

## EXHIBIT A

| FORM NRC-313M<br>(8-78)<br>10 CFR 35  | U.S. NUCLEAR REGULATORY COMMISSION<br><b>APPLICATION FOR MATERIALS LICENSE – MEDICAL</b> |  | Approved:<br>GAO R0557  |                   |                           |   |   |  |  |   |  |  |  |  |  |   |  |  |   |  |  |  |  |  |
|---|--|--|---|-------------------|---------------------------|---|---|--|--|---|--|--|--|--|--|---|--|--|---|--|--|--|--|--|
| <b>INSTRUCTIONS</b> – Complete Items 1 through 26 if this is an initial application or an application for renewal of a license. Use supplemental sheets where necessary. Item 26 must be completed on all applications and signed. Retain one copy. Submit original and one copy of entire application to: Director, Office of Nuclear Materials Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Upon approval of this application, the applicant will receive a Materials License. An NRC Materials 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, Parts 19, 20 and 35 and the license fee provision of Title 10, Code of Federal Regulations, Part 170. The license fee category should be stated in Item 26 and the appropriate fee enclosed. |  |  |   |                   |                           |   |   |  |  |   |  |  |  |  |  |   |  |  |   |  |  |  |  |  |
| 1.a. NAME AND MAILING ADDRESS OF APPLICANT (institution, firm, clinic, physician, etc.) INCLUDE ZIP CODE<br><br>Gary B. Robnett, M.D.<br><u>VA Medical Center</u><br>American Lake, Tacoma, WA 98493<br><br>TELEPHONE NO.: AREA CODE (206) 582 8440 ext. 6610   |  | 1.b. STREET ADDRESS(ES) AT WHICH RADIOACTIVE MATERIAL WILL BE USED (If different from 1.a.) INCLUDE ZIP CODE<br><br>Same as 1.a.<br><br><div style="text-align: right; font-size: 1.2em;">L &amp; L 19584</div>  |   |                   |                           |   |   |  |  |   |  |  |  |  |  |   |  |  |   |  |  |  |  |  |
| 2. PERSON TO CONTACT REGARDING THIS APPLICATION<br><br>Gary B. Robnett, M.D.<br><br>TELEPHONE NO.: AREA CODE (206) 582 8440 ext. 6610   |  | 3. THIS IS AN APPLICATION FOR: (Check appropriate item)<br>a. <input checked="" type="checkbox"/> NEW LICENSE<br>b. <input type="checkbox"/> AMENDMENT TO LICENSE NO. _____<br>c. <input type="checkbox"/> RENEWAL OF LICENSE NO. _____  |   |                   |                           |   |   |  |  |   |  |  |  |  |  |   |  |  |   |  |  |  |  |  |
| 4. INDIVIDUAL USERS (Name individuals who will use or directly supervise use of radioactive material. Complete Supplements A and B for each individual.)<br><br>Gary B. Robnett, M.D.<br>(Also see Addendum 2 to Supplement A)  |  | 5. RADIATION SAFETY OFFICER (RSO) (Name of person designated as radiation safety officer. If other than individual user, complete resume of training and experience as in Supplement A.)<br><br>Same as 4.<br><br><div style="text-align: right; font-size: 1.2em;">30-18926</div> |   |                   |                           |   |   |  |  |   |  |  |  |  |  |   |  |  |   |  |  |  |  |  |
| 6.a. RADIOACTIVE MATERIAL FOR MEDICAL USE   |  |  |   |                   |                           |   |   |  |  |   |  |  |  |  |  |   |  |  |   |  |  |  |  |  |
| RADIOACTIVE MATERIAL LISTED IN:   | ITEMS DESIRED<br>"X"   | MAXIMUM POSSESSION LIMITS<br>(In millicuries)  | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">ADDITIONAL ITEMS:</th> <th style="width: 10%;">MARK ITEMS DESIRED<br/>"X"</th> <th style="width: 30%;">MAXIMUM POSSESSION LIMITS<br/>(In millicuries)</th> </tr> </thead> <tbody> <tr> <td>IODINE-131 AS IODIDE FOR TREATMENT OF HYPERTHYROIDISM</td> <td></td> <td></td> </tr> <tr> <td>PHOSPHORUS-32 AS SOLUBLE PHOSPHATE FOR TREATMENT OF POLYCYTHEMIA VERA, LEUKEMIA AND BONE METASTASES</td> <td></td> <td></td> </tr> <tr> <td>PHOSPHORUS-32 AS COLLOIDAL CHROMIC PHOSPHATE FOR INTRACAVITARY TREATMENT OF MALIGNANT EFFUSIONS.</td> <td></td> <td></td> </tr> <tr> <td>GOLD-198 AS COLLOID FOR INTRACAVITARY TREATMENT OF MALIGNANT EFFUSIONS.</td> <td></td> <td></td> </tr> <tr> <td>IODINE-131 AS IODIDE FOR TREATMENT OF THYROID CARCINOMA</td> <td></td> <td></td> </tr> <tr> <td>XENON-133 AS GAS OR GAS IN SALINE FOR BLOOD FLOW STUDIES AND PULMONARY FUNCTION STUDIES.</td> <td></td> <td></td> </tr> </tbody> </table> | ADDITIONAL ITEMS: | MARK ITEMS DESIRED<br>"X" | MAXIMUM POSSESSION LIMITS<br>(In millicuries) | IODINE-131 AS IODIDE FOR TREATMENT OF HYPERTHYROIDISM |  |  | PHOSPHORUS-32 AS SOLUBLE PHOSPHATE FOR TREATMENT OF POLYCYTHEMIA VERA, LEUKEMIA AND BONE METASTASES |  |  | PHOSPHORUS-32 AS COLLOIDAL CHROMIC PHOSPHATE FOR INTRACAVITARY TREATMENT OF MALIGNANT EFFUSIONS. |  |  | GOLD-198 AS COLLOID FOR INTRACAVITARY TREATMENT OF MALIGNANT EFFUSIONS. |  |  | IODINE-131 AS IODIDE FOR TREATMENT OF THYROID CARCINOMA |  |  | XENON-133 AS GAS OR GAS IN SALINE FOR BLOOD FLOW STUDIES AND PULMONARY FUNCTION STUDIES. |  |  |
| ADDITIONAL ITEMS:   | MARK ITEMS DESIRED<br>"X"  | MAXIMUM POSSESSION LIMITS<br>(In millicuries)  |   |                   |                           |   |   |  |  |   |  |  |  |  |  |   |  |  |   |  |  |  |  |  |
| IODINE-131 AS IODIDE FOR TREATMENT OF HYPERTHYROIDISM   |  |  |   |                   |                           |   |   |  |  |   |  |  |  |  |  |   |  |  |   |  |  |  |  |  |
| PHOSPHORUS-32 AS SOLUBLE PHOSPHATE FOR TREATMENT OF POLYCYTHEMIA VERA, LEUKEMIA AND BONE METASTASES   |  |  |   |                   |                           |   |   |  |  |   |  |  |  |  |  |   |  |  |   |  |  |  |  |  |
| PHOSPHORUS-32 AS COLLOIDAL CHROMIC PHOSPHATE FOR INTRACAVITARY TREATMENT OF MALIGNANT EFFUSIONS.  |  |  |   |                   |                           |   |   |  |  |   |  |  |  |  |  |   |  |  |   |  |  |  |  |  |
| GOLD-198 AS COLLOID FOR INTRACAVITARY TREATMENT OF MALIGNANT EFFUSIONS.   |  |  |   |                   |                           |   |   |  |  |   |  |  |  |  |  |   |  |  |   |  |  |  |  |  |
| IODINE-131 AS IODIDE FOR TREATMENT OF THYROID CARCINOMA   |  |  |   |                   |                           |   |   |  |  |   |  |  |  |  |  |   |  |  |   |  |  |  |  |  |
| XENON-133 AS GAS OR GAS IN SALINE FOR BLOOD FLOW STUDIES AND PULMONARY FUNCTION STUDIES.  |  |  |   |                   |                           |   |   |  |  |   |  |  |  |  |  |   |  |  |   |  |  |  |  |  |
| 10 CFR 31.11 FOR IN VITRO STUDIES   |  |  |   |                   |                           |   |   |  |  |   |  |  |  |  |  |   |  |  |   |  |  |  |  |  |
| 10 CFR 35.100, SCHEDULE A, GROUP I  |  | AS NEEDED  |   |                   |                           |   |   |  |  |   |  |  |  |  |  |   |  |  |   |  |  |  |  |  |
| 10 CFR 35.100, SCHEDULE A, GROUP II   |  | AS NEEDED  |   |                   |                           |   |   |  |  |   |  |  |  |  |  |   |  |  |   |  |  |  |  |  |
| 10 CFR 35.100, SCHEDULE A, GROUP III  | X  | 2,000  |   |                   |                           |   |   |  |  |   |  |  |  |  |  |   |  |  |   |  |  |  |  |  |
| 10 CFR 35.100, SCHEDULE A, GROUP IV   |  | AS NEEDED  |   |                   |                           |   |   |  |  |   |  |  |  |  |  |   |  |  |   |  |  |  |  |  |
| 10 CFR 35.100, SCHEDULE A, GROUP V  |  | AS NEEDED  |   |                   |                           |   |   |  |  |   |  |  |  |  |  |   |  |  |   |  |  |  |  |  |
| 10 CFR 35.100, SCHEDULE A, GROUP VI   |  |  |   |                   |                           |   |   |  |  |   |  |  |  |  |  |   |  |  |   |  |  |  |  |  |
| 6.b. RADIOACTIVE MATERIAL FOR USES NOT LISTED IN ITEM 6.a. (Sealed sources up to 3 mCi used for calibration and reference standards are authorized under Section 35.14(d), 10 CFR Part 35, and NEED NOT BE LISTED.)   |  |  |   |                   |                           |   |   |  |  |   |  |  |  |  |  |   |  |  |   |  |  |  |  |  |
| ELEMENT AND MASS NUMBER   | CHEMICAL AND/OR PHYSICAL FORM  | MAXIMUM NUMBER OF MILLICURIES OF EACH FORM   | DESCRIBE PURPOSE OF USE   |                   |                           |   |   |  |  |   |  |  |  |  |  |   |  |  |   |  |  |  |  |  |
| Thallium 201  | Thallous Chloride<br>Tl201   | 5 mCi  | Myocardial imaging  |                   |                           |   |   |  |  |   |  |  |  |  |  |   |  |  |   |  |  |  |  |  |

 FORM NRC-313M  
 (8-78)

 8012050298  
 3098

05745

# INFORMATION REQUIRED FOR ITEMS 7 THROUGH 23

For Items 7 through 23, check the appropriate box(es) and submit a detailed description of all the requested information. Begin each item on a separate sheet. Identify the item number and the date of the application in the lower right corner of each page. If you indicate that an appendix to the medical licensing guide will be followed, do not submit the pages, but specify the revision number and date of the referenced guide: Regulatory Guide 10.8, Rev. \_\_\_\_\_ Date: Jan 79

|   |   |  |  |
|---|---|--|--|
| 7. MEDICAL ISOTOPES COMMITTEE   |   | 15. GENERAL RULES FOR THE SAFE USE OF RADIOACTIVE MATERIAL (Check One)               |  |
| <input checked="" type="checkbox"/>   | Names and Specialties Attached; and   | <input checked="" type="checkbox"/>  | Appendix G Rules Followed; or                        |
| <input checked="" type="checkbox"/>   | Duties as in Appendix B; or _____ (Check One)                               |  | Equivalent Rules Attached                            |
|   | Equivalent Duties Attached  | 16. EMERGENCY PROCEDURES (Check One)   |  |
| 8. TRAINING AND EXPERIENCE  |   | <input checked="" type="checkbox"/>  | Appendix H Procedures Followed; or                   |
| <input checked="" type="checkbox"/>   | Supplements A & B Attached for Each Individual User; and                    |  | Equivalent Procedures Attached                       |
|   | Supplement A Attached for RSO.  | 17. AREA SURVEY PROCEDURES (Check One)   |  |
| 9. INSTRUMENTATION (Check One)  |   | <input checked="" type="checkbox"/>  | Appendix I Procedures Followed; or                   |
| <input checked="" type="checkbox"/>   | Appendix C Form Attached; or  |  | Equivalent Procedures Attached                       |
|   | List by Name and Model Number   | 18. WASTE DISPOSAL (Check One)   |  |
| 10. CALIBRATION OF INSTRUMENTS  |   | <input checked="" type="checkbox"/>  | Appendix J Form Attached; or                         |
| <input checked="" type="checkbox"/>   | Appendix D Procedures Followed for Survey Instruments; or _____ (Check One) |  | Equivalent Information Attached                      |
|   | Equivalent Procedures Attached; and   | 19. THERAPEUTIC USE OF RADIOPHARMACEUTICALS (Check One)                              |  |
| <input checked="" type="checkbox"/>   | Appendix D Procedures Followed for Dose Calibrator; or _____ (Check One)    |  | Appendix K Procedures Followed; or                   |
|   | Equivalent Procedures Attached  |  | Equivalent Procedures Attached                       |
| 11. FACILITIES AND EQUIPMENT  |   | 20. THERAPEUTIC USE OF SEALED SOURCES  |  |
| <input checked="" type="checkbox"/>   | Description and Diagram Attached  |  | Detailed Information Attached; and                   |
| 12. PERSONNEL TRAINING PROGRAM  |   |  | Appendix L Procedures Followed; or _____ (Check One) |
| <input checked="" type="checkbox"/>   | Description of Training Attached  |  | Equivalent Procedures Attached                       |
| 13. PROCEDURES FOR ORDERING AND RECEIVING RADIOACTIVE MATERIAL                          |   | 21. PROCEDURES AND PRECAUTIONS FOR USE OF RADIOACTIVE GASES (e.g., Xenon - 133)      |  |
| <input checked="" type="checkbox"/>   | Detailed Information Attached   |  | Detailed Information Attached                        |
| 14. PROCEDURES FOR SAFELY OPENING PACKAGES CONTAINING RADIOACTIVE MATERIALS (Check One) |   | 22. PROCEDURES AND PRECAUTIONS FOR USE OF RADIOACTIVE MATERIAL IN ANIMALS            |  |
| <input checked="" type="checkbox"/>   | Appendix F Procedures Followed; or  | <input checked="" type="checkbox"/>  | Detailed Information Attached                        |
|   | Equivalent Procedures Attached  | 23. PROCEDURES AND PRECAUTIONS FOR USE OF RADIOACTIVE MATERIAL SPECIFIED IN ITEM 6.b |  |
|   |   |  | Detailed Information Attached                        |

| 24. PERSONNEL MONITORING DEVICES               |                                     |                        |                                    |         |
|--|-------------------------------------|------------------------|------------------------------------|---------|
| TYPE<br><small>(Check appropriate box)</small> |                                     | SUPPLIER               | EXCHANGE FREQUENCY                 |         |
| a. WHOLE BODY                                  | <input checked="" type="checkbox"/> | FILM                   | U.S. Testing Company, Richland, WA | Monthly |
|  | <input type="checkbox"/>            | TLD                    |                                    |         |
|  | <input type="checkbox"/>            | OTHER <i>(Specify)</i> |                                    |         |
| b. FINGER                                      | <input checked="" type="checkbox"/> | FILM                   | Same as above                      | Monthly |
|  | <input type="checkbox"/>            | TLD                    |                                    |         |
|  | <input type="checkbox"/>            | OTHER <i>(Specify)</i> |                                    |         |
| c. WRIST                                       | <input type="checkbox"/>            | FILM                   |                                    |         |
|  | <input type="checkbox"/>            | TLD                    |                                    |         |
|  | <input type="checkbox"/>            | OTHER <i>(Specify)</i> |                                    |         |
| d. OTHER <i>(Specify)</i>                      |                                     |                        |                                    |         |

| 25. FOR PRIVATE PRACTICE APPLICANTS ONLY                                |  |  |  |          |
|---|--|--|--|----------|
| a. HOSPITAL AGREEING TO ACCEPT PATIENTS CONTAINING RADIOACTIVE MATERIAL |  |  |  |          |
| NAME OF HOSPITAL<br><br>MAILING ADDRESS<br><br>CITY                     |  |  | a. ATTACH A COPY OF THE AGREEMENT LETTER SIGNED BY THE HOSPITAL ADMINISTRATOR.<br><br>c. WHEN REQUESTING THERAPY PROCEDURES, ATTACH A COPY OF RADIATION SAFETY PRECAUTIONS TO BE TAKEN AND LIST AVAILABLE RADIATION DETECTION INSTRUMENTS. |          |
|   |  |  | STATE  | ZIP CODE |

| 26. CERTIFICATE<br><small>(This item must be completed by applicant)</small>  |  |
|---|--|
| The applicant and any official executing this certificate on behalf of the applicant named in Item 1a certify that this application is prepared in conformity with Title 10, Code of Federal Regulations, Parts 30 and 35, and that all information contained herein, including any supplements attached hereto, is true and correct to the best of our knowledge and belief. |  |
| a. LICENSE FEE REQUIRED<br><small>(See Section 170.31, 10 CFR 170)</small>  | b. APPLICANT OR CERTIFYING OFFICIAL <i>(Signature)</i><br>(1) NAME <i>(Type of Print)</i><br>WILLIAM E. CLAYPOOL |
| (1) LICENSE FEE CATEGORY:<br>Not Applicable   | (2) TITLE<br>Medical Center Director   |
| (2) LICENSE FEE ENCLOSED: \$  | c. DATE<br>October 24, 1980  |

## PRIVACY ACT STATEMENT

Pursuant to 5 U.S.C. 552a(e)(3), enacted into law by section 3 of the Privacy Act of 1974 (Public Law 93-579), the following statement is furnished to individuals who supply information to the Nuclear Regulatory Commission on Form NRC-313M. This information is maintained in a system of records designated as NRC-3 and described at 40 Federal Register 45334 (October 1, 1975).

1. **AUTHORITY** Sections 81 and 161(b) of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2111 and 2201(b)).
2. **PRINCIPAL PURPOSE(S)** The information is evaluated by the NRC staff pursuant to the criteria set forth in 10 CFR Parts 30-36 to determine whether the application meets the requirements of the Atomic Energy Act of 1954, as amended, and the Commission's regulations, for the issuance of a radioactive material license or amendment thereof.
3. **ROUTINE USES** The information may be used: (a) to provide records to State health departments for their information and use; and (b) to provide information to Federal, State, and local health officials and other persons in the event of incident or exposure, for their information, investigation, and protection of the public health and safety. The information may also be disclosed to appropriate Federal, State, and local agencies in the event that the information indicates a violation or potential violation of law and in the course of an administrative or judicial proceeding. In addition, this information may be transferred to an appropriate Federal, State, or local agency to the extent relevant and necessary for a NRC decision or to an appropriate Federal agency to the extent relevant and necessary for that agency's decision about you. A copy of the license issued will routinely be placed in the NRC's Public Document Room, 1717 H Street, N.W., Washington, D.C.
4. **WHETHER DISCLOSURE IS MANDATORY OR VOLUNTARY AND EFFECT ON INDIVIDUAL OF NOT PROVIDING INFORMATION** Disclosure of the requested information is voluntary. If the requested information is not furnished, however, the application for radioactive material license, or amendment thereof, will not be processed.
5. **SYSTEM MANAGER(S) AND ADDRESS** Director, Division of Fuel Cycle and Material Safety, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.



MEDICAL ISOTOPES COMMITTEE

Gary B. Robnett, M.D.

Radiology

Louis Zibelli, M.D.

Cardiology

Carl Gerber, M.D., Ph.D.

Neurology, Psychiatry  
Chief of Staff

TRAINING AND EXPERIENCE  
AUTHORIZED USER OR RADIATION SAFETY OFFICER

|   |  |
|---|--|
| 1. NAME OF AUTHORIZED USER OR RADIATION SAFETY OFFICER<br><br>Gary B. Robnett, M.D. | 2. STATE OR TERRITORY IN WHICH LICENSED TO PRACTICE MEDICINE<br>WA |
|---|--|

| 3. CERTIFICATION                |               |                               |
|---------------------------------|---------------|-------------------------------|
| SPECIALTY BOARD<br>A            | CATEGORY<br>B | MONTH AND YEAR CERTIFIED<br>C |
| The American Board of Radiology | Radiology     | June 1975                     |

| 4. TRAINING RECEIVED IN BASIC RADIOISOTOPE HANDLING TECHNIQUES        |  |   |  |
|---|--|---|--|
| FIELD OF TRAINING<br>A  | LOCATION AND DATE(S) OF TRAINING<br>B                                | TYPE AND LENGTH OF TRAINING                       |  |
|   |  | LECTURE/<br>LABORATORY<br>COURSES<br>(Hours)<br>C | SUPERVISED<br>LABORATORY<br>EXPERIENCE<br>(Hours)<br>D |
| a. RADIATION PHYSICS AND INSTRUMENTATION                              | Radiology Residency<br>Fitzsimons Army Medical<br>Center, Denver, CO |   |  |
| b. RADIATION PROTECTION   | Sep 69 - Jun 72<br>(See Enclosed Supplement<br>A Form AEC-313a)      |   |  |
| c. MATHEMATICS PERTAINING TO THE USE AND MEASUREMENT OF RADIOACTIVITY | "  |   |  |
| d. RADIATION BIOLOGY  | "  |   |  |
| e. RADIOPHARMACEUTICAL CHEMISTRY                                      | "  |   |  |

| 5. EXPERIENCE WITH RADIATION. (Actual use of Radioisotopes or Equivalent Experience) |                |  |                        |             |
|--|----------------|--|------------------------|-------------|
| ISOTOPE  | MAXIMUM AMOUNT | WHERE EXPERIENCE WAS GAINED  | DURATION OF EXPERIENCE | TYPE OF USE |
|  |                | See 4 above and attached<br>sheet of experience in<br>past 1½ years. |                        |             |

PRECEPTOR STATEMENT

Supplement B must be completed by the applicant physician's preceptor. If more than one preceptor is necessary to document experience, obtain a separate statement from each.

|   |       |          |   |
|---|-------|----------|---|
| 1. APPLICANT PHYSICIAN'S NAME AND ADDRESS |       |          | <b>KEY TO COLUMN C</b><br><b>PERSONAL PARTICIPATION SHOULD CONSIST OF:</b><br>1-Supervised examination of patients to determine the suitability for radioisotope diagnosis and/or treatment and recommendation for prescribed dosage.<br>2-Collaboration in dose calibration and actual administration of dose to the patient including calculation of the radiation dose, related measurements and plotting of data.<br>3-Adequate period of training to enable physician to manage radioactive patients and follow patients through diagnosis and/or course of treatment. |
| FULL NAME                                 |       |          |   |
| STREET ADDRESS                            |       |          |   |
| CITY                                      | STATE | ZIP CODE |   |

2. CLINICAL TRAINING AND EXPERIENCE OF ABOVE NAMED PHYSICIAN

| ISOTOPE<br>A         | CONDITIONS DIAGNOSED OR TREATED<br>B              | NUMBER OF CASES INVOLVING PERSONAL PARTICIPATION<br>C | COMMENTS<br>(Additional information or comments may be submitted in duplicate on separate sheets.)<br>D |
|----------------------|---|---|---|
| I-131<br>or<br>I-125 | DIAGNOSIS OF THYROID FUNCTION                     |   | (See Item 4 Supplement A)   |
|                      | DETERMINATION OF BLOOD AND BLOOD PLASMA VOLUME    |   |   |
|                      | LIVER FUNCTION STUDIES                            |   |   |
|                      | FAT ABSORPTION STUDIES                            |   |   |
|                      | KIDNEY FUNCTION STUDIES                           |   |   |
|                      | IN VITRO STUDIES                                  |   |   |
| OTHER                |   |   |   |
| I-125                | DETECTION OF THROMBOSIS                           |   |   |
| I-131                | THYROID IMAGING                                   |   |   |
| P-32                 | EYE TUMOR LOCALIZATION                            |   |   |
| Se-75                | PANCREAS IMAGING                                  |   |   |
| Yb-169               | CISTERNOGRAPHY                                    |   |   |
| Xe-133               | BLOOD FLOW STUDIES AND PULMONARY FUNCTION STUDIES |   |   |
| OTHER                |   |   |   |
| Tc-99m               | BRAIN IMAGING                                     |   |   |
|                      | CARDIAC IMAGING                                   |   |   |
|                      | THYROID IMAGING                                   |   |   |
|                      | SALIVARY GLAND IMAGING                            |   |   |
|                      | BLOOD POOL IMAGING                                |   |   |
|                      | PLACENTA LOCALIZATION                             |   |   |
|                      | LIVER AND SPLEEN IMAGING                          |   |   |
|                      | LUNG IMAGING                                      |   |   |
| OTHER                | BONE IMAGING                                      |   |   |
|                      |   |   |   |

UNITED STATES ATOMIC ENERGY COMMISSION  
**APPLICATION FOR BYPRODUCT MATERIAL LICENSE—MEDICAL**  
SUPPLEMENT A—PRECEPTOR STATEMENT

This page is to be completed by the applicant physician's preceptor. If more than one preceptor is necessary to document experience, obtain a separate statement from each. Back of page may be used for comments.

9. NAME AND ADDRESS OF APPLICANT PHYSICIAN (Include ZIP Code)

Major Gary B. Robnett, SSN 489 46 9605  
Nuclear Medicine Service  
Fitzsimons General Hospital 80240

10. CLINICAL TRAINING AND EXPERIENCE OF PHYSICIAN NAMED IN ITEM 9 ABOVE

| (A)<br>ISOTOPE                           | (B)<br>CONDITIONS DIAGNOSED OR TREATED                                  | (C)<br>No. Cases Observed<br>(See 1 in key below) | (D)<br>No. Cases Involving Personal<br>Participation (See 2 in key below) |
|--|---|---|---|
| I-131                                    | Diagnosis of thyroid function   | 360   | (a) (b) (c)   |
|  | Dilution studies  |   |   |
|  | Excretion studies Renogram  | 49  | (a) (b) (c)   |
|  | Brain tumor localization  |   |   |
|  | Scanning studies (Whole Body) (Thyroid Scans) (Uptakes) (13) (71) (180) |   | (a) (b) (c)   |
|  | Treatment of hyperthyroidism  | 12  | (a) (b) (c)   |
|  | Treatment of cardiac conditions   |   |   |
|  | Treatment of thyroid carcinoma  | 4   | (a) (b) (c)   |
| P-32<br>Soluble                          | Treatment of polycythemia   |   |   |
|  | Treatment of leukemia   |   |   |
|  | Treatment of bone metastases  |   |   |
|  | Tumor localization  |   |   |
|  | Intracavitary treatment   |   |   |
|  | Interstitial treatment  |   |   |
| <del>Na-22</del><br>Tc-99m               | Intracavitary treatment   |   |   |
|  | Interstitial treatment  |   |   |
|  | Scanning studies (Liver) (Spleen)                                       | (80) (81)   | (a) (b) (c)   |
| Cr-51                                    | Blood determinations (Blood Volume) (Bone Marrow)                       | (2) (6)   | (a) (b) (c)   |
|  | Scanning studies  |   |   |
| <del>Cs-137</del> or<br>Co-57            | Diagnosis of pernicious anemia Schilling                                | 10  | (a) (b) (c)   |
| Co-60                                    | Interstitial treatment  |   |   |
| I-192                                    | Intracavitary treatment   |   |   |
| Co-60 or<br>Cs-137                       | Teletherapy treatment   |   |   |
| Sr-90                                    | Treatment of superficial diseases of the eye                            |   |   |
| Other<br>Isotopes<br>Use back<br>of page | Hg-197 Renal Scan   | 38  | (a) (b) (c)   |
|  | MAAG I-131 Lung Scans   | 68  | (a) (b) (c)   |
|  | Sr-85 Bone Scan   | 63  | (a) (b) (c)   |

Key to Column (C) and (D) above

1. Observation should consist of observing radioisotope administration techniques and discussion with preceptor the case histories to establish most appropriate diagnostic and/or therapeutic procedure, limitation, contraindications, etc.
2. Personal participation should consist of (a) supervised examination of patients to determine the suitability for radioisotope diagnosis and/or treatment and recommendation on dosage to be prescribed; (b) collaboration in calibration of the dose and the actual administration of the dose to the patient, including calculation of the radiation dose, related measurements, and plotting of data; and (c) adequate period of training to enable the physician to manage radioactive patients and to follow patients through diagnosis and/or the course of treatment.

11. DATES AND TOTAL NUMBER OF HOURS OF CLINICAL RADIOISOTOPE TRAINING 1 Sep 70 thru 1 Dec 70 (600 hours)

12. THE TRAINING AND EXPERIENCE INDICATED ABOVE WAS OBTAINED UNDER THE SUPERVISION OF EUGENE T MORITA, MD, MAJ, MC

Fitzsimons General Hospital  
Nuclear Medicine Service  
At Denver, Colorado 80240

05-0046-13

(Institution Name and Address)

(Byproduct Material License Number)

(Signature of Preceptor)

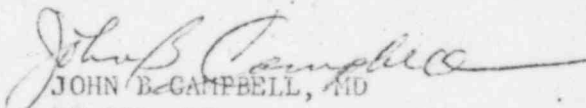


# FITZSIMONS RADIOISOTOPE COMMITTEE-HUMAN USERS CERTIFICATION

Under the provision of paragraph 3d (2), AR 4037, Maj. Gary R. Robnett,  
489 46 9605  
 is authorized to conduct the following procedures using the following isotopes  
 at Fitzsimons General Hospital:

| ISOTOPE | DOSE           | FORM                               | PROCEDURES                                  |
|---------|----------------|------------------------------------|---|
| I-131   | 10uCi          | NaI                                | Thyroid Uptake                              |
| I-131   | 100uCi         | NaI                                | Thyroid Scan                                |
| I-131   | 15mCi mCi      | NaI                                | Treatment of Hyperthyroid                   |
| I-131   | 100uCi         | NaI                                | Conversion Ratio                            |
| I-131   | 15mCi mCi      | NaI                                | Treatment of Graves Disease                 |
| I-131   | 100-150mCi mCi | NaI                                | Treatment of Thyroid Malignant              |
| I-131   | 1mCi mCi       | NaI                                | Chest Scan                                  |
| I-131   | 300uCi         | Macroaggregated Albumin            | Lung Scan                                   |
| I-131   | 5uCi           | Albumin                            | Blood Volume                                |
| I-131   | 40uCi          | Hippuran                           | Renogram                                    |
| I-131   | 150uCi         | Rose Bengal                        | Liver Scan                                  |
| I-131   | 5uCi           | Albumin                            | Placental Localization                      |
| I-131   | 300uCi         | Cholegrafen                        | Heart Scan                                  |
| I-125   | 0.5uCi         | NaI                                | T3 Invitro                                  |
| Tc-99m  | 10mCi          | Pertechnetate                      | Brain Scan                                  |
|         |                | (fr Mo 99 generator)               |   |
| Na-22   | 150uCi         | Colloidal                          | Liver Scan                                  |
| Cr-51   | 50uCi          | Sodium Chromate                    | Blood Volume                                |
| Cr-51   | 150uCi         | Sodium Chromate                    | Red Blood Cell Survival                     |
| Cr-51   | 200uCi         | Sodium Chromate                    | Spleen Scan                                 |
| Cr-51   | 50uCi          | Sodium Chromate & Chromic Chloride | Determination of gastro-intestinal bleeding |
| Cr-57   | 0.5uCi         | Vitamin B-12                       | Schilling Test                              |
| Hg-197  | 150uCi         | Chlormerodrin                      | Kidney Scan                                 |
| Hg-197  | 150uCi         | Chlormerodrin                      | Renal Uptake                                |
| Sr-85   | 100uCi         | Nitrate                            | Bone Scan                                   |
| I-125   | 0.1 uCi        | NaI                                | T4 Invitro                                  |

4 Copies  
 1 to Individual  
 1 to 201 file  
 1 to Mins of Radioisotope Committee  
 1 to Files of Radioisotope Committee

  
 JOHN B. CAMPBELL, MD  
 LT COL, MC  
 Chairman, Radioisotope Committee

APPLICATION FOR BYPRODUCT MATERIAL LICENSE—MEDICAL  
SUPPLEMENT A—HUMAN USE

PAGE 4

This page may be used for providing additional information.

|                          |     |     |     |     |
|--------------------------|-----|-----|-----|-----|
| Brain Scans              | 212 | (a) | (b) | (c) |
| Xenon-133 Lung Scans     | 14  | (a) | (b) | (c) |
| Risa I-131 Placentograms | 3   | (a) | (b) | (c) |
| Risa I-125 Blood Volume  | 2   | (a) | (b) | (c) |
| I-125 T4                 | 63  | (a) | (b) | (c) |
| I-125 T3                 | 161 | (a) | (b) | (c) |
| THAT                     | 41  | (a) | (b) | (c) |
| I-131 Rosebengal         |     |     |     |     |
| Liver Scans              | 7   | (a) | (b) | (c) |
| I-131 Urine Excretion    | 69  | (a) | (b) | (c) |
| PBI-131                  | 3   | (a) | (b) | (c) |

Gary B. Robnett, M.D.

Washington State Medical License

Number 252-09 0014012

Expiration Date: 01-23-81

(Also see Supplements A & B)

# The American Board of Radiology

*Organized through the cooperation of the  
American College of Radiology, the American Roentgen Ray Society,  
the American Radium Society, the Radiological Society of North America,  
the Section on Radiology of the American Medical Association  
and the American Society of Therapeutic Radiologists  
Hereby certifies that*

**Gary Boyd Rolnnett, M.D.**

*Has pursued an accepted course of graduate study  
and clinical work, has met certain standards and qualifications and  
has passed the examinations conducted under the authority of*

*The American Board of Radiology*

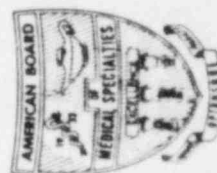
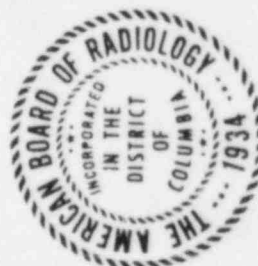
*On this seventh day of June, 1975*

*Thereby demonstrating to the satisfaction of the Board  
that he is qualified to practice the specialty of*

**Radiology**

**Robert N. Cooley**  
President

**C. Allen Good**  
Secretary





## DISPOSITION FORM

(AR 710-15)

*Maj Robert's copy*

REFERENCE OR OFFICE SYMBOL

SUBJECT

MEDEO-X

Radioisotope Qualification Forms

TO Ch, Military Personnel Div,  
Officer Records Section

FROM Ch, Nuclear Med Service

DATE 5 Apr 71

CMT 1

Dr Morita/hb/22133

In accordance with paragraph 3c, (6), AR 40-37, these radioisotope qualification forms on Maj. Gary B. Robnett, SSN 489 46 9605, will be a permanent part of the individual's 201 file.

*Eugene T. Morita*

EUGENE T MORITA, MD

Maj, MC

Chief, Nuclear Medicine Service

Approved by Radioisotope Committee 6 April 1971. Request this DF, together with attached radioisotope qualification forms, be made a permanent part of Maj Robnett's 201 file.

1 Incl  
as*John B. Campbell*  
JOHN B. CAMPBELL, M.D. *PK*  
LTC, MC  
Chairman, Radioisotope Committee

ADDENDUM 1 TO SUPPLEMENT A - ITEM 5

EXPERIENCE WITH RADIATION:

VA Medical Center, American Lake, Tacoma, WA

February 2, 1979 to December 31, 1979

|  |    |
|--|----|
| Brain Scan                               | 66 |
| Liver/Spleen Scan                        | 46 |
| Bone Scan                                | 52 |
| Lung Scan                                | 26 |
| Venogram                                 | 8  |
| Renal Scan                               | 2  |
| Resting Thallium                         | 1  |
| Exercise Thallium with<br>Redistribution | 8  |
| Liver/Lung Scan                          | 1  |

ADDENDUM 2 TO SUPPLEMENT A

These physicians are members of the private practice radiology group from Tacoma who provide radiology service during absences of Dr. Robnett for annual leave, sick leave, etc.

DRS. GROSS, LARSON, WHITNEY & ASSOCIATES

Kenneth E. Gross, M.D.  
Vernon O. Larson, M.D.  
Robert B. Whitney, Jr., M.D.  
Raymond J. Pliskow, M.D.  
Jaroslaw Saikewicz, M.D.  
Robert D. Rich, M.D.  
Michael S. Campbell, M.D.  
Martin L. Graham, M.D.  
John A. Flood, M.D.  
R. F. Kilcoyne, M.D.

License No. WN 151

APPENDIX C  
INSTRUMENTATION

1. Survey meters

- a. Manufacturer's name: EON CDV 700  
Manufacturer's model number: \_\_\_\_\_  
Number of instruments available: 1  
Minimum range: .01 mr/hr to .5 mr/hr  
Maximum range: 5 mr/hr to 50 mr/hr
- b. Manufacturer's name: Victoreen  
Manufacturer's model number: 474 high range  
Number of instruments available: 1  
Minimum range 1 mr/hr to 25 mr/hr  
Maximum range 1,000 mr/hr to 25,000 mr/hr

2. Dose calibrator

Manufacturer's name: Capintec  
Manufacturer's model number: CR C-16  
Number of instruments available: 1

3. Diagnostic instruments

| <u>Type of Instrument</u>                            | <u>Manufacturer's Name</u> | <u>Model No.</u> |
|--|----------------------------|------------------|
| Radioisotope Camera<br>with accessory<br>Collimators | Ohio-Nuclear               | Series 100       |

4. Other



## CALIBRATION OF SURVEY INSTRUMENTS

Check appropriate items.

- X 1. Survey instruments will be calibrated at least annually and following repair.

- X 2. Calibration will be performed at two points on each scale.

The two points will be approximately 1/3 and 2/3 of full scale. A survey instrument may be considered properly calibrated when the instrument readings are within  $\pm 10\%$  of the calculated or known values for each point checked. Readings within  $\pm 20\%$  are considered acceptable if a calibration chart or graph is prepared and attached to the instrument.

3. Survey instruments will be calibrated

- a. By the manufacturer
- b. At the licensee's facility

- (1) Calibration source

Manufacturer's name \_\_\_\_\_  
Model no. \_\_\_\_\_  
Activity in millicuries \_\_\_\_\_  
Accuracy \_\_\_\_\_  
Traceability to primary standard \_\_\_\_\_

- (2) The calibration procedures in Section I of Appendix D will be used.

or

- (3) The step-by-step procedures, including radiation safety procedures, are attached.

- x c. By a consultant or outside firm

- (1) Name Ralph M. Baltzo

- (2) Location Seattle, WA

- ### (3) Procedures and sources

X have been approved by NRC and are on file in  
License No. WN-LO 41-1

are attached

## Section 2

## METHODS FOR CALIBRATION OF DOSE CALIBRATOR

All radiopharmaceuticals must be assayed for activity to an accuracy of 10%. The most common instrument for accomplishing this is an ionization-type dose calibrator. The instrument must be checked for accurate operation at the time of installation and periodically thereafter.

## A. Test for the following:

1. Instrument linearity (at installation and quarterly thereafter)
2. Geometrical variation (at installation)
3. Instrument accuracy (at installation and annually thereafter).

## B. After repair or adjustment of the dose calibrator, repeat all the appropriate tests listed above (dependent upon the nature of the repairs).

## C. Daily or before each use of the instrument:

1. Measure and record the activity of at least one reference source (e.g., 1-2 mCi of Co-57). This check should be repeated during the day whenever sample readings are not within 10% of the anticipated assay. Variation greater than 5% in this test will indicate the need for instrument repair, adjustment, or recalibration.
2. Measure and record the apparent activity of a long-lived standard radionuclide such as Cs-137 or Ra-226 at all the commonly used radionuclide settings (when the unit was first calibrated against NBS-traceable standards). Choose a source with activity in the 100  $\mu$ Ci range.

## D. Inspect the instrument on a quarterly basis to ascertain that the measurement chamber liner is in place and that instrument zero is properly set (see manufacturer's instructions).

## E. Test of Instrument Linearity

The linearity of a dose calibrator should be ascertained over the entire range of activities employed. This test will utilize a vial of Tc-99m whose activity is equivalent to the maximum anticipated activity to be assayed (e.g., the first elution from a new generator).

1. Assay the Tc-99m vial in the dose calibrator and subtract background level to obtain net activity in millicuries.
2. Repeat step 1 at time intervals of 6, 24, 30, and 48 hours after the initial assay.
3. Using the 30-hour activity measurement as a starting point, calculate the predicted activities at 0, 6, 24, and 48 hours using the following table:

| Assay Time (hr) | Correction Factor |
|-----------------|-------------------|
| 0               | 32                |
| 6               | 16                |
| 24              | 2                 |
| 30              | 1                 |
| 48              | 0.125             |

Example: If the net activity measured at 30 hours was 15.625 mCi, the predicted activity for 6 and 48 hours would be  $15.625 \text{ mCi} \times 16 = 250 \text{ mCi}$  and  $15.625 \text{ mCi} \times 0.125 = 1.95 \text{ mCi}$ , respectively.

4. Plot the measured net activity for each time interval versus the predicted activity on log-log graph paper.
5. The activities plotted should be within  $\pm 5\%$  of the predicted curve if the instrument is linear and functioning properly. Errors greater than  $\pm 5\%$  indicate the need for repair or adjustment of the instrument.
6. If instrument linearity cannot be corrected, it will be necessary in routine assays to either assay an aliquot of the eluate that can be accurately measured or to use the graph constructed in step 4 to relate measured activities to true activities.

## F. Test for Geometrical Variation

There may be significant geometrical variation in activity measured as a function of sample volume or configuration, depending on the volume and size of the ionization chamber used in the dose calibrator. The extent of geometrical variation should be ascertained for commonly used radionuclides and appropriate correction factors computed if variations are significant,

# CALIBRATION OF DOSE CALIBRATOR

## A. Sources Used for Linearity Test

(Check as appropriate)

\_\_\_\_\_ First elution from new Mo-99/Tc-99m generator

or

☒ Other\* (specify) Calibration aliquot of instant technetium

## B. Sources Used for Instrument Accuracy and Constancy Tests

| Radionuclide | Activity<br>(mCi) | Accuracy    |
|--------------|-------------------|-------------|
| Co-57        | <u>1 - 5 mCi</u>  | <u>4.5%</u> |
| Ba-133       | <u>0.6 mCi</u>    | <u>4.5%</u> |
| Cs-137       | <u>10 mCi</u>     | <u>5%</u>   |
| _____        | _____             | _____       |
| _____        | _____             | _____       |

C. ☒ The procedures described in Section 2 of Appendix D will be used for calibration of the dose calibrator

or

\_\_\_\_\_ Equivalent procedures are attached.

\*Must be equivalent to the highest activity used.

## PERSONNEL TRAINING PROGRAM

A training program will be conducted for all personnel who work with or in the vicinity of radioactive materials. The training will be in the form of lectures supplemented by audiovisual material. Individuals who must obtain this training will be the Nuclear Medicine Service secretary, involved individuals from the Nursing Service, those individuals from Building Management Service performing duties in the Nuclear Medicine department, all hospital police, and those individuals from Supply Service who are involved in the transportation of radioactive materials.

An initial course will be held for all individuals. It will be repeated on an annual basis as a refresher course. Those new employees who are involved and who have not received this training will receive equivalent training prior to their working in the vicinity of radioactive materials. Additional instructional education will be given whenever there is a significant change in duties, regulations, or the terms of the license of the hospital.

The training program will include the following:

- a. Areas where radioactive material is used or stored;
- b. Potential hazards associated with radioactive material;
- c. Radiological safety procedures appropriate to their respective duties;
- d. Pertinent Nuclear Regulatory Commission regulations;
- e. Rules and regulations of the licensee;
- f. Pertinent terms of the license;
- g. The employee's obligation to report unsafe conditions;
- h. Appropriate response to emergencies or unsafe conditions;
- i. The employee's right to be informed of his radiation exposure and bioassay reports.

Notices and copies of pertinent regulations, licenses and license conditions will be kept posted in the Nuclear Medicine Department, Room 201, Building 81.



PROCEDURES FOR ORDERING AND RECEIVING  
RADIOACTIVE MATERIAL

1. The Nuclear Medicine Technologist must place all orders for radioactive material and must insure that the requested materials and quantities are authorized by the license and that possession limits are not exceeded.
2. During normal working hours, carriers are instructed to deliver radioactive packages directly to the Nuclear Medicine Department, Room 201, Building 81, and these will be received by the Nuclear Medicine Technologist.
3. During off-duty hours, the Administrative Officer of the Day must accept delivery of radioactive packages in accordance with the procedures outlined in the sample memorandum attached.

*Memorandum*

DATE October 24, 1980

TO Administrative Officer of the Day (136)

FROM Medical Center Director (00)

SUBJ Receipt of Packages Containing Radioactive Material for the Nuclear Medicine Department

Any packages containing radioactive material for the Nuclear Medicine Department that arrive between 4:30 p.m. and 8:00 a.m. or on Saturdays or Sundays shall be signed for by the A.O.D. and taken immediately to the Nuclear Medicine Department, Room 201, Building 81. Unlock the door, turn right after entering the room and place the package on the counter top above the refrigerator.

If the package is wet or appears damaged, immediately contact the Medical Center Radiation Safety Officer. Ask the carrier to remain at the medical center until it can be determined that neither he nor the delivery vehicle is contaminated.

RADIATION SAFETY OFFICER

Gary B. Robnett, M.D.

Office phone: 582-8440 ext. 6606

Home phone: 582-0142

WILLIAM E. CLAYPOOL  
Medical Center Director



ITEM 13, October 24, 1980

*Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan*

Addendum to Isotope License Application

Research Service use of Isotope materials

- I. Isotopes used:
  - a. Monthly or annual procurement
  - b. Maximum activity on hand at any time.
- II. Protection measures:

Shielding

Personnel protection
- III. Disposal methods:
- IV. Radiation safety officer and procedures, record-keeping and equipment.
- V. Users and experience of each.

I. Isotopes used

a) Procurement:

|                  |   |              |
|------------------|---|--------------|
| $^3\text{H}$     | : | 2-5 mCi/mo   |
| $^{32}\text{P}$  | : | 0.3 mCi/6 mo |
| $^{45}\text{Ca}$ | : | 5 mCi/6 mo   |
| $^{125}\text{I}$ | : | 2 mCi/mo     |
| $^{14}\text{C}$  | : | 2 mCi/12 mo  |
| $^{35}\text{S}$  | : | 2 mCi/12 mo  |

b) Maximum activity on hand at any time:

|                  |   |         |
|------------------|---|---------|
| $^3\text{H}$     | : | 25 mCi  |
| $^{32}\text{P}$  | : | 0.3 mCi |
| $^{45}\text{Ca}$ | : | 5 mCi   |
| $^{125}\text{I}$ | : | 3 mCi   |
| $^{14}\text{C}$  | : | 2 mCi   |
| $^{35}\text{S}$  | : | 2 mCi   |



## II. Protective Measures:

- A. Security - All work with radioisotopes is performed in a dedicated research laboratory that is not accessible to patients or the public.
- B. Shielding and containment:
  - 1. All isotopes are stored in thick-walled glass containers with sealed screw-tops.
  - 2.  $^{32}\text{P}$  and gamma emitters are stored in lead containers.
  - ✓ 3.  $^{125}\text{I}$  is stored behind 2 cm of lead brick shielding in a high capacity fume hood (850 CFM).
- ✓ C. Volatile chemical usage is restricted to a high capacity (850 CFM) fume hood.
- D. New laboratory personnel are recruited with training and experience in the use of radioisotopes whenever possible. Instruction in the safe use of radioisotopes is available and required to compensate for specific deficiencies as required for individuals.
- E. All areas of the laboratory, equipment and supplies exposed to radioactivity are labeled with radioactivity markers and placards in accordance with 10CFR-20.

All radiation storage areas are well marked and placed away from general laboratory areas and personnel.
- F. A routine survey for contamination is conducted monthly by counting wipe samples of areas where isotopes are used or stored. The laboratory is also directly monitored with a survey meter monthly, and the meter is available for use at all times. A record of the monthly survey is kept.
- ✓ G. The individual working  $^{125}\text{I}$  monitors his exposure on a weekly basis (by counting a urine sample).
- H. A careful record of the radioactive inventory is kept, including amount received, amounts used and disposed of, and waste collected for disposal.

## III. Disposal methods:

### A. Dry waste:

Insufficient amount generated to warrant a separate low specific activity box. Thus it is placed in the drums together with liquid waste.

### B. Liquid waste:

- 1. Aqueous experiments involving less than 10 mCi total radioactivity: the isotopes are rinsed down the sink with a copious amount of running water. Also any experiments with activity of less than 1 mCi/ml of materials are treated likewise.

The amount of radioactivity washed into the sink will not exceed the recommended limits. The weekly water usage of the hospital, exclusive of garden and lawn, is 843,000 gallons or 3,195,000 liters. The amount of radioactivity washed into the sink per week is less than 6 microCuries of tritium ( $^3\text{H}$ ) per week, less than 5 millicuries as  $^3\text{H}$ -proline and less than 1 microCurie of  $^3\text{H}$ -thymidine. Swabs are counted from the sink as part of the routine inspection.

2. Organic/volatile radioactive substances are stored in a specially marked container (open) in a specifically marked fume hood to allow the material to be released by evaporation.
3. Scintillation vials and other liquid (non-corrosive) waste (total volume of less than 10 ml/container) are placed in metal drums with a copious amount of dry filler to soak up the liquid. When full the barrels are sealed and removed from the premises by a radioactive disposal company. During use the barrels are kept in a locked area outside the laboratory facility itself.

C. Animal Carcasses:

These are stored in double plastic bags at  $-20^{\circ}\text{C}$  in a specially marked freezer. Those with  $^{32}\text{P}$  or  $^{45}\text{Ca}$  are stored until sufficient half-life hours pass to allow normal incineration of the carcasses without any safety hazards.

IV. Radiation Safety Officer and procedures, record-keeping and equipment:  
(see also Section II).

A. Officer: John R. Farley, Ph.D.  
Asst: Michael Su, M.S.

B. Safety procedures and equipment:

1. Radiation badges for personnel.
2. Alcohol wipes for contamination of general use areas (e.g. telephone, drinking fountain, door handles) as well as bench top work areas.  
Done bi-monthly.
3. Hand-held radiation detector (geiger counter) to monitor spills and clean ups.
4. Rubber gloves on personnel handling isotopes.
5. Orientation for all new personnel.
6. All isotopes stored in one refrigerator/freezer; clearly marked as containing radioisotopes.
7. Tape and labels available (and used) to identify experimental material as radioactive.

C. Record Keeping:

1. Log kept of incoming isotopes.
2. Tabular use list located on door of isotope refrigerator. Users log out amounts used and date.
3. Record of alcohol swab tests and monitoring kept by Safety Officer.
4. All orders are placed through the Safety Officer to insure inventory control.

D. Equipment used with Isotopes in Research Service:

1. Geiger Counter, Eberline Instrument Corp.  
Model E-510- SN 820
2. Packard Tri-Carb - Model C2425  
Liquid Scintillation Spectrometer
3. Packard Auto-Gamma - Model 5230  
Scintillation Spectrometer - SN A5230-08  
23360

# APPENDIX J

## WASTE DISPOSAL

1. Liquid waste will be disposed of (check as appropriate)

☒ By commercial waste disposal service (see also item 4 below).

☐ In the sanitary sewer system in accordance with §20.303 of 10 CFR Part 20.

☐ Other (specify): \_\_\_\_\_

2. Mo-99/Tc-99m generators will be (check as appropriate)

☐ Returned to the manufacturer for disposal.

☐ Held for decay until radiation levels, as measured with a low-level survey meter and with all shielding removed, have reached background levels. All radiation labels will be removed or obliterated and the generators disposed of as normal trash. (Note: This method of disposal may not be practical for generators containing long-lived radioactive contaminants.)

☒ Disposed of by commercial waste disposal service (see also item 4 below).

☐ Other (specify): \_\_\_\_\_

3. Other solid waste will be (check as appropriate)

☐ Held for decay until radiation levels, as measured with a low-level survey meter and with all shielding removed, have reached background levels. All radiation labels will be removed or obliterated and the waste will be disposed of in normal trash.

☒ Disposed of by commercial waste disposal service (see also item 4 below).

☐ Other (specify): \_\_\_\_\_

4. The commercial waste disposal service used will be

Ralph M. Baltzo Seattle, WA  
(Name) (City, State)

NRC/Agreement State License No. WN-L041-1

V. Users and experience of each.

A) Investigators:

- 1) John Farley, Ph.D.: 6 yrs.; used  $^3\text{H}$ ,  $^{14}\text{C}$ ,  $^{35}\text{S}$ ,  $^{32}\text{P}$ ; synthesized radioactive compounds; formal yearly instructor received at university regarding safety in isotope use in vivo and in vitro.
- 2) Chung-Ching Liu, Ph.D.: 10 yrs.; used  $^3\text{H}$ ,  $^{14}\text{C}$ ,  $^{45}\text{Ca}$ ; in vivo (animals) and in vitro.
- 3) Guy A. Howard, Ph.D.: 13 yrs.; used  $^3\text{H}$ ,  $^{14}\text{C}$ ,  $^{45}\text{Ca}$ ,  $^{35}\text{S}$ ,  $^{32}\text{P}$ ,  $^{59}\text{Fe}$ ,  $^{60}\text{Co}$ ,  $^{125}\text{I}$ ; synthesized radioactive compounds; formal instructor in safety procedures at university; used monitors of various types; in vivo and in vitro.

B) Technicians:

- 1) Elmer Feist, B.S.: 20 yrs.; used  $^3\text{H}$ ,  $^{14}\text{C}$ ,  $^{32}\text{P}$ ,  $^{45}\text{Ca}$ ; in vivo and in vitro; safety classes at Seattle VA on yearly basis.
- 2) Robert Haller, B.S.: 20 yrs.; used  $^3\text{H}$ ,  $^{14}\text{C}$ ,  $^{32}\text{P}$ ,  $^{45}\text{Ca}$ ,  $^{125}\text{I}$ ; in vivo and in vitro; safety classes at Seattle VA on yearly basis.
- 3) Emily Thompson: 20 yrs.; used  $^3\text{H}$ ,  $^{14}\text{C}$ ,  $^{45}\text{Ca}$ ,  $^{59}\text{Fe}$ ; synthesized radio labelled compounds; formally in charge of  $^{59}\text{Fe}$  (5mCi) dispensing for several years; in vivo use.
- 4) Chris Carlson, B.S.: 10 months experience in present laboratory; used  $^3\text{H}$ ,  $^{45}\text{Ca}$ ; in vitro.
- 5) John Breininger, B.S.: newly hired; receiving on-the-job training for  $^3\text{H}$  in vitro.
- 6) Jean Sibonga, B.S.: newly hired; receiving on-the-job training for  $^3\text{H}$  in vitro.
- 7) Michael Su, M.S.: 13 yrs.; used  $^{125}\text{I}$ ,  $^3\text{H}$ ,  $^{14}\text{C}$ ; safety classes yearly at Seattle VA; formal instructor on radioisotopes in university; in vitro and in vivo.

*Memorandum*

DATE October 24, 1980

TO Administrative Officer of the Day (136)

FROM Medical Center Director (00)

SUBJ Receipt of Packages Containing Radioactive Material for the Nuclear Medicine Department

Any packages containing radioactive material for the Nuclear Medicine Department that arrive between 4:30 p.m. and 8:00 a.m. or on Saturdays or Sundays shall be signed for by the A.O.D. and taken immediately to the Nuclear Medicine Department, Room 201, Building 81. Unlock the door, turn right after entering the room and place the package on the counter top above the refrigerator. Lock the door upon leaving.

If the package is wet or appears damaged, immediately contact the Medical Center Radiation Safety Officer. Ask the carrier to remain at the medical center until it can be determined that neither he nor the delivery vehicle is contaminated.

RADIATION SAFETY OFFICER

Gary B. Robnett, M.D.

Office phone: 582-8440 ext. 6606

Home phone: 582-0142

WILLIAM E. CLAYPOOL  
Medical Center Director

ITEM 13, October 24, 1980



*Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan*

VA FORM 2105  
AUG 1979

Attachment 7



HVAC UNIT BELOW WINDOW

DOSE CALIBRATOR

PHARMACY  
IV SEC'L

WASTE AND STORAGE

(ELEV. SHAFTS)

COUNTER TOP  
UNIT'S

DEPT'S BELOW  
SHELVING ABOVE

BASE UNIT 6/5/5

(4) COLLIMATORS

LOCKED  
DOOR

CORRIDOR

A. TABLE

B. FILE CABINET

C. CONSOLE

D. GURNEY TABLE

RM DIMENSIONS 16'-6" X 20'-0"

# NUCLEAR MEDICINE RM EQUIPMENT LAYOUT

1/4" = 1'-0" VARIOUS AMERICAN ILL. V.A.

05745