 I (12-81) 10 CFR 30		U.S. NUCLEAR REGULATORY COMMISSION							
APPLICATION FOR BYPRODUCT MATERIAL LICENSE INDUSTRIAL		1. APPLICATION FOR: <i>(Check and/or complete as appropriate)</i>							
<i>See attached instructions for details.</i> <i>Completed applications are filed in duplicate with the Division of Fuel Cycle and Material Safety, Office of Nuclear Material Safety, and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555 or applications may be filed in person at the Commission's office at 1717 H Street, NW, Washington, D. C. or 7915 Eastern Avenue, Silver Spring, Maryland.</i>		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">a. NEW LICENSE</td> <td style="width: 50%;"></td> </tr> <tr> <td style="text-align: center;">b. AMENDMENT TO: LICENSE NUMBER</td> <td></td> </tr> <tr> <td style="text-align: center;">c. RENEWAL OF: LICENSE NUMBER</td> <td style="text-align: center;"> X 46-10100-02 </td> </tr> </table>		a. NEW LICENSE		b. AMENDMENT TO: LICENSE NUMBER		c. RENEWAL OF: LICENSE NUMBER	X 46-10100-02
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b. AMENDMENT TO: LICENSE NUMBER									
c. RENEWAL OF: LICENSE NUMBER	X 46-10100-02								
2. APPLICANT'S NAME <i>(Institution, firm, person, etc.)</i> U.S. Environmental Protection Agency Region 10 Laboratory TELEPHONE NUMBER: AREA CODE - NUMBER EXTENSION 206-442-0370		3. NAME AND TITLE OF PERSON TO BE CONTACTED REGARDING THIS APPLICATION Arnold R. Gahler, Laboratory Director TELEPHONE NUMBER: AREA CODE - NUMBER EXTENSION 206-442-0370							
4. APPLICANT'S MAILING ADDRESS <i>(Include Zip Code)</i> <i>(Address to which NRC correspondence, notices, bulletins, etc., should be sent.)</i> P.O. Box 549 Manchester, WA 98353		5. STREET ADDRESS WHERE LICENSED MATERIAL WILL BE USED <i>(Include Zip Code)</i> 7411 Beach Drive East Port Orchard, WA 98366							
(IF MORE SPACE IS NEEDED FOR ANY ITEM, USE ADDITIONAL PROPERLY KEYED PAGES.)									
6. INDIVIDUAL(S) WHO WILL USE OR DIRECTLY SUPERVISE THE USE OF LICENSED MATERIAL <i>(See Items 16 and 17 for required training and experience of each individual named below)</i>									
FULL NAME		TITLE							
a. Robert Henry Rieck		Chemist							
b. Phillip Roger Davis		Physical Science Technician							
c.									
7. RADIATION PROTECTION OFFICER Arnold Robert Gahler		<i>Attach a resume of person's training and experience as outlined in Items 16 and 17 and describe his responsibilities under Item 15.</i>							
8. LICENSED MATERIAL									
L I N E NO.	ELEMENT AND MASS NUMBER A	CHEMICAL AND/OR PHYSICAL FORM B	NAME OF MANUFACTURER AND MODEL NUMBER <i>(If Sealed Source)</i> C						
			MAXIMUM NUMBER OF MILLICURIES AND/OR SEALED SOURCES AND MAXIMUM ACTI- VITY PER SOURCE WHICH WILL BE POSSESSED AT ANY ONE TIME D						
(1)	Hydrogen-3	Titanium Tritide Foils	SLC Model 508-3						
(2)	Nickel-63	Plated Foil	Tracor detector cell 114400-3201						
(3)	Nickel-63	Plated Foil	Tracor detector cell 111019-001						
(4)	Nickel-63	Plated Foil	NER-004. Tracor cell 115500						
			Not to exceed 250 Millicuries per source						
			Not to exceed 20 Millicuries per source						
			Not to exceed 20 Millicuries per source						
			Not to exceed 20 Millicuries per source						
DESCRIBE USE OF LICENSED MATERIAL E									
(1)	For use in Tracor MT222 gas chromatograph for sample analysis.								
(2)	For use in Tracor MT222 gas	"	" " " "						
(3)	For use in Tracor MT222 gas	"	" " " "						
(4)	For use in Tracor 570 gas	"	" " " "						

9. STORAGE OF SEALED SOURCES

LINE NO.	CONTAINER AND/OR DEVICE IN WHICH EACH SEALED SOURCE WILL BE STORED OR USED. A.	NAME OF MANUFACTURER B.	MODEL NUMBER C.
(1)	Storage in devices only		
(2)	Reference item 8		
(3)			
(4)			

10. RADIATION DETECTION INSTRUMENTS

LINE NO.	TYPE OF INSTRUMENT A.	MANUFACTURER'S NAME B.	MODEL NUMBER C.	NUMBER AVAILABLE D.	RADIATION DETECTED (alpha, beta, gamma, neutron) E.	SENSITIVITY RANGE (milliroentgens/hour or counts/minute) F.
(1)	N/A					
(2)						
(3)						
(4)						

11. CALIBRATION OF INSTRUMENTS LISTED IN ITEM 10

<input type="checkbox"/> a. CALIBRATED BY SERVICE COMPANY NAME, ADDRESS, AND FREQUENCY N/A	<input type="checkbox"/> b. CALIBRATED BY APPLICANT <i>Attach a separate sheet describing method, frequency and standards used for calibrating instruments.</i>
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12. PERSONNEL MONITORING DEVICES

TYPE (Check and/or complete as appropriate.) A.	SUPPLIER (Service Company) B.	EXCHANGE FREQUENCY C.
<input type="checkbox"/> (1) FILM BADGE <input type="checkbox"/> (2) THERMOLUMINESCENCE DOSIMETER (TLD) <input type="checkbox"/> (3) OTHER (Specify): _____ _____ _____	N/A	<input type="checkbox"/> MONTHLY <input type="checkbox"/> QUARTERLY <input type="checkbox"/> OTHER (Specify): _____ _____ _____

13. FACILITIES AND EQUIPMENT (Check where appropriate and attach annotated sketch(es) and description(s).)

- ☒ a. LABORATORY FACILITIES, PLANT FACILITIES, FUME HOODS (Include filtration, if any), ETC.
- ☐ b. STORAGE FACILITIES, CONTAINERS, SPECIAL SHIELDING (fixed and/or temporary), ETC.
- ☐ c. REMOTE HANDLING TOOLS OR EQUIPMENT, ETC.
- ☐ d. RESPIRATORY PROTECTIVE EQUIPMENT, ETC.

14. WASTE DISPOSAL

- a. NAME OF COMMERCIAL WASTE DISPOSAL SERVICE EMPLOYED
Return of source to supplier
- b. IF COMMERCIAL WASTE DISPOSAL SERVICE IS NOT EMPLOYED, SUBMIT A DETAILED DESCRIPTION OF METHODS WHICH WILL BE USED FOR DISPOSING OF RADIOACTIVE WASTES AND ESTIMATES OF THE TYPE AND AMOUNT OF ACTIVITY INVOLVED. IF THE APPLICATION IS FOR SEALED SOURCES AND DEVICES AND THEY WILL BE RETURNED TO THE MANUFACTURER, SO STATE

15. RADIATION PROTECTION PROGRAM

a. Leak testing sealed sources

A commercial leak-test Kit supplied by Tracor (Tracor Part No. 111131-0001) is used for the wipe tests. Wipe tests are performed every 6 months by R. Rieck for the nickel-63 foil detector and sent to Tracor for evaluation.

Instructions for conducting the wipe test are supplied with test Kits and are maintained in file with test results.

b. Gas chromatographic detector cells are serviced, if necessary, by the following organizations:

Hydrogen-3 Detectors
Detector Service Center
P.O. Box 1044
Cary, NC 27511
(919) 469-0259
NRC License 092-660-1

Nickel-63 Detectors
Tracor Instruments Group
6500 Tracor Lane
Austin, Texas 78721

c. Temperature control devices are installed on each gas chromatograph to prevent excess temperature exposure for the tritium or nickel foil.

Since leak tests are unnecessary to the tritium foil, the condition of the source will be checked semi-annually by measuring the ionization current of the cell under repeatable conditions of carrier gas flow and cell voltage.

RESPONSIBILITIES of RPO

- a. Ensures that detectors remain in instrumentation except for servicing. Use of devices is limited to gas chromatography. Instrumentation remains in a permanent location in the laboratory.
- b. Ensures that devices are shipped properly when removed for servicing by reputable servicing organizations. Entire device is shipped, not radioactive foil.

- c. Ensures that periodic leak tests are conducted, standards are met, records filed and reviewed for compliance with NRC regulations, requirements, and license conditions.
- d. RPO and R. Rieck home phones are on laboratory telephone alarm for both fire and security. Names and phone numbers are posted near instruments and other parts of building for contact in the event of an emergency. Building maintenance personnel are also on emergency phone.
- e. All laboratory personnel are given an annual physical examination by EPA. RPO coordinates this with EPA Regional Safety Officer.
- f. Written instructions have been issued to users of gas chromatographs with detectors that the devices will be removed from the instrument only for purposes of shipping for servicing, if required.

Instructions also include emergency procedures in case of accident and personnel to contact.

- g. Detector cells with hydrogen-3 have not been vented since this was not formerly required. The laboratory contains a hood certified annually by EPA for performance. Ventilation is single pass to atmosphere. Venting can be arranged if necessary.

16. Formal Training Radiation Safety

R.H. Rieck - None

In-house training only.

P.R. Davis - None

A.R. Gahler

Courses: 1. Radioactive Tracer Methods (4 hours credit
including Laboratory)

Oregon State University, 1965

Dr. C.H. Wang, Director of the Radiation Center

2. Properties of Ionizing Radiation
University of Buffalo, 1959

It is anticipated that EPA will be offering a training course for personnel involved with radioisotopes in laboratory and field instrumentation.

17. Experience

- R. H. Rieck - No experience with radiation. 15 years gas chromatography experience with detectors containing radioisotopes.
- P. R. Davis - No experience with radiation. Limited experience with gas chromatography
- A. R. Gahler - Performed laboratory studies on degradation of C-14 tagged NTA in environmental samples such as lake sediment and water. Low levels used for a year at EPA laboratory, Corvallis, Oregon.

Laboratory experience with gas chromatographs using detectors containing radioisotopes.

Supervised laboratory at Union Carbide Corp. handling isotopes in a radiation section. Isotopes handled:

Tritium - (low levels)

Sulfur - 35 (10 mc)

Zirconium - 95 (low levels)

These were used to study efficiency of analytical separations.

INSTRUCTIONS FOR USING PART #111131-0001 WIPE
TEST KITS FOR NICKEL 63 DETECTORS

1. WIPE TEST ARE REQUIRED AT 6 MONTH INTERVALS ON ALL IONIZATION DETECTORS CONTAINING NI₆₃ SOURCES. ALL DETECTORS CONTAINING NI₆₃ ARE SHIPPED WITH TWO WIPE TEST KITS AND A CERTIFICATE OF INSPECTION.
2. THE CERTIFICATE OF INSPECTION SUPPLIED WITH THE DETECTOR GIVES THE RESULTS OF INITIAL WIPE TESTS PERFORMED ON THE OUTSIDE SURFACES OF THE DETECTOR PRIOR TO SHIPMENT. THIS INFORMATION SHOULD BE MAINTAINED FOR INSPECTION BY THE AEC.
3. TWO WIPE TEST KITS ARE INCLUDED TO COVER THE FIRST YEAR'S OPERATION OF THE DETECTOR. ONE WIPE TEST SHOULD BE PERFORMED ON THE DATE SPECIFIED ON THE CERTIFICATE OF INSPECTION. THE SECOND WIPE TEST SHOULD BE PERFORMED SIX MONTHS LATER.
4. ADDITIONAL WIPE TEST KITS (TRACOR PART NUMBER 111131-0001) FOR SUBSEQUENT SURVEYS ARE AVAILABLE FROM:

TRACOR, INC.
6500 TRACOR LANE
AUSTIN, TEXAS 78721

THE WIPE TEST PROCEDURE IS AS FOLLOWS:

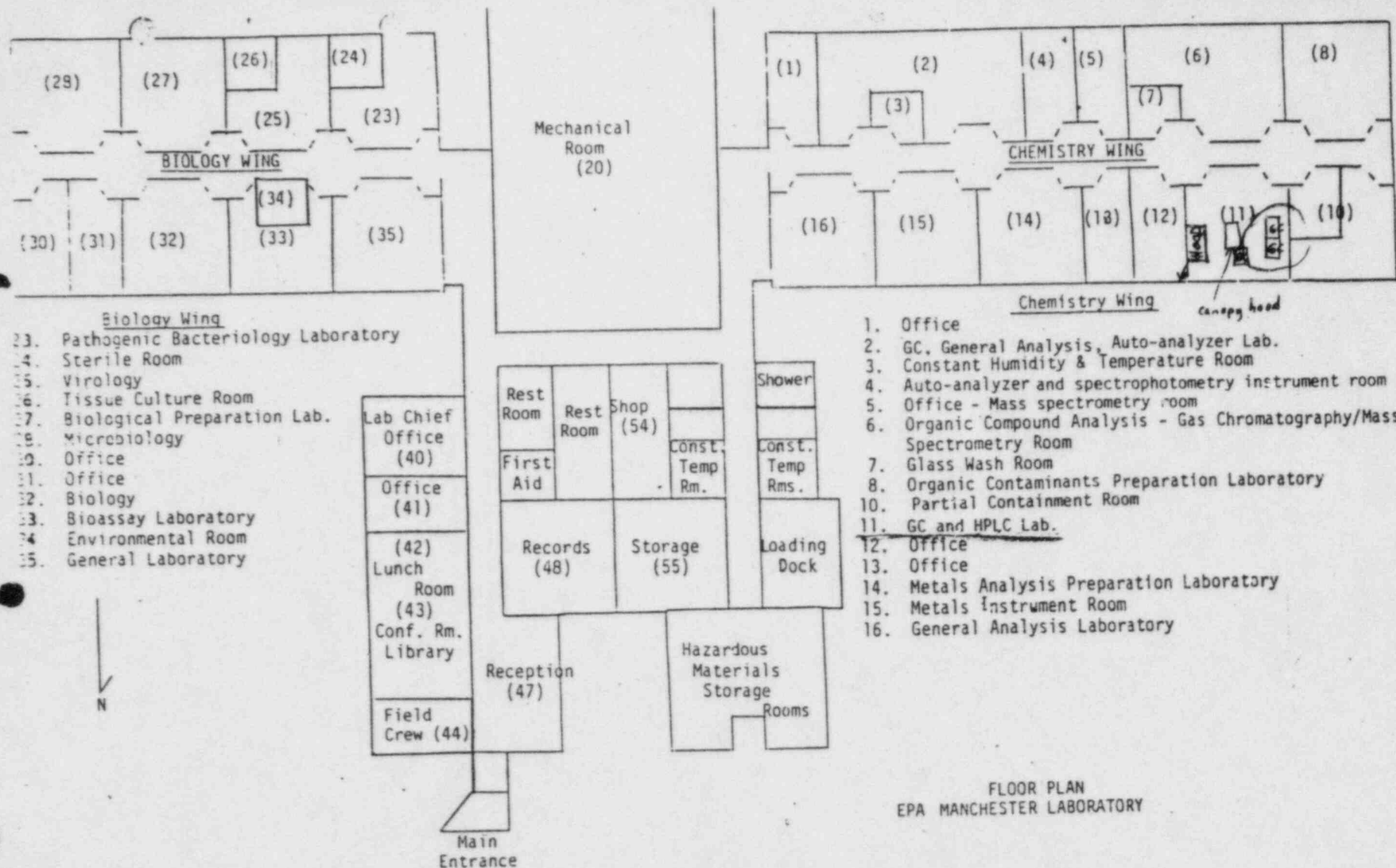
- STEP 1. REMOVE THE SWAB FROM THE PLASTIC CASE.
- STEP 2. MOISTEN THE TIP OF THE SWAB WITH THE SOLVENT PROVIDED IN THE SMALL BROWN BOTTLE.
- STEP 3. GRASPING THE HOLDER, RUB THE MOISTENED TIP OF THE SWAB OVER THE OUTSIDE SURFACES OF THE DETECTOR AND ALL SURFACES IMMEDIATELY ADJACENT TO THE DETECTOR. BE PARTICULARLY CAREFUL TO WIPE THE OUTLET TUBE TERMINUS.
- STEP 4. REPLACE THE SWAB IN THE PLASTIC CASE, BEING CAREFUL NOT TO TOUCH THE COTTON TIP TO THE PLASTIC.
- STEP 5. FILL IN THE INFORMATION REQUESTED BELOW.
- STEP 6. PLACE THIS SHEET ALONG WITH THE PLASTIC CASE CONTAINING THE SWAB IN THE SHIPPING CONTAINER PROVIDED AND MAIL BY THE PARCEL POST TO:

TRACOR, INC.
6500 TRACOR LANE
AUSTIN, TEXAS 78721
ATTN: RADIATION OFFICER

DATE OF SWAB TEST _____
DETECTOR SERIAL NO. _____

SIZE A	CODE IDENT NO. 19397	112619	-
SCALE		SHEET	2

No laboratory air is recycled to the building.



INFORMATION REQUIRED FOR ITEMS 15, 16 AND 17

Describe in detail the information required for Items 15, 16 and 17. Begin each item on a separate page and key to the application as follows:


15. **RADIATION PROTECTION PROGRAM.** Describe the radiation protection program as appropriate for the material to be used including the duties and responsibilities of the Radiation Protection Officer, control measures, bioassay procedures *(if needed)*, day-to-day general safety instruction to be followed, etc. If the application is for sealed source's also submit leak testing procedures, or if leak testing will be performed using a leak test kit, specify manufacturer and model number of the leak test kit.
16. **FORMAL TRAINING IN RADIATION SAFETY.** Attach a resume for each individual named in Items 6 and 7. Describe individual's formal training in the following areas where applicable. Include the name of person or institution providing the training, duration of training, when training was received, etc.
 - a. Principles and practices of radiation protection.
 - 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.
17. **EXPERIENCE.** Attach a resume for each individual named in Items 6 and 7. Describe individual's work experience with radiation, including where experience was obtained. Work experience or on-the-job training should be commensurate with the proposed use. Include list of radioisotopes and maximum activity of each used.

18. CERTIFICATE

(This item must be completed by applicant)

The applicant and any official executing this certificate on behalf of the applicant named in Item 2, 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.

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.

a. LICENSE FEE REQUIRED <i>(See Section 170.31, 10 CFR 170)</i> <div style="text-align: center;">N/A</div>	b. CERTIFYING OFFICIAL <i>(Signature)</i>  <hr/> c. NAME <i>(Type or print)</i> <div style="text-align: center;">Arnold R. Gahler</div>
(1) LICENSE FEE CATEGORY: <div style="text-align: center;">N/A</div>	d. TITLE <div style="text-align: center;">Laboratory Director</div>
(2) LICENSE FEE ENCLOSED: \$	e. DATE <div style="text-align: center;">9/27/83</div>