FORM NRC-313M
(8-78)
10 CFR 35

U.S. NUCLEAR REGULATORY COMMISSION

APPLICATION FOR MATERIALS LICENSE – MEDICAL

Approved:
GAO R0557

INSTRUCTIONS – *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

Johnston-Willis Hospital
2908 Kensington Avenue
Richmond, Virginia 23221

TELEPHONE NO.: AREA CODE( ) _____ _____

1.b. STREET ADDRESS(ES) AT WHICH RADIOACTIVE MATERIAL WILL BE USED *(If different from 1.a.)* INCLUDE ZIP CODE

Same

2. PERSON TO CONTACT REGARDING THIS APPLICATION

Russell O. Briere, M. D.

TELEPHONE NO.: AREA CODE (804) 359 9111

3. THIS IS AN APPLICATION FOR: *(Check appropriate item)*

a. ☐ NEW LICENSE
b. ☐ AMENDMENT TO LICENSE NO. _____
c. ☒ RENEWAL OF LICENSE NO. 45-02888-01

4. INDIVIDUAL USERS *(Name individuals who will use or directly supervise use of radioactive material. Complete Supplements A and B for each individual.)*

H.R. Bates, M. D. 1-3E 4B
Russell O. Briere, M. D. - All
Fabio Gutierrez, M. D. 1-3+4
John L. Thornton, M. D. 1-3F 4B

Have users under these

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.)*

Russell O. Briere, M. D.

6.a. RADIOACTIVE MATERIAL FOR MEDICAL USE

RADIOACTIVE MATERIAL LISTED IN:	ITEMS DESIRED "X"	MAXIMUM POSSESSION LIMITS (In millicuries)
10 CFR 31.11 FOR IN VITRO STUDIES	X	3
10 CFR 35.100, SCHEDULE A, GROUP I	X	AS NEEDED
10 CFR 35.100, SCHEDULE A, GROUP II	X	AS NEEDED
10 CFR 35.100, SCHEDULE A, GROUP III	X	2,000
10 CFR 35.100, SCHEDULE A, GROUP IV	X	AS NEEDED
10 CFR 35.100, SCHEDULE A, GROUP V	X	AS NEEDED
10 CFR 35.100, SCHEDULE A, GROUP VI		

ADDITIONAL ITEMS:	MARK ITEMS DESIRED "X"	MAXIMUM POSSESSION LIMITS (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.		

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

* Check for recent Amendment

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7908100311

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. 01 Date: Nov. 1, 1977

7. MEDICAL ISOTOPES COMMITTEE	
X	Names and Specialties Attached; and
	Duties as in Appendix B; or *(Check One)*
X	Equivalent Duties Attached
8. TRAINING AND EXPERIENCE	
	Supplements A & B Attached for Each Individual User; and
	Supplement A Attached for RSO.
9. INSTRUMENTATION *(Check One)*	
	Appendix C Form Attached; or
X	List by Name and Model Number
10. CALIBRATION OF INSTRUMENTS	
	Appendix D Procedures Followed for Survey Instruments; or *(Check One)*
X	Equivalent Procedures Attached; and
	Appendix D Procedures Followed for Dose Calibrator; or *(Check One)*
	Equivalent Procedures Attached
11. FACILITIES AND EQUIPMENT	
X	Description and Diagram Attached
12. PERSONNEL TRAINING PROGRAM	
X	Description of Training Attached
13. PROCEDURES FOR ORDERING AND RECEIVING RADIOACTIVE MATERIAL	
X	Detailed Information Attached
14. PROCEDURES FOR SAFELY OPENING PACKAGES CONTAINING RADIOACTIVE MATERIALS *(Check One)*	
	Appendix F Procedures Followed; or
X	Equivalent Procedures Attached

15. GENERAL RULES FOR THE SAFE USE OF RADIOACTIVE MATERIAL *(Check One)*	
	Appendix G Rules Followed; or
X	Equivalent Rules Attached
16. EMERGENCY PROCEDURES *(Check One)*	
	Appendix H Procedures Followed; or
X	Equivalent Procedures Attached
17. AREA SURVEY PROCEDURES *(Check One)*	
	Appendix I Procedures Followed; or
X	Equivalent Procedures Attached
18. WASTE DISPOSAL *(Check One)*	
	Appendix J Form Attached; or
X	Equivalent Information Attached
19. THERAPEUTIC USE OF RADIOPHARMACEUTICALS *(Check One)*	
	Appendix K Procedures Followed; or
X	Equivalent Procedures Attached
20. THERAPEUTIC USE OF SEALED SOURCES	
	Detailed Information Attached; and
	Appendix L Procedures Followed; or *(Check One)*
	Equivalent Procedures Attached
21. PROCEDURES AND PRECAUTIONS FOR USE OF RADIOACTIVE GASES (e.g., Xenon – 133)	
	Detailed Information Attached
22. PROCEDURES AND PRECAUTIONS FOR USE OF RADIOACTIVE MATERIAL IN ANIMALS	
	Detailed Information Attached
23. PROCEDURES AND PRECAUTIONS FOR USE OF RADIOACTIVE MATERIAL SPECIFIED IN ITEM 6.b	
	Detailed Information Attached

00408

24. PERSONNEL MONITORING DEVICES

TYPE (Check appropriate box)			SUPPLIER	EXCHANGE FREQUENCY
a. WHOLE BODY	X	FILM	Searle Health Physics, Inc. Des Plaines, Ill. 60018	Monthly
		TLD		
		OTHER (Specify)		
b. FINGER		FILM		
	X	TLD	Same as above	Monthly
		OTHER (Specify)		
c. WRIST		FILM		
		TLD		
		OTHER (Specify)		

d. OTHER (Specify)

25. FOR PRIVATE PRACTICE APPLICANTS ONLY

a. HOSPITAL AGREEING TO ACCEPT PATIENTS CONTAINING RADIOACTIVE MATERIAL

NAME OF HOSPITAL

MAILING ADDRESS

CITY | STATE | ZIP CODE

b. ATTACH A COPY OF THE AGREEMENT LETTER SIGNED BY THE HOSPITAL ADMINISTRATOR.

c. WHEN REQUESTING THERAPY PROCEDURES, ATTACH A COPY OF RADIATION SAFETY PRECAUTIONS TO BE TAKEN AND LIST AVAILABLE RADIATION DETECTION INSTRUMENTS.

26. CERTIFICATE

(This item must be completed by applicant)

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
(See Section 170.31, 10 CFR 170)

(1) LICENSE FEE CATEGORY: 7B Medical Institution (Renewal)

(2) LICENSE FEE ENCLOSED: $ 150.00

b. APPLICANT OR CERTIFYING OFFICIAL *(Signature)*

(1) NAME *(Type or Print)*
Samuel G. Feazell

(2) TITLE
ADMINISTRATOR

c. DATE
June 20, 1979

FORM NRC-313M (8-78)

MEDICAL ISOTOPE COMMITTE MEMBERS

Dr. Russell O. Briere, Pathologist - Chairman

Dr. Henry J. Showalter, Jr. - Radiologist - Member

Mr. Bennett McCrackin, Asst. Administrator - Member

Ms. Suzanne Smoot, Chief Technologist, Nuclear Medicine - Member

Item 7
6-20-70

STATEMENT OR RADIATION PROTECTION PROGRAM MANAGEMENT

A. Health Physics Services, Inc., (HPSI) has been contracted to manage the overall radiation protection program for Johnston-Willis Hospital, Richmond, Virginia.

B. The radiation safety officer, Dr. Russell O. Briere, and his health physics consultant staff will be reponsible for the following:

1. Maintain the Nuclear Regulatory Commission/State license in a compliance status.

2. Provide training of personnel to insure that safe procedures in the laboratory are practiced.

3. Provide consultation to all of the radiation workers on all matters relating to health physics.

4. Conduct the required health physics surveys and advise management of his findings and recommendations on a quarterly basis for routine matters, or immediately when necessary.

5. Be available to respond to any radiation emergency.

6. Review all personnel dosimetry reports monthly and advise management of the findings and recommendations.

7. Conduct calibrations of radiation survey meters as required.

8. Review all proposed procedures or new experiments to insure that staff personnel will not become unnecessarily exposed to radiation. In addition, he will insure that maximum permissible concentrations in air and water are within acceptable limits as outlined in Part 20, Title 10, Code of Federal Regulations and/or applicable State Regulations.

9. Insure that the following documents are properly posted in the laboratory:

NRC Form 3 *
The NRC license for radioactive materials, and all supporting documents *
Emergency procedures
Parts 19, 20, Title 10, Code of Federal Regulations *

*And/or applicable State documents.

10. Advise radiation workers of any unusual procedures which they must employ in order to reduce unnecessary exposure. Also, advise workers on the location of radioactive materials, proper use of survey meters, and their responsibilities with regard to the safe us of radioactive materials.

11. The radiation safety officer will prepare any requests for license amendments, with assistance of management.

12. He will promulgate rules for the safe use of radioactive materials in the hospital.

C. Health Physics Surveys. Quarterly, the health physics consultant will conduct a comprehensive radiation safety survey of all areas where radioactive material is used or stored. The survey will include the following:

1. Smears for spreadable contamination will be taken in all areas of probable contamination, such as bench tops, sinks, floors, door handles, control knobs, etc. Permissible contamination levels have been established at 100 dpm per 100cm^2. Contamination detected in excess of these levels will be immediately reported to the assistant radiation safety officer who will insure that appropriate decontamination is affected. Subsequently, the assistant radiation safety officer will take additional smears to insure that decontamination efforts have been completed.

2. Survey meter measurements will be taken in areas where radioactive materials are used or stored to insure that they are adequately shielded.

3. Review radioactive material storage areas to insure that materials are properly shielded, stored in double containers, and properly labeled.

4. Review the bulletin board to insure that required documents are properly posted and current.

5. Review all personnel dosimetry reports.

6. Review the records of inventory, isotope receipt, isotope disposal, and other health physics records for completeness and accuracy.

7. Insure that areas where radioactive materials are used or stored are properly labeled in accordance with Part 20, Title 10, Code of Federal Regulations and/or State regulations.

8. Observe the procedures of the technical staff to insure that safe working habits are practiced.

D. Assistant Radiation Safety Officer.

The assistant radiation safety officer will be responsible within his department for the daily, on-site management of radiation safety. He will report directly to the radiation safety officer who has overall responsibility if any of the following should occur:

1. Spill of radioactive material
2. Suspected overexposure of personnel
3. Malfunctioning radiation detection equipment
4. Contaminated shipment of radioactive material
5. Any other condition that may result in unnecessary radiation exposure.

In addition, the assistant radiation safety officer will be responsible for the following:

1. Weekly, he will conduct a survey of all areas where radioactive materials are used or stored. The survey will include the taking of smears for spreadable contamination, survey meter measurement to assure that radiation levels in the work areas of adjacent environments are as low as practicable. Records of these surveys will be maintained for review by the radiation safety officer.
2. Exchange of monthly film badges
3. Scheduling of radioactive waste pick-up by the vendor
4. Maintain facility files with regard to:
   a) The NRC/State license for use of radioactive materials
   b) Health physics surveys
   c) Dosimetry reports
   d) Calibration reports
   e) Maintain the radioactive material inventory, isotope receipt, and disposal documentation.
   f) Conduct follow-up surveys when contamination is detected by the health physics consultant and properly document same.

g) Insure that purchase orders for radioactive material are compared with the inventory such that possession limits are not exceeded.

h) Maintain close liaison with the radiation safety officer to insure that the radiation safety program is properly maintained in a compliance status.

MEDICAL ISOTOPES COMMITTEE

The Medical Isotopes Committee is established by the authority of the Administrator as the committee responsible for the safe use of radioactive material throughout Johnston-Willis Hospital, Richmond, Virginia 23221.

Committee Responsibilities

1. Review and grant permission, or disapprove, the use and users (including physicians, technologists, and physicists) of byproduct material within the institution. This will be done from the standpoint of radiological health and safety regulatory standards and guides, or other factors that the committee may wish to establish for medical uses of byproduct materials, prior to submission of an application to the regulatory agency for licensing action.

2. Prescribe special conditions that will be required during a proposed use of radioactive material, such as requirements for bioassays and physical examinations of users, and special monitoring procedures.

3. Review records and reports from the radiation safety officer and results of regulatory agency inspections.

4. Recommend remedial action to correct safety infractions.

5. Formulate and review the institutional training programs for the safe use of radioactive material.

6. Maintain written records of actions taken by the committee.

7. Inform the regulatory agency of any changes in committee memberships.

Committee Administrative Duties and Frequency

1. The committee will meet at least quarterly to review safety aspects of present programs and to consider special cases or problems. At least annually, review the entire radiation safety program to determine that all activities are being conducted safely and in accordance with the Nuclear Regulatory Commission/State Regulations and the conditions of the respective radioactive material licenses.

2. Minutes of committee meetings will be maintained by the Chairman of the Committee.

3. The senior technologist in each department utilizing radioactive material will serve as the assistant radiation safety officer and will be responsible for maintaining health physics records and the daily management of the radiation safety program in his department.

4. The radiation safety officer will be responsible for the preparation and distribution of radiation safety training materials. In addition, he will insure that necessary classes on radiation safety for staff personnel be conducted.

Training and Experience Documentation

Individual Users:

Russell O. Briere, M.D. Training and Experience Documentation on file with NRC under License No. 45-02888-01.

Fabio Gutierrez, M.D.* - NO

John L. Thornton, M.D.*

Hampton R. Bates, M.D.*

Vernon M. Sylvest, M.D.* 1-3

George W. Thomas, M.D.* 1-3

*Training and Experience and Preceptor Statements are attached for each of the above named individuals.

Item 8
6-20-79

FORM NRC-313M-SUPPLEMENT A (8-78)

U.S. NUCLEAR REGULATORY COMMISSION

TRAINING AND EXPERIENCE
AUTHORIZED USER OR RADIATION SAFETY OFFICER

1. NAME OF AUTHORIZED USER OR RADIATION SAFETY OFFICER	2. STATE OR TERRITORY IN WHICH LICENSED TO PRACTICE MEDICINE
Fabio Gutierrez, M. D.	Virginia

3. CERTIFICATION

SPECIALTY BOARD A	CATEGORY B	MONTH AND YEAR CERTIFIED C
American Board of Pathology	Anatomic Pathology	May, 1975
American Board of Pathology	Clinical Pathology	May, 1975

4. TRAINING RECEIVED IN BASIC RADIOISOTOPE HANDLING TECHNIQUES

FIELD OF TRAINING A	LOCATION AND DATE(S) OF TRAINING B	TYPE AND LENGTH OF TRAINING	
		LECTURE/ LABORATORY COURSES (Hours) C	SUPERVISED LABORATORY EXPERIENCE (Hours) D
a. RADIATION PHYSICS AND INSTRUMENTATION	V. A Hospital Richmond, Virginia	80	
b. RADIATION PROTECTION	"	25	
c. MATHEMATICS PERTAINING TO THE USE AND MEASUREMENT OF RADIOACTIVITY	"	25	
d. RADIATION BIOLOGY	"	35	
e. RADIOPHARMACEUTICAL CHEMISTRY	"	22	

5. EXPERIENCE WITH RADIATION. *(Actual use of Radioisotopes or Equivalent Experience)*

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
Cr-51	0.4 mCi	V.A. Hospital, Richmond, VA.	160 hours	Diagnosis
Fe-59	0.006 mCi	"	"	"
Co-60	0.003 mCi	"	"	"
Tc-99m	20 mCi	"	"	"
I-131	0.8 mCi	"	"	"

FORM NRC-313M-SUPPLEMENT B
(8-78)

U. S. NUCLEAR REGULATORY COMMISSION

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

FULL NAME
Fabio Gutierrez, M. D.

STREET ADDRESS
Johnston-Willis Hospital
2908 Kensington Avenue

CITY | STATE | ZIP CODE
Richmond, | VA | 23221

KEY TO COLUMN C

PERSONAL PARTICIPATION SHOULD CONSIST OF:

1-Supervised examination of patients to determine the suitability for radioisotope diagnosis and/or treatment and recommendation for prescribed dosage.

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.

3-Adequate period of training to enable physician to manage radioactive patients and follow patients through diagnosis and/or course of treatment.

2. CLINICAL TRAINING AND EXPERIENCE OF ABOVE NAMED PHYSICIAN

ISOTOPE A	CONDITIONS DIAGNOSED OR TREATED B	NUMBER OF CASES INVOLVING PERSONAL PARTICIPATION C	COMMENTS *(Additional information or comments may be submitted in duplicate on separate sheets.)* D
I-131 or I-125	DIAGNOSIS OF THYROID FUNCTION	4	
	DETERMINATION OF BLOOD AND BLOOD PLASMA VOLUME		
	LIVER FUNCTION STUDIES		
	FAT ABSORPTION STUDIES		
	KIDNEY FUNCTION STUDIES		
	IN VITRO STUDIES		
OTHER	Cisternography	1	
I-125	DETECTION OF THROMBOSIS		
I-131	THYROID IMAGING	4	
P-32	EYE TUMOR LOCALIZATION		
Se-75	PANCREAS IMAGING		
Yb-169	CISTERNOGRAPHY		
Xe-133	BLOOD FLOW STUDIES AND PULMONARY FUNCTION STUDIES		
OTHER	Co-57 Schillings		
Tc-99m	BRAIN IMAGING	20	
	CARDIAC IMAGING		
	THYROID IMAGING	2	
	SALIVARY GLAND IMAGING		
	BLOOD POOL IMAGING	18	
	PLACENTA LOCALIZATION		
	LIVER AND SPLEEN IMAGING	24	
	LUNG IMAGING	9	
	BONE IMAGING	3	
OTHER			

Fabio Gutierrez, M. D. **PRECEPTOR STATEMENT** *(Continued)*

2. CLINICAL TRAINING AND EXPERIENCE OF ABOVE NAMED PHYSICIAN *(Continued)*

ISOTOPE A	CONDITIONS DIAGNOSED OR TREATED B	NUMBER OF CASES INVOLVING PERSONAL PARTICIPATION C	COMMENTS *(Additional information or comments may be submitted in duplicate on separate sheets.)* D
P-32 *(Soluble)*	TREATMENT OF POLYCYTHEMIA VERA, LEUKEMIA, AND BONE METASTASES	1	
P-32 *(Colloidal)*	INTRACAVITARY TREATMENT		
I-131	TREATMENT OF THYROID CARCINOMA	3	
	TREATMENT OF HYPERTHYROIDISM	10	
Au-198	INTRACAVITARY TREATMENT		
Co-60 or Cs-137	INTERSTITIAL TREATMENT		
	INTRACAVITARY TREATMENT		
I-125 or Ir-192	INTERSTITIAL TREATMENT		
Co-60 or Cs-137	TELETHERAPY TREATMENT		
Sr-90	TREATMENT OF EYE DISEASE		
	RADIOPHARMACEUTICAL PREPARATION		
Mo-99/ Tc-99m	GENERATOR		
Sn-113/ In-113m	GENERATOR		
Tc-99m	REAGENT KITS		
Other			

3. DATES AND TOTAL NUMBER OF HOURS RECEIVED IN CLINICAL RADIOISOTOPE TRAINING

185 hours

In addition to the training and some experience received at the V. A. Hospital, Richmond, Virginia, the above listed experience was gained under Johnston Willis, Hospital, Richmond, Va.

4. THE TRAINING AND EXPERIENCE INDICATED ABOVE WAS OBTAINED UNDER THE SUPERVISION OF:

a. NAME OF SUPERVISOR
Halcott T. Haden, M. D.

b. NAME OF INSTITUTION
V. A. Hospital

c. MAILING ADDRESS

d. CITY
Richmond, Virginia

5. MATERIALS LICENSE NUMBER(S)

6. PRECEPTOR'S SIGNATURE
Russell O. Briere

7. PRECEPTOR'S NAME *(Please type or print)*
Russell O. Briere, M. D.

8. DATE
June 20, 1979

FORM NRC-313M-SUPPLEMENT B
(8-78)

FORM NRC-313M-SUPPLEMENT A (8-78) U.S. NUCLEAR REGULATORY COMMISSION

TRAINING AND EXPERIENCE
AUTHORIZED USER OR RADIATION SAFETY OFFICER

1. NAME OF AUTHORIZED USER OR RADIATION SAFETY OFFICER	2. STATE OR TERRITORY IN WHICH LICENSED TO PRACTICE MEDICINE
John L. Thornton, M.D.	VIRGINIA

3. CERTIFICATION

SPECIALTY BOARD A	CATEGORY B	MONTH AND YEAR CERTIFIED C
American Board of Pathology	Pathologic Anatomy	October, 1956
American Board of Nuclear Medicine	Nuclear Medicine	May, 1972

4. TRAINING RECEIVED IN BASIC RADIOISOTOPE HANDLING TECHNIQUES

FIELD OF TRAINING A	LOCATION AND DATE(S) OF TRAINING B	TYPE AND LENGTH OF TRAINING: LECTURE/ LABORATORY COURSES (Hours) C	TYPE AND LENGTH OF TRAINING: SUPERVISED LABORATORY EXPERIENCE (Hours) D
a. RADIATION PHYSICS AND INSTRUMENTATION	Doctor's Hospital Washington D.C.	90	
b. RADIATION PROTECTION	Doctors Hospital Washington, D.C.	90	
c. MATHEMATICS PERTAINING TO THE USE AND MEASUREMENT OF RADIOACTIVITY	Doctors Hospital Washington, D.C.	90	
d. RADIATION BIOLOGY	Doctors Hospital Washington, D.C.	90	
e. RADIOPHARMACEUTICAL CHEMISTRY	Doctors Hospital Washington, D.C.	90	

5. EXPERIENCE WITH RADIATION. *(Actual use of Radioisotopes or Equivalent Experience)*

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
I-131	0.8 mCi	Doctor's Hosp., Wash, DC	70 Hours	Diagnosis
Co-60	3.0 uCi	Doctor's Hospital, DC	70 Hours	Diagnosis
Cr-51	0.4 mCi	Doctor's Hospital, DC	70 Hours	Diagnosis
Tc-99m	50.0 mCi	Johnston-Willis Hospital	2000 Hours	Diagnosis
I-125	1.0 mCi	Johnston-Willis Hospital	2000 Hours	Diagnosis
P-32	20.0 mCi	Johnston-Willis Hospital	50 Hours	Therapy

FORM NRC-313M-SUPPLEMENT B
(8-78)

U. S. NUCLEAR REGULATORY COMMISSION

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

FULL NAME
John L. Thornton, M.D.

STREET ADDRESS
Johnston-Willis Hospital
2908 Kensington Avenue

CITY: Richmond | STATE: VA | ZIP CODE: 23221

KEY TO COLUMN C

PERSONAL PARTICIPATION SHOULD CONSIST OF:

1-Supervised examination of patients to determine the suitability for radioisotope diagnosis and/or treatment and recommendation for prescribed dosage.

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.

3-Adequate period of training to enable physician to manage radioactive patients and follow patients through diagnosis and/or course of treatment.

2. CLINICAL TRAINING AND EXPERIENCE OF ABOVE NAMED PHYSICIAN

ISOTOPE A	CONDITIONS DIAGNOSED OR TREATED B	NUMBER OF CASES INVOLVING PERSONAL PARTICIPATION C	COMMENTS *(Additional information or comments may be submitted in duplicate on separate sheets.)* D
I-131 or I-125	DIAGNOSIS OF THYROID FUNCTION	22	
	DETERMINATION OF BLOOD AND BLOOD PLASMA VOLUME	7	
	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	200	
	CARDIAC IMAGING	30	
	THYROID IMAGING	40	
	SALIVARY GLAND IMAGING		
	BLOOD POOL IMAGING	150	
	PLACENTA LOCALIZATION		
	LIVER AND SPLEEN IMAGING	300	
	LUNG IMAGING	200	
	BONE IMAGING	50	
OTHER			

John L. Thornton, M. [redacted] PRECEPTOR STATEMENT *(Continued)*

2. CLINICAL TRAINING AND EXPERIENCE OF ABOVE NAMED PHYSICIAN *(Continued)*

ISOTOPE A	CONDITIONS DIAGNOSED OR TREATED B	NUMBER OF CASES INVOLVING PERSONAL PARTICIPATION C	COMMENTS *(Additional information or comments may be submitted in duplicate on separate sheets.)* D
P-32 *(Soluble)*	TREATMENT OF POLYCYTHEMIA VERA, LEUKEMIA, AND BONE METASTASES	4	
P-32 *(Colloidal)*	INTRACAVITARY TREATMENT		
I-131	TREATMENT OF THYROID CARCINOMA	2	
	TREATMENT OF HYPERTHYROIDISM	2	
Au-198	INTRACAVITARY TREATMENT	2	
Co-60 or Cs-137	INTERSTITIAL TREATMENT		
	INTRACAVITARY TREATMENT		
I-125 or Ir-192	INTERSTITIAL TREATMENT		
Co-60 or Cs-137	TELETHERAPY TREATMENT		
Sr-90	TREATMENT OF EYE DISEASE		
	RADIOPHARMACEUTICAL PREPARATION		
Mo-99/ Tc-99m	GENERATOR		
Sn-113/ In-113m	GENERATOR		
Tc-99m	REAGENT KITS		
Other Cr-51	Blood	4	

3. DATES AND TOTAL NUMBER OF HOURS RECEIVED IN CLINICAL RADIOISOTOPE TRAINING

500 hours

In addition to the training and some experience received at the Oscar B. Hunter Memorial Laboratory, the above listed experienced was gained under Johnston-Willis Hospital, Richmond, VA.

4. THE TRAINING AND EXPERIENCE INDICATED ABOVE WAS OBTAINED UNDER THE SUPERVISION OF:

a. NAME OF SUPERVISOR
Oscar B. Hunter, M.D.

b. NAME OF INSTITUTION
Oscar B. Hunter Memorial Laboratory

c. MAILING ADDRESS
915 19th St., NW

d. CITY
Washington, DC

5. MATERIALS LICENSE NUMBER(S)

6. PRECEPTOR'S SIGNATURE
Russell O. Briere

7. PRECEPTOR'S NAME *(Please type or print)*
Russell O. Briere, M. D.

8. DATE
June 20, 1979

FORM NRC-313M-SUPPLEMENT B
(8-78)

FORM NRC-313M-SUPPLEMENT A (8-78) U.S. NUCLEAR REGULATORY COMMISSION

TRAINING AND EXPERIENCE
AUTHORIZED USER OR RADIATION SAFETY OFFICER

1. NAME OF AUTHORIZED USER OR RADIATION SAFETY OFFICER	2. STATE OR TERRITORY IN WHICH LICENSED TO PRACTICE MEDICINE
Hampton R. Bates, M. D.	Virginia

3. CERTIFICATION

SPECIALTY BOARD A	CATEGORY B	MONTH AND YEAR CERTIFIED C
American Board of Nuclear Medicine	Nuclear Medicine	October, 1976
American Board of Pathology	Anatomic Pathology	April, 1963
American Board of Pathology	Clinical Pathology	April, 1964

4. TRAINING RECEIVED IN BASIC RADIOISOTOPE HANDLING TECHNIQUES

FIELD OF TRAINING A	LOCATION AND DATE(S) OF TRAINING B	TYPE AND LENGTH OF TRAINING	
		LECTURE/ LABORATORY COURSES (Hours) C	SUPERVISED LABORATORY EXPERIENCE (Hours) D
a. RADIATION PHYSICS AND INSTRUMENTATION	Medical College of Virginia Richmond, Virginia	55	40
b. RADIATION PROTECTION	"	20	20
c. MATHEMATICS PERTAINING TO THE USE AND MEASUREMENT OF RADIOACTIVITY	"	15	5
d. RADIATION BIOLOGY	"	22	8
e. RADIOPHARMACEUTICAL CHEMISTRY	"	25	8

5. EXPERIENCE WITH RADIATION. *(Actual use of Radioisotopes or Equivalent Experience)*

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
Cr-51	200 uCi	Chippenham Hospital	2,000 hours	Diagnostic
Fe-54	5 uCi	" "	" "	"
Co-60	0.5 uCi	" "	" "	"
Tc-99m	25 mCi	" "	" "	"
I-131	150 uCi	" "	" "	"

FORM NRC-313M-SUPPLEMENT B (8-78)

U. S. NUCLEAR REGULATORY COMMISSION

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

FULL NAME
Hampton R. Bates, M. D.

STREET ADDRESS
Johnston-Willis Hospital
2908 Kensington Road

CITY: Richmond | STATE: VA | ZIP CODE: 23225

KEY TO COLUMN C

PERSONAL PARTICIPATION SHOULD CONSIST OF:

1-Supervised examination of patients to determine the suitability for radioisotope diagnosis and/or treatment and recommendation for prescribed dosage.

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.

3-Adequate period of training to enable physician to manage radioactive patients and follow patients through diagnosis and/or course of treatment.

2. CLINICAL TRAINING AND EXPERIENCE OF ABOVE NAMED PHYSICIAN

ISOTOPE A	CONDITIONS DIAGNOSED OR TREATED B	NUMBER OF CASES INVOLVING PERSONAL PARTICIPATION C	COMMENTS *(Additional information or comments may be submitted in duplicate on separate sheets.)* D
I-131 or I-125	DIAGNOSIS OF THYROID FUNCTION	500	
	DETERMINATION OF BLOOD AND BLOOD PLASMA VOLUME	12	
	LIVER FUNCTION STUDIES		
	FAT ABSORPTION STUDIES		
	KIDNEY FUNCTION STUDIES		
	IN VITRO STUDIES		
OTHER			
I-125	DETECTION OF THROMBOSIS		
I-131	THYROID IMAGING	590	
P-32	EYE TUMOR LOCALIZATION		
Se-75	PANCREAS IMAGING		
Yb-169	CISTERNOGRAPHY		
Xe-133	BLOOD FLOW STUDIES AND PULMONARY FUNCTION STUDIES		
OTHER	Au-198 Liver Imaging	11	
Tc-99m	BRAIN IMAGING	2,000	
	CARDIAC IMAGING		
	THYROID IMAGING		
	SALIVARY GLAND IMAGING		
	BLOOD POOL IMAGING		
	PLACENTA LOCALIZATION		
	LIVER AND SPLEEN IMAGING	1,000	
	LUNG IMAGING	1,000	
	BONE IMAGING	500	
OTHER			

Hampton R. Bates, M. [redacted] **PRECEPTOR STATEMENT** *(Continued)*

2. CLINICAL TRAINING AND EXPERIENCE OF ABOVE NAMED PHYSICIAN *(Continued)*

ISOTOPE A	CONDITIONS DIAGNOSED OR TREATED B	NUMBER OF CASES INVOLVING PERSONAL PARTICIPATION C	COMMENTS *(Additional information or comments may be submitted in duplicate on separate sheets.)* D
P-32 *(Soluble)*	TREATMENT OF POLYCYTHEMIA VERA, LEUKEMIA, AND BONE METASTASES		
P-32 *(Colloidal)*	INTRACAVITARY TREATMENT		
I-131	TREATMENT OF THYROID CARCINOMA	3	
	TREATMENT OF HYPERTHYROIDISM	10	
Au-198	INTRACAVITARY TREATMENT		
Co-60 or Cs-137	INTERSTITIAL TREATMENT		
	INTRACAVITARY TREATMENT		
I-125 or Ir-192	INTERSTITIAL TREATMENT		
Co-60 or Cs-137	TELETHERAPY TREATMENT		
Sr-90	TREATMENT OF EYE DISEASE		
	RADIOPHARMACEUTICAL PREPARATION		
Mo-99/ Tc-99m	GENERATOR		
Sn-113/ In-113m	GENERATOR		
Tc-99m	REAGENT KITS		
Other			

3. DATES AND TOTAL NUMBER OF HOURS RECEIVED IN CLINICAL RADIOISOTOPE TRAINING

600 hours

In addition to the training and some experience received at the Medical College of Virginia, the above listed experience was gained under Johnston-Willis Hospital, Richmond, Va.

4. THE TRAINING AND EXPERIENCE INDICATED ABOVE WAS OBTAINED UNDER THE SUPERVISION OF:

a. NAME OF SUPERVISOR

b. NAME OF INSTITUTION
Medical College of Virginia

c. MAILING ADDRESS

d. CITY
Richmond, Virginia

5. MATERIALS LICENSE NUMBER(S)

6. PRECEPTOR'S SIGNATURE
✓ Russell O. Briere

7. PRECEPTOR'S NAME *(Please type or print)*
Russell O. Briere, M. D.

8. DATE
June 20, 1979

FORM NRC-313M-SUPPLEMENT 8
(8-78)

FORM NRC-313M-SUPPLEMENT A (8-78) U.S. NUCLEAR REGULATORY COMMISSION

TRAINING AND EXPERIENCE
AUTHORIZED USER OR RADIATION SAFETY OFFICER

1. NAME OF AUTHORIZED USER OR RADIATION SAFETY OFFICER	2. STATE OR TERRITORY IN WHICH LICENSED TO PRACTICE MEDICINE
Vernon Martin Sylvest, M.D.	Virginia

3. CERTIFICATION

SPECIALTY BOARD A	CATEGORY B	MONTH AND YEAR CERTIFIED C
American Board of Pathology	Anatomic Pathology Clinical Pathology	May, 1974

4. TRAINING RECEIVED IN BASIC RADIOISOTOPE HANDLING TECHNIQUES

FIELD OF TRAINING A	LOCATION AND DATE(S) OF TRAINING B	TYPE AND LENGTH OF TRAINING	
		LECTURE/ LABORATORY COURSES (Hours) C	SUPERVISED LABORATORY EXPERIENCE (Hours) D
a. RADIATION PHYSICS AND INSTRUMENTATION	University of Michigan	25	80
b. RADIATION PROTECTION	University of Michigan	15	10
c. MATHEMATICS PERTAINING TO THE USE AND MEASUREMENT OF RADIOACTIVITY	University of Michigan	15	10
d. RADIATION BIOLOGY	University of Michigan	18	22
e. RADIOPHARMACEUTICAL CHEMISTRY	University of Michigan	25	15

5. EXPERIENCE WITH RADIATION. *(Actual use of Radioisotopes or Equivalent Experience)*

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
I 131	50 mCi	Michigan	6/72 to 7/72	Therapy
Tc 99m	20 mCi	Michigan	6/72 to 7/72	Imaging
Xe 133	10 mCi	Michigan	6/72 to 7/72	Imaging
Ga 67	6 mCi	Johnston-Willis Hospital	1974 to 1979	Imaging
Th201	1.5mCi	Johnston-Willis Hospital	1978 to 1979	Imaging
Cr 51	30 uCi	Johnston-Willis Hospital	1974 to 1979	Imaging
I125	30 uCi	Johnston-Willis Hospital	1974 to 1979	Imaging

Form AEC-313a
(2-73)
Page 3

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. Page 2 may be used for comments and additional information.

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

Veron M. Sylvest, M.D.
1516 Edma Forst Drive
Richmond, Vir. 23229

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

(A) ISOTOPE	(B) CONDITIONS DIAGNOSED OR TREATED	(C) No. Cases Observed (See 1 in key below)	(D) No. Cases Involving Personal Participation (See 2 in key below)
I-131 or I-125	Diagnosis of thyroid function		5
	Determination of blood and blood plasma volume		
	Liver function studies		
	Fat absorption studies		
	Kidney function studies		
	In vitro studies		
Cr-51	Gastrointestinal protein loss studies		
	Determination of red blood cell volume and studies of red blood cell survival		5
Fe-59	Iron turn over studies		
Co-58or Co-60	Intestinal absorption studies		
K-42	Potassium space determinations		
I-131	Thyroid imaging		13
	Brain tumor localization and cardiac imaging		
	Cisternography		
	Lung imaging		
	Liver imaging		
	Kidney imaging		
	Placenta localization		
Cr-51	Placenta localization		
	Spleen imaging		
Au-198	Liver imaging		
Hg-197	Brain imaging		
	Kidney imaging		
Hg-203	Brain imaging		
Sr-85	Bone imaging		
Tc-99m	Brain imaging	108	27
	Thyroid imaging	38	10
	Salivary gland imaging		
	Blood pool imaging		

00408

APPLICATION FOR BYPRODUCT MATERIAL LICENSE—MEDICAL

SUPPLEMENT A—HUMAN USE

(A) ISOTOPE	(B) CONDITIONS DIAGNOSED OR TREATED	(C) No. Cases Observed (See 1 in key below)	(D) No. Cases Involving Personal Participation (See 2 in key below)
Tc-99m	Placenta localization		
	Liver and spleen imaging	100	20
	Lung imaging	19	5
	Bone imaging	12	3
Xe-133	Blood flow studies and pulmonary function studies		9
Se-75	Pancreas imaging		
P-32	Treatment of polycythemia, leukemia, and Bone metastases		
	Intracavitary treatment		
I-131	Treatment of thyroid carcinoma		1
	Treatment of hyperthyroidism and cardiac condition		8
Au-198	Intracavitary treatment		
Co-60 or CO-137	Interstitial treatment		
	Intracavitary treatment		
Ir-192	Interstitial treatment		
Co-60 CO-137	Teletherapy treatment		
Sr-90	Treatment of eye disease		

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.

12. DATES AND TOTAL NUMBER OF HOURS OF CLINICAL RADIOISOTOPE TRAINING 6-72 to 7-72 160 hours

13. THE TRAINING AND EXPERIENCE INDICATED ABOVE WAS OBTAINED UNDER THE SUPERVISION OF Wm. H. Beierwaltes, M.D.

AT University of Michigan 21-215-4. Wm. H. Beierwaltes

(Institution) Name and Address (Byproduct Material License Number) (Signature of Preceptor)

FORM NRC-313M-SUPPLEMENT B
(8-78)

U. S. NUCLEAR REGULATORY COMMISSION

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

FULL NAME

Vernon M. Sylvest, M.D.

STREET ADDRESS

2908 Kensington Avenue

CITY	STATE	ZIP CODE
Richmond	VA	23221

KEY TO COLUMN C

PERSONAL PARTICIPATION SHOULD CONSIST OF:

1-Supervised examination of patients to determine the suitability for radioisotope diagnosis and/or treatment and recommendation for prescribed dosage.

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.

3-Adequate period of training to enable physician to manage radioactive patients and follow patients through diagnosis and/or course of treatment.

2. CLINICAL TRAINING AND EXPERIENCE OF ABOVE NAMED PHYSICIAN

ISOTOPE A	CONDITIONS DIAGNOSED OR TREATED B	NUMBER OF CASES INVOLVING PERSONAL PARTICIPATION C	COMMENTS *(Additional information or comments may be submitted in duplicate on separate sheets.)* D
I-131 or I-125	DIAGNOSIS OF THYROID FUNCTION	150	
	DETERMINATION OF BLOOD AND BLOOD PLASMA VOLUME	12	
	LIVER FUNCTION STUDIES		
	FAT ABSORPTION STUDIES		
	KIDNEY FUNCTION STUDIES	45	
	IN VITRO STUDIES		
OTHER			
I-125	DETECTION OF THROMBOSIS		
I-131	THYROID IMAGING	100	
P-32	EYE TUMOR LOCALIZATION		
Se-75	PANCREAS IMAGING		
Yb-169	CISTERNOGRAPHY	5	
Xe-133	BLOOD FLOW STUDIES AND PULMONARY FUNCTION STUDIES	12	
OTHER			
Tc-99m	BRAIN IMAGING	1000	
	CARDIAC IMAGING	15	
	THYROID IMAGING		
	SALIVARY GLAND IMAGING		
	BLOOD POOL IMAGING	12	
	PLACENTA LOCALIZATION		
	LIVER AND SPLEEN IMAGING	500	
	LUNG IMAGING	400	
	BONE IMAGING	350	
OTHER	Gallium	50	

PRECEPTOR STATEMENT *(Continued)*

2. CLINICAL TRAINING AND EXPERIENCE OF ABOVE NAMED PHYSICIAN *(Continued)*

ISOTOPE A	CONDITIONS DIAGNOSED OR TREATED B	NUMBER OF CASES INVOLVING PERSONAL PARTICIPATION C	COMMENTS *(Additional information or comments may be submitted in duplicate on separate sheets.)* D
P-32 *(Soluble)*	TREATMENT OF POLYCYTHEMIA VERA, LEUKEMIA, AND BONE METASTASES		
P-32 *(Colloidal)*	INTRACAVITARY TREATMENT		
I-131	TREATMENT OF THYROID CARCINOMA		
	TREATMENT OF HYPERTHYROIDISM		
Au-198	INTRACAVITARY TREATMENT		
Co-60 or Cs-137	INTERSTITIAL TREATMENT		
	INTRACAVITARY TREATMENT		
I-125 or Ir-192	INTERSTITIAL TREATMENT		
Co-60 or Cs-137	TELETHERAPY TREATMENT		
Sr-90	TREATMENT OF EYE DISEASE		
	RADIOPHARMACEUTICAL PREPARATION		
Mo-99/ Tc-99m	GENERATOR		
Sn-113/ In-113m	GENERATOR		
Tc-99m	REAGENT KITS		
Other			

3. DATES AND TOTAL NUMBER OF HOURS RECEIVED IN CLINICAL RADIOISOTOPE TRAINING

Includes experience in basic radioisotope handling technique and experience with radiation.
See additional preceptor's statement

July 1, 1974 - June 12, 1979 - 1000 hours

4. THE TRAINING AND EXPERIENCE INDICATED ABOVE WAS OBTAINED UNDER THE SUPERVISION OF:

a. NAME OF SUPERVISOR
John L. Thornton, M.D.

b. NAME OF INSTITUTION
Johnston-Willis Hospital

c. MAILING ADDRESS
2908 Kensington Avenue

d. CITY
Richmond

5. MATERIALS LICENSE NUMBER(S)

6. PRECEPTOR'S SIGNATURE
John L. Thornton, MD

7. PRECEPTOR'S NAME *(Please type or print)*
John L. Thornton, M.D.

8. DATE
June 13, 1979

FORM NRC-313M-SUPPLEMENT B
(8-78)

FORM NRC-313M-SUPPLEMENT A (8-78) U.S. NUCLEAR REGULATORY COMMISSION

TRAINING AND EXPERIENCE
AUTHORIZED USER OR RADIATION SAFETY OFFICER

1. NAME OF AUTHORIZED USER OR RADIATION SAFETY OFFICER	2. STATE OR TERRITORY IN WHICH LICENSED TO PRACTICE MEDICINE
Vernon Martin Sylvest, M.D.	Virginia

3. CERTIFICATION

SPECIALTY BOARD A	CATEGORY B	MONTH AND YEAR CERTIFIED C
American Board of Pathology	Anatomic Pathology Clinical Pathology	May, 1974

4. TRAINING RECEIVED IN BASIC RADIOISOTOPE HANDLING TECHNIQUES

FIELD OF TRAINING A	LOCATION AND DATE(S) OF TRAINING B	TYPE AND LENGTH OF TRAINING	
		LECTURE/ LABORATORY COURSES (Hours) C	SUPERVISED LABORATORY EXPERIENCE (Hours) D
a. RADIATION PHYSICS AND INSTRUMENTATION	University of Michigan	25	80
b. RADIATION PROTECTION	University of Michigan	15	10
c. MATHEMATICS PERTAINING TO THE USE AND MEASUREMENT OF RADIOACTIVITY	University of Michigan	15	10
d. RADIATION BIOLOGY	University of Michigan	18	22
e. RADIOPHARMACEUTICAL CHEMISTRY	University of Michigan	25	15

5. EXPERIENCE WITH RADIATION. *(Actual use of Radioisotopes or Equivalent Experience)*

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
I 131	50 mCi	Michigan	6/72 to 7/72	Therapy
Tc 99m	20 mCi	Michigan	6/72 to 7/72	Imaging
Xe 133	10 mCi	Michigan	6/72 to 7/72	Imaging
Ga 67	6 mCi	Johnston-Willis Hospital	1974 to 1979	Imaging
Th201	1.5mCi	Johnston-Willis Hospital	1978 to 1979	Imaging
Cr 51	30 uCi	Johnston-Willis Hospital	1974 to 1979	Imaging
I125	30 uCi	Johnston-Willis Hospital	1974 to 1979	Imaging

Form AEC-313a
(2-73)
Page 3

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. Page 2 may be used for comments and additional information.

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

Veron M. Sylvest, M.D.
1516 Edna Forst Drive
Richmond, Vir. 23229

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

(A) ISOTOPE	(B) CONDITIONS DIAGNOSED OR TREATED	(C) No. Cases Observed (See 1 in key below)	(D) No. Cases Involving Personal Participation (See 2 in key below)
I-131 or I-125	Diagnosis of thyroid function		5
	Determination of blood and blood plasma volume		
	Liver function studies		
	Fat absorption studies		
	Kidney function studies		
	In vitro studies		
Cr-51	Gastrointestinal protein loss studies		
	Determination of red blood cell volume and studies of red blood cell survival		5
Fe-59	Iron turn over studies		
Co-58or Co-60	Intestinal absorption studies		
K-42	Potassium space determinations		
I-131	Thyroid imaging		13
	Brain tumor localization and cardiac imaging		
	Cisternography		
	Lung imaging		
	Liver imaging		
	Kidney imaging		
	Placenta localization		
Cr-51	Placenta localization		
	Spleen imaging		
Au-198	Liver imaging		
Hg-197	Brain imaging		
	Kidney imaging		
Hg-203	Brain imaging		
Sr-85	Bone imaging		
Tc-99m	Brain imaging	108	27
	Thyroid imaging	38	10
	Salivary gland imaging		
	Blood pool imaging		

APPLICATION FOR BYPRODUCT MATERIAL LICENSE—MEDICAL

SUPPLEMENT A—HUMAN USE

(A) ISOTOPE	(B) CONDITIONS DIAGNOSED OR TREATED	(C) No. Cases Observed (See 1 in key below)	(D) No. Cases Involving Personal Participation (See 2 in key below)
Tc-99m	Placenta localization		
	Liver and spleen imaging	100	20
	Lung imaging	19	5
	Bone imaging	12	3
Xe-133	Blood flow studies and pulmonary function studies		9
Se-75	Pancreas imaging		
P-32	Treatment of polycythemia, leukemia, and Bone metastases		
	Intracavitary treatment		
I-131	Treatment of thyroid carcinoma		1
	Treatment of hyperthyroidism and cardiac condition		8
Au-198	Intracavitary treatment		
Co-60 or CO-137	Interstitial treatment		
	Intracavitary treatment		
Ir-192	Interstitial treatment		
Co-60 CO-137	Teletherapy treatment		
Sr-90	Treatment of eye disease		

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.

12. DATES AND TOTAL NUMBER OF HOURS OF CLINICAL RADIOISOTOPE TRAINING 6-72 to 7-72 160 hours

13. THE TRAINING AND EXPERIENCE INDICATED ABOVE WAS OBTAINED UNDER THE SUPERVISION OF Wm. H. Beierwaltes, M.D.

AT University of Michigan 21-215-4. Wm. H. Beierwaltes

(Institution) Name and Address (Byproduct Material License Number) (Signature of Preceptor)

FORM NRC-313M-SUPPLEMENT B
(8-78)

U. S. NUCLEAR REGULATORY COMMISSION

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

FULL NAME

Vernon M. Sylvest, M.D.

STREET ADDRESS

2908 Kensington Avenue

CITY	STATE	ZIP CODE
Richmond	VA	23221

KEY TO COLUMN C

PERSONAL PARTICIPATION SHOULD CONSIST OF:

1-Supervised examination of patients to determine the suitability for radioisotope diagnosis and/or treatment and recommendation for prescribed dosage.

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.

3-Adequate period of training to enable physician to manage radioactive patients and follow patients through diagnosis and/or course of treatment.

2. CLINICAL TRAINING AND EXPERIENCE OF ABOVE NAMED PHYSICIAN

ISOTOPE A	CONDITIONS DIAGNOSED OR TREATED B	NUMBER OF CASES INVOLVING PERSONAL PARTICIPATION C	COMMENTS *(Additional information or comments may be submitted in duplicate on separate sheets.)* D
I-131 or I-125	DIAGNOSIS OF THYROID FUNCTION	150	
	DETERMINATION OF BLOOD AND BLOOD PLASMA VOLUME	12	
	LIVER FUNCTION STUDIES		
	FAT ABSORPTION STUDIES		
	KIDNEY FUNCTION STUDIES	45	
	IN VITRO STUDIES		
OTHER			
I-125	DETECTION OF THROMBOSIS		
I-131	THYROID IMAGING	100	
P-32	EYE TUMOR LOCALIZATION		
Se-75	PANCREAS IMAGING		
Yb-169	CISTERNOGRAPHY	5	
Xe-133	BLOOD FLOW STUDIES AND PULMONARY FUNCTION STUDIES	12	
OTHER			
Tc-99m	BRAIN IMAGING	1000	
	CARDIAC IMAGING	15	
	THYROID IMAGING		
	SALIVARY GLAND IMAGING		
	BLOOD POOL IMAGING	12	
	PLACENTA LOCALIZATION		
	LIVER AND SPLEEN IMAGING	500	
	LUNG IMAGING	400	
	BONE IMAGING	350	
OTHER	Gallium	50	

00408

PRECEPTOR STATEMENT *(Continued)*

2. CLINICAL TRAINING AND EXPERIENCE OF ABOVE NAMED PHYSICIAN *(Continued)*

ISOTOPE A	CONDITIONS DIAGNOSED OR TREATED B	NUMBER OF CASES INVOLVING PERSONAL PARTICIPATION C	COMMENTS *(Additional information or comments may be submitted in duplicate on separate sheets.)* D
P-32 *(Soluble)*	TREATMENT OF POLYCYTHEMIA VERA, LEUKEMIA, AND BONE METASTASES		
P-32 *(Colloidal)*	INTRACAVITARY TREATMENT		
I-131	TREATMENT OF THYROID CARCINOMA		
	TREATMENT OF HYPERTHYROIDISM		
Au-198	INTRACAVITARY TREATMENT		
Co-60 or Cs-137	INTERSTITIAL TREATMENT		
	INTRACAVITARY TREATMENT		
I-125 or Ir-192	INTERSTITIAL TREATMENT		
Co-60 or Cs-137	TELETHERAPY TREATMENT		
Sr-90	TREATMENT OF EYE DISEASE		
	RADIOPHARMACEUTICAL PREPARATION		
Mo-99/ Tc-99m	GENERATOR		
Sn-113/ In-113m	GENERATOR		
Tc-99m	REAGENT KITS		
Other			

3. DATES AND TOTAL NUMBER OF HOURS RECEIVED IN CLINICAL RADIOISOTOPE TRAINING

Includes experience in basic radioisotope handling technique and experience with radiation.
See additional preceptor's statement

July 1, 1974 - June 12, 1979 - 1000 hours

4. THE TRAINING AND EXPERIENCE INDICATED ABOVE WAS OBTAINED UNDER THE SUPERVISION OF:

a. NAME OF SUPERVISOR
John L. Thornton, M.D.

b. NAME OF INSTITUTION
Johnston-Willis Hospital

c. MAILING ADDRESS
2908 Kensington Avenue

d. CITY
Richmond

5. MATERIALS LICENSE NUMBER(S)

6. PRECEPTOR'S SIGNATURE
John L. Thornton MD

7. PRECEPTOR'S NAME *(Please type or print)*
John L. Thornton, M.D.

8. DATE
June 13, 1979

FORM NRC-313M-SUPPLEMENT B
(8-78)

FORM NRC-313M-SUPPLEMENT A (8-78) U.S. NUCLEAR REGULATORY COMMISSION

TRAINING AND EXPERIENCE
AUTHORIZED USER OR RADIATION SAFETY OFFICER

1. NAME OF AUTHORIZED USER OR RADIATION SAFETY OFFICER	2. STATE OR TERRITORY IN WHICH LICENSED TO PRACTICE MEDICINE
Vernon Martin Sylvest, M.D.	Virginia

3. CERTIFICATION

SPECIALTY BOARD A	CATEGORY B	MONTH AND YEAR CERTIFIED C
American Board of Pathology	Anatomic Pathology Clinical Pathology	May, 1974

4. TRAINING RECEIVED IN BASIC RADIOISOTOPE HANDLING TECHNIQUES

FIELD OF TRAINING A	LOCATION AND DATE(S) OF TRAINING B	TYPE AND LENGTH OF TRAINING	
		LECTURE/ LABORATORY COURSES (Hours) C	SUPERVISED LABORATORY EXPERIENCE (Hours) D
a. RADIATION PHYSICS AND INSTRUMENTATION	University of Michigan	25	80
b. RADIATION PROTECTION	University of Michigan	15	10
c. MATHEMATICS PERTAINING TO THE USE AND MEASUREMENT OF RADIOACTIVITY	University of Michigan	15	10
d. RADIATION BIOLOGY	University of Michigan	18	22
e. RADIOPHARMACEUTICAL CHEMISTRY	University of Michigan	25	15

5. EXPERIENCE WITH RADIATION. *(Actual use of Radioisotopes or Equivalent Experience)*

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
I 131	50 mCi	Michigan	6/72 to 7/72	Therapy
Tc 99m	20 mCi	Michigan	6/72 to 7/72	Imaging
Xe 133	10 mCi	Michigan	6/72 to 7/72	Imaging
Ga 67	6 mCi	Johnston-Willis Hospital	1974 to 1979	Imaging
Th201	1.5mCi	Johnston-Willis Hospital	1978 to 1979	Imaging
Cr 51	30 uCi	Johnston-Willis Hospital	1974 to 1979	Imaging
I125	30 uCi	Johnston-Willis Hospital	1974 to 1979	Imaging

Form AEC-313a
(2-73)
Page 3

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. Page 2 may be used for comments and additional information.

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

Veron M. Sylvest, M.D.
1516 Edma Forst Drive
Richmond, Vir. 23229

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

(A) ISOTOPE	(B) CONDITIONS DIAGNOSED OR TREATED	(C) No. Cases Observed (See 1 in key below)	(D) No. Cases Involving Personal Participation (See 2 in key below)
I-131 or I-125	Diagnosis of thyroid function		5
	Determination of blood and blood plasma volume		
	Liver function studies		
	Fat absorption studies		
	Kidney function studies		
	In vitro studies		
Cr-51	Gastrointestinal protein loss studies		
	Determination of red blood cell volume and studies of red blood cell survival		5
Fe-59	Iron turn over studies		
Co-58or Co-60	Intestinal absorption studies		
K-42	Potassium space determinations		
I-131	Thyroid imaging		13
	Brain tumor localization and cardiac imaging		
	Cisternography		
	Lung imaging		
	Liver imaging		
	Kidney imaging		
	Placenta localization		
Cr-51	Placenta localization		
	Spleen imaging		
Au-198	Liver imaging		
Hg-197	Brain imaging		
	Kidney imaging		
Hg-203	Brain imaging		
Sr-85	Bone imaging		
Tc-99m	Brain imaging	108	27
	Thyroid imaging	38	10
	Salivary gland imaging		
	Blood pool imaging		

APPLICATION FOR BYPRODUCT MATERIAL LICENSE—MEDICAL

SUPPLEMENT A—HUMAN USE

(A) ISOTOPE	(B) CONDITIONS DIAGNOSED OR TREATED	(C) No. Cases Observed (See 1 in key below)	(D) No. Cases Involving Personal Participation (See 2 in key below)
Tc-99m	Placenta localization		
	Liver and spleen imaging	100	20
	Lung imaging	19	5
	Bone imaging	12	3
Xe-133	Blood flow studies and pulmonary function studies		9
Se-75	Pancreas imaging		
P-32	Treatment of polycythemia, leukemia, and Bone metastases		
	Intracavitary treatment		
I-131	Treatment of thyroid carcinoma		1
	Treatment of hyperthyroidism and cardiac condition		8
Au-198	Intracavitary treatment		
Co-60 or CO-137	Interstitial treatment		
	Intracavitary treatment		
Ir-192	Interstitial treatment		
Co-60 CO-137	Teletherapy treatment		
Sr-90	Treatment of eye disease		

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.

12. DATES AND TOTAL NUMBER OF HOURS OF CLINICAL RADIOISOTOPE TRAINING 6-72 to 7-72 160 hours

13. THE TRAINING AND EXPERIENCE INDICATED ABOVE WAS OBTAINED UNDER THE SUPERVISION OF Wm. H. Beierwaltes, M.D.

AT University of Michigan 21-215-4. Wm. H. Beierwaltes

(Institution) Name and Address (Byproduct Material License Number) (Signature of Preceptor)

FORM NRC-313M-SUPPLEMENT B
(8-78)

U. S. NUCLEAR REGULATORY COMMISSION

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

FULL NAME

Vernon M. Sylvest, M.D.

STREET ADDRESS

2908 Kensington Avenue

CITY	STATE	ZIP CODE
Richmond	VA	23221

KEY TO COLUMN C

PERSONAL PARTICIPATION SHOULD CONSIST OF:

1-Supervised examination of patients to determine the suitability for radioisotope diagnosis and/or treatment and recommendation for prescribed dosage.

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.

3-Adequate period of training to enable physician to manage radioactive patients and follow patients through diagnosis and/or course of treatment.

2. CLINICAL TRAINING AND EXPERIENCE OF ABOVE NAMED PHYSICIAN

ISOTOPE A	CONDITIONS DIAGNOSED OR TREATED B	NUMBER OF CASES INVOLVING PERSONAL PARTICIPATION C	COMMENTS *(Additional information or comments may be submitted in duplicate on separate sheets.)* D
I-131 or I-125	DIAGNOSIS OF THYROID FUNCTION	150	
	DETERMINATION OF BLOOD AND BLOOD PLASMA VOLUME	12	
	LIVER FUNCTION STUDIES		
	FAT ABSORPTION STUDIES		
	KIDNEY FUNCTION STUDIES	45	
	IN VITRO STUDIES		
OTHER			
I-125	DETECTION OF THROMBOSIS		
I-131	THYROID IMAGING	100	
P-32	EYE TUMOR LOCALIZATION		
Se-75	PANCREAS IMAGING		
Yb-169	CISTERNOGRAPHY	5	
Xe-133	BLOOD FLOW STUDIES AND PULMONARY FUNCTION STUDIES	12	
OTHER			
Tc-99m	BRAIN IMAGING	1000	
	CARDIAC IMAGING	15	
	THYROID IMAGING		
	SALIVARY GLAND IMAGING		
	BLOOD POOL IMAGING	12	
	PLACENTA LOCALIZATION		
	LIVER AND SPLEEN IMAGING	500	
	LUNG IMAGING	400	
	BONE IMAGING	350	
OTHER	Gallium	50	

PRECEPTOR STATEMENT *(Continued)*

2. CLINICAL TRAINING AND EXPERIENCE OF ABOVE NAMED PHYSICIAN *(Continued)*

ISOTOPE A	CONDITIONS DIAGNOSED OR TREATED B	NUMBER OF CASES INVOLVING PERSONAL PARTICIPATION C	COMMENTS *(Additional information or comments may be submitted in duplicate on separate sheets.)* D
P 32 *(Soluble)*	TREATMENT OF POLYCYTHEMIA VERA, LEUKEMIA, AND BONE METASTASES		
P-32 *(Colloidal)*	INTRACAVITARY TREATMENT		
I-131	TREATMENT OF THYROID CARCINOMA		
	TREATMENT OF HYPERTHYROIDISM		
Au-198	INTRACAVITARY TREATMENT		
Co-60 or Cs-137	INTERSTITIAL TREATMENT		
	INTRACAVITARY TREATMENT		
I-125 or Ir-192	INTERSTITIAL TREATMENT		
Co-60 or Cs-137	TELETHERAPY TREATMENT		
Sr-90	TREATMENT OF EYE DISEASE		
	RADIOPHARMACEUTICAL PREPARATION		
Mo-99/ Tc-99m	GENERATOR		
Sn-113/ In-113m	GENERATOR		
Tc-99m	REAGENT KITS		
Other			

3. DATES AND TOTAL NUMBER OF HOURS RECEIVED IN CLINICAL RADIOISOTOPE TRAINING

Includes experience in basic radioisotope handling technique and experience with radiation.
See additional preceptor's statement

July 1, 1974 - June 12, 1979 - 1000 hours

4. THE TRAINING AND EXPERIENCE INDICATED ABOVE WAS OBTAINED UNDER THE SUPERVISION OF:

a. NAME OF SUPERVISOR
John L. Thornton, M.D.

b. NAME OF INSTITUTION
Johnston-Willis Hospital

c. MAILING ADDRESS
2908 Kensington Avenue

d. CITY
Richmond

5. MATERIALS LICENSE NUMBER(S)

6. PRECEPTOR'S SIGNATURE

John L. Thornton, MD

7. PRECEPTOR'S NAME *(Please type or print)*

John L. Thornton, M.D.

8. DATE

June 13, 1979

FORM NRC-313M-SUPPLEMENT B
(8-78)

FORM NRC-313M-SUPPLEMENT B
(8-78)

U. S. NUCLEAR REGULATORY COMMISSION

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

FULL NAME: George Walter Thomas

STREET ADDRESS: 2908 Kensington Ave

CITY: Richmond | STATE: Va | ZIP CODE: 23221

KEY TO COLUMN C

PERSONAL PARTICIPATION SHOULD CONSIST OF:

1-Supervised examination of patients to determine the suitability for radioisotope diagnosis and/or treatment and recommendation for prescribed dosage.

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.

3-Adequate period of training to enable physician to manage radioactive patients and follow patients through diagnosis and/or course of treatment.

2. CLINICAL TRAINING AND EXPERIENCE OF ABOVE NAMED PHYSICIAN

ISOTOPE A	CONDITIONS DIAGNOSED OR TREATED B	NUMBER OF CASES INVOLVING PERSONAL PARTICIPATION C	COMMENTS *(Additional information or comments may be submitted in duplicate on separate sheets.)* D
I-131 or I-125	DIAGNOSIS OF THYROID FUNCTION	[redacted]121	
	DETERMINATION OF BLOOD AND BLOOD PLASMA VOLUME	4	
	LIVER FUNCTION STUDIES		
	FAT ABSORPTION STUDIES		
	KIDNEY FUNCTION STUDIES	26	
	IN VITRO STUDIES		
OTHER			
I-125	DETECTION OF THROMBOSIS		
I-131	THYROID IMAGING	35	
P-32	EYE TUMOR LOCALIZATION		
Se-75	PANCREAS IMAGING		
Yb-169	CISTERNOGRAPHY	3	
Xe-133	BLOOD FLOW STUDIES AND PULMONARY FUNCTION STUDIES	12	
OTHER			
Tc-99m	BRAIN IMAGING	850	
	CARDIAC IMAGING	11	
	THYROID IMAGING	121	
	SALIVARY GLAND IMAGING		
	BLOOD POOL IMAGING	8	
	PLACENTA LOCALIZATION		
	LIVER AND SPLEEN IMAGING	460	
	LUNG IMAGING	382	
	BONE IMAGING	425	
OTHER	Gallium Scans	45	

PRECEPTOR STATEMENT *(Continued)*

2. CLINICAL TRAINING AND EXPERIENCE OF ABOVE NAMED PHYSICIAN *(Continued)*

ISOTOPE A	CONDITIONS DIAGNOSED OR TREATED B	NUMBER OF CASES INVOLVING PERSONAL PARTICIPATION C	COMMENTS *(Additional information or comments may be submitted in duplicate on separate sheets.)* D
P-32 *(Soluble)*	TREATMENT OF POLYCYTHEMIA VERA, LEUKEMIA, AND BONE METASTASES		
P-32 *(Colloidal)*	INTRACAVITARY TREATMENT		
I-131	TREATMENT OF THYROID CARCINOMA		
	TREATMENT OF HYPERTHYROIDISM		
Au-198	INTRACAVITARY TREATMENT		
Co-60 or Cs-137	INTERSTITIAL TREATMENT		
	INTRACAVITARY TREATMENT		
I-125 or Ir-192	INTERSTITIAL TREATMENT		
Co-60 or Cs-137	TELETHERAPY TREATMENT		
Sr-90	TREATMENT OF EYE DISEASE		
	RADIOPHARMACEUTICAL PREPARATION		
Mo-99/ Tc-99m	GENERATOR		
Sn-113/ In-113m	GENERATOR		
Tc-99m	REAGENT KITS		
Other			

3. DATES AND TOTAL NUMBER OF HOURS RECEIVED IN CLINICAL RADIOISOTOPE TRAINING

Oct 1, 1976 through Oct 31, 1978 Total 750 hours
Nov 1, 1978 through June 15, 1979 250 hours
1000 hours

4. THE TRAINING AND EXPERIENCE INDICATED ABOVE WAS OBTAINED UNDER THE SUPERVISION OF:

a. NAME OF SUPERVISOR
John L. Thornton

b. NAME OF INSTITUTION
Johnston Willis Hospital

c. MAILING ADDRESS
2908 Kensington Ave

d. CITY
Richmond, Va 23221

5. MATERIALS LICENSE NUMBER(S)

6. PRECEPTOR'S SIGNATURE
John L. Thornton

7. PRECEPTOR'S NAME *(Please type or print)*
John L. Thornton, M.D.

8. DATE June 20, 1979

FORM NRC-313M-SUPPLEMENT B
(8-78)

FORM NRC-313M-SUPPLEMENT A (8-78) — U.S. NUCLEAR REGULATORY COMMISSION

TRAINING AND EXPERIENCE
AUTHORIZED USER OR RADIATION SAFETY OFFICER

1. NAME OF AUTHORIZED USER OR RADIATION SAFETY OFFICER	2. STATE OR TERRITORY IN WHICH LICENSED TO PRACTICE MEDICINE
George Walter Thomas	Va

3. CERTIFICATION

SPECIALTY BOARD A	CATEGORY B	MONTH AND YEAR CERTIFIED C
American Board of Pathology	Anatomic Pathology Clinical Pathology	May 1977

4. TRAINING RECEIVED IN BASIC RADIOISOTOPE HANDLING TECHNIQUES

FIELD OF TRAINING A	LOCATION AND DATE(S) OF TRAINING B	TYPE AND LENGTH OF TRAINING: LECTURE/ LABORATORY COURSES (Hours) C	TYPE AND LENGTH OF TRAINING: SUPERVISED LABORATORY EXPERIENCE (Hours) D
a. RADIATION PHYSICS AND INSTRUMENTATION	Medical College of Virginia	60	100
b. RADIATION PROTECTION	Medical College of Virginia	20	
c. MATHEMATICS PERTAINING TO THE USE AND MEASUREMENT OF RADIOACTIVITY	Medical College of V irginia	25	
d. RADIATION BIOLOGY	Medical College of Virginia	30	
e. RADIOPHARMACEUTICAL CHEMISTRY	Medical College of Virginia	30	

5. EXPERIENCE WITH RADIATION. *(Actual use of Radioisotopes or Equivalent Experience)*

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
Tc99m	25 mCi	Johnston-Willis Hospital	1977 - 1979	Imaging
Xe133	10 mCi	Chippenham Hospital	1978 - 1979	Imaging
I131	50μCi	Johnston-Willis Hospital	1977 - 1979	Imaging
Ga67	6 mCi	Johnston-Willis Hospital	1978 - 1979	Imaging
Th201	1.5mCi	Johnston-Willis Hospital	1978 - 1979	Imaging
Cr 51	30 μCi	Johnston-Willis Hospital	1977 - 1979	Imaging
I125	30 μCi	Johnston-Willis Hospital	1977 - 1979	Imaging

Instrumentation

A. Survey Instrument: Eberline E-520, 0 - 5000 mR/hr - one each

Victoreen Panoramic 470-A - 0 - 300 mR/hr.

B. Dose Calibrator: Capintec CRC-10

C. Diagnostic Instruments: Picker Dynacamera
Picker 5" Scanner
Ohio Nuclear 410
Ohio Nuclear Ultimat

Calibration of Instruments

1. Calibration of scanning and measuring equipment will be conducted in accordance with the manufacturers' instructions.

2. The dose calibrator will be calibrated as follows:

   A. On a daily basis, a microcurie level constancy source such as Radium-226 or Cesium-137 will be used to insure that the instrument in consistant to within ±5%. Should the error be greater than 5%, appropriate corrective maintenance will be conducted.

   B. On a quarterly basis, a Cobalt-57 standard of up to 10 mCi will be used to test the dose calibrator accuracy. This service will be conducted by Health Physics Services, Inc., under their Maryland License No. 31-035-01. Should this calibration deviate by greater than ±5%, appropriate corrective maintenance will be conducted. This quarterly procedure will be repeated using a Cesium-137 and a Barium-133 source of approximately .2 millicuries each. (see Attachment A)

   In addition to the above calibrations, the linearity of of the dose calibrator will be determined quarterly over the full range of activities of Technetium used. Should the linearity (measured vs. calculated) be off by greater than ±5%, appropriate corrective maintenance will be conducted.

3. Calibration of survey meters will be conducted on a quarterly basis by Health Physics Services, Inc., Potomac, Maryland, using Cesium-137 under Md. License No. 31-035-01. The calibration will be conducted on at least two points of each scale at approximately 1/3 and 2/3 of the scale. (see Attachment B)

NOTE: Certificates of all calibrations will be maintained in the appropriate files. (see Attachment C)

Attachments: A - Calibration of Dose Calibrator
B - Calibration of Survey Meters
C - Calibration Certificate

Attachment A

CALIBRATION OF DOSE CALIBRATOR

A. Sources Used for Linearity Test:

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

B. Sources Used for Instrument Accuracy and Constancy Tests:

Radionuclide	Activity	Accuracy
Co-57 (ICN77329)	10.0 mCi	±5%
Ba-133 (NEN, NES-358)	0.2 mCi	±5%
Cs-137 (NEN, NES-356)	0.2 mCi	±3.8%
Ra-226 (Amersham Searle 184622)	0.015 mCi	±5%

C. The procedures described in Appendix D, Section 2, NRC Licensing Guide for Medical Programs will be used for calibration of the dose calibrator.

HEALTH PHYSICS SERVICES, INC.

7825 TUCKERMAN LANE • SUITE 201 • POTOMAC, MARYLAND 20854 • (301) 299-2700

April 3, 1978

SURVEY INSTRUMENT CALIBRATION PROCEDURES

Source

Sealed Cesium-137 sources of approximately 250 mCi, authorized under Maryland License No. MD-31-035-01 for calibration purposes. The exposure rate at discrete distances have been determined with NBS traceable ion chambers by a certified radiological physicist. These measurements will be re-certified annually.

Procedure

1. Turn on instrument to be calibrated and check batteries, etc. Replace as necessary.
2. Prepare calibration certificate in duplicate.
3. Unlock calibrator and remove souce plug.
4. Compare instrument at two points on each scale (approximately 30% and 70% of scale), to known exposure level. If deviation from true exposure exceeds ±10%, make appropriate adjustments in accordance with the instrument manual.
5. After appropriate adjustments repeat Item 4., above. If deviations still exceed ±10%, forward for appropriate maintenance with customer's consent.
6. Complete calibration certificate and insure that true exposure and meter response is listed for two or more points on each scale.
7. Replace plug, lock calibrator and sign certificate.
8. Insure that certificate accompanies instrument when returned to customer.
9. Affix calibration sticker, with date of calibration, on side of meter and pack for shipping.

NOTE: Instruments used to measure low energy range isotopes, e.g., I-125, Tc-99m, Xe-133, shall also be calibrated with a Co-57 source of approximately 10 mCi (ICN Model 77321 or equivalent) for relative response comparison.

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6-20-79

HEALTH PHYSICS SERVICES, INC.

7825 TUCKERMAN LANE • SUITE 201 • POTOMAC, MARYLAND 20854 • (301) 299-2700

CALIBRATION CERTIFICATE

This is to certify that the instrument described below was calibrated with Cesium-137, and compared to instrumentation whose calibration is traceable to the National Bureau of Standards.

HEALTH PHYSICS SERVICES, INC.

Health Physicist

MFG_____ MDL_____ SN_____

OWNER_____

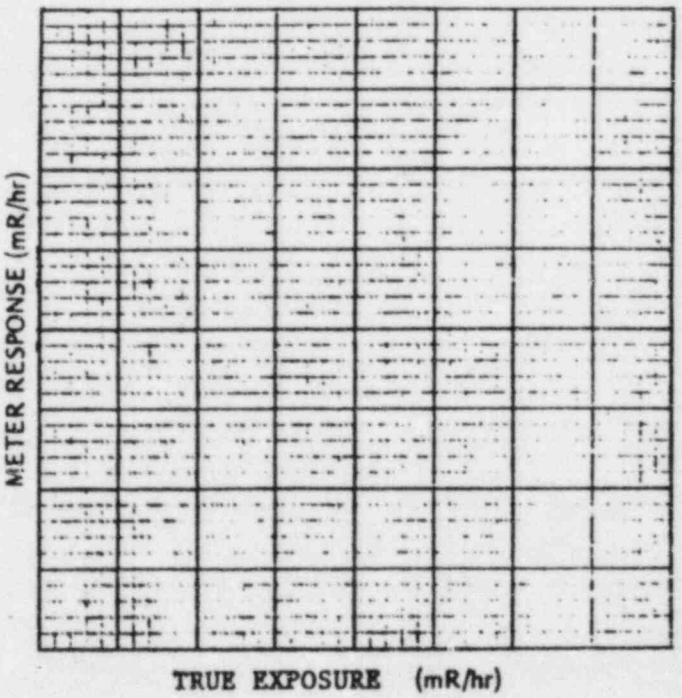
CALIBRATION DATE_____

NEXT CALIBRATION DUE DATE_____

BATTERIES CHANGED: YES_____ NO_____

INTERNAL ADJUSTMENT REQUIRED: YES___ NO__

METER READING mR/hr	SCALE	EXPOSURE mR/hr



Item No. 10
Attachment
6-20-79

FACILITIES AND EQUIPMENT

The Nuclear Medicine Clinic is divided into three separate functional areas:

1. Office
2. Imaging and Scanning Room
3. Radioisotope Laboratory

The radioisotope laboratory contains an area shielded with lead bricks for storage of radioisotopes and generators. Also located in this area is a refrigerator for storage of perishable materials, a sink, the dose calibrator and adequate bench space for preparation of radiopharmaceuticals.

The laboratory area has available additional lead bricks, lead pigs, syringe shields, automatic pipettes, forceps, etc., for the preparation and administration of patient doses. The decay storage bin and radioactive waste receptacle are also located in this laboratory.

The radioisotope laboratory is locked when the Nuclear Medicine physician or technician is not in attendance. The keys to this facility are maintained by the Nuclear Medicine personnel.

RADIATION HANDLING EQUIPMENT

To enable personnel to work safety with unsealed radioactive materials, the Nuclear Medicine laboratory will have on hand the proper radiation handling equipment. The following is a list of basic radiation handling equipment which is available in the Nuclear Medicine departments.

Shielding Equipment

Lead bricks (e.g., 2 inch x 4 inch x 6 inch)

Lead syringe holders for transporting syringes containing radioactivity

Lead syringe shields for reducing exposure during injection of radiopharmaceuticals

Lead vial and container shields (pigs) for reducing exposure during transport and storage of vials, etc., that contain radioactive material.

Contamination Control

Disposable gloves

Laboratory coats or uniforms

Absorbent pads (absorbent layer backed by non-absorbent plastic material) for covering work surfaces

Trays (e.g., 14 inch x 18 inch x 7/8 inch deep) used with absorbent pads for covering work surfaces

Decontaminating agents. Special agents are commercially available for decontaminating hands, utensils, work areas, etc.

Signs and labels indicating the presence of radioactive materials in areas or rooms where they are being used or stored. Labels on containers indicating radionuclide, activity, and date.

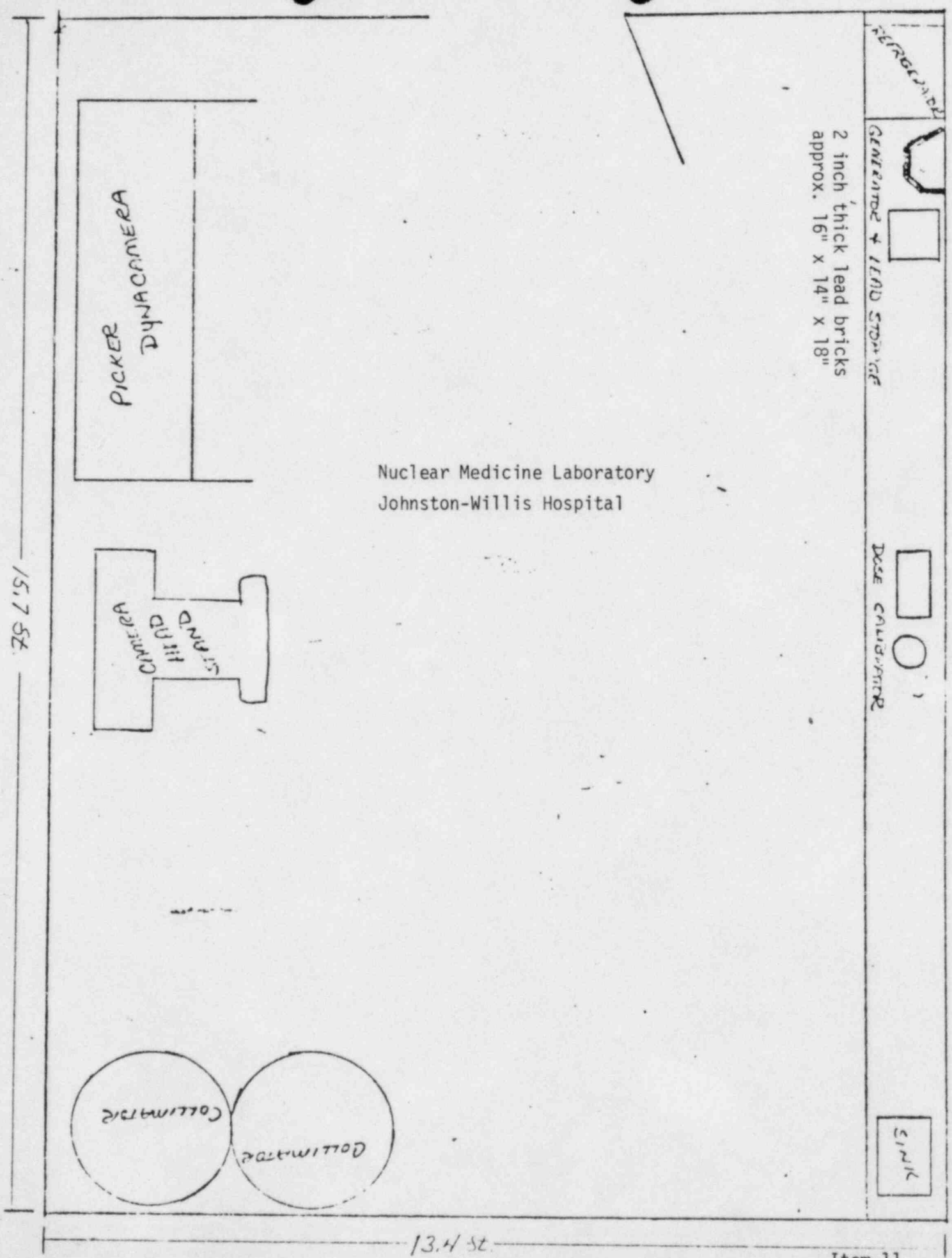
Monitoring

Low level survey meter (portable, battery operated)

High level ionization survey meter (portable, battery operated), e.g., a "Cutie Pie" or similar instrument.

00408

Item 11
6-20-79



Item 11
6-20-79

RADIATION SAFETY TRAINING FOR RADIATION WORKERS

1. The principal user of radiation sources is responsible for insuring that all such sources under his jurisdiction are used only by individuals who have been properly trained to use them safely.

2. Radiation workers shall participate in continuing education programs such as on-the-job training, in-service educational programs, technical workshops, and professional society meetings. Such training shall be documented.

3. In addition to on-the-job training provided initially by supervisory personnel, all individuals who work with radiation sources (including security, nursing and housekeeping personnel) shall receive periodic training at least annually in radiation safety. The health physics staff will conduct this training. The attached subject outline lists the topics to be included in this training. The depth of discussion will be based upon the extent of applicability to the employees involved. This training will be documented.

SUBJECT: Radiation Safety Training Program

CLASS PRESENTED TO: Radiation Workers

FREQUENCY OF INSTRUCTION: Once a year, minimum, or whenever there is a significant change in duties, regulations, or terms of the license.

CLASS OUTLINE

1. Introduction
   A. Purpose: To familiarize radiation workers with the established standards for protection against unwarranted radiation exposure from radioactive materials.
   B. References:
      1) Title 10, Code of Federal Regulations Parts 19 and 20
      2) NBS Handbook 92
      3) NCRP Reports No. 39 and 48
      4) Specific NRC License conditions
2. Principles of Radiation Protection
   A. Philosophy of radiation exposure control
   B. Potential hazards and physical safeguards
   C. NRC Regulations and NCRP Recommendations
3. Radiological Safety Procedures Described in the license
   A. General Laboratory Rules
   B. Isotope Receipt and inspection, use and storage
   C. Radiation caution signs and labels
   D. Anti-contamination procedures
   E. Radioactive waste disposal
   F. Personnel monitoring
   G. Radiation emergency procedure
   H. Applicable special procdures (e.g. therapy, gases, animal)
4. Health Physics Surveys
   A. Criteria and periodicity
   B. Measurement of radiation levels
   C. Assessment of laboratory procedures
   D. Facility evaluation
   E. Records review
5. Question and Answer Period

PROCEDURES FOR ORDERING AND RECEIVING RADIOACTIVE MATERIAL

1. Radioactive materials will be ordered by the Chief Technologist or Chief of Service for the Nuclear Medicine Department. Prior to placing an order, the inventory will be reviewed to insure that possession limits will not be exceeded.

2. During normal working hours carriers will be instructed to deliver radioactive packages directly to the Nuclear Medicine Department.

3. During off-duty hours, radioactive packages will be received as follows:

Shipments of radioactive material arriving after normal working hours are delivered to the Nursing Supervisor.

The Nursing Supervisor will immediately have the radioactive material shipment transported to the Nuclear Medicine Hot Lab, where it will be placed on the floor in the middle of the room. The room will be locked.

If the package appears wet or damaged, the Nursing Supervisor will immediately notify the Radiation Safety Officer or Nuclear Medicine technologist. The delivery agent will be asked to remain until his person and vehicle have been surveyed for contamination by either of the above personnel.

Inspection of the damaged shipment, by either of the above individuals will be conducted in accordance with the "Procedures for Package Inspection".

The Nuclear Medicine technologist, upon arrival during normal working hours will process the radioactive material in accordance with previous instructions.

CONTACTS

Radiation Safety Officer: Russell O. Briere, M. D.
Duty Phone: 804-359-9111
Home Phone: 804-285-2195

Nuclear Medicine Technologist: Ms. Suzanne Smoot
Duty Phone: 804-359-9111
Home Phone: 804-744-3266

PROCEDURES FOR EXAMINING INCOMING RADIOISOTOPE PACKAGES

1. Section 20.205 of Title 10, Part 20, Code of Federal Regulations and pertinent parts of Agreement State Regulations for Radiation Control, require that procedures be established and maintained for "Safely Opening Packages" in which radioactive material is received, and shall assure that such procedures are followed and that due consideration is given to special instructions for the type of package being opened.

2. The following outline is provided as a model for fulfillment of this requirement:

A. General Set-up

1) All packages containing radioactive materials will be inspected for damage, leakage, or contamination by monitoring with a beta-gamma survey meter and wipe testing the outside of the shipping container and the external surface of the final source container.

2) A record shall be maintained to show the results of such monitoring.

3) Packages should be delivered to one specific location in the laboratory or clinic for receipt and inspection. Treat as contaminated until proven otherwise, especially if damaged.

4) Arrange to open and inspect packages as soon as possible after receipt, but not later than three (3) hours during normal work hours, or 18 hours if received after normal work hours.

B. Procedures for Package Inspection

1) Place package on surface with absorbent material. Plastic or other protective gloves should be worn for opening packages for protection of the surveyor.

2) Observe package for leakage stains. Record condition.

3) Monitor the unopened package with a survey meter. If the radiation level exceeds 200 mR per hour at the surface, or 10 mR per hour at three (3) feet, record in log book and proceed with caution.

4) *Wipe 100 cm^2 area of outer package with dry wipe and measure amount of removable activity with count rate meter. Record in log book. The maximum allowable limit is 22,000 dpm.
*PERFORM THIS STEP ONLY IF PACKAGE APPEARS DAMAGED.

NOTE: If radiation measurements exceed the levels in either step 3) or 4), above, DO NOT OPEN PACKAGE. Immediately notify Radiation Safety Officer or health physics consultant and chief of the department for further instructions. The Radiation Safety Officer or consultant will notify the appropriate officials of the Nuclear Regulatory Commission or State Health Department, the final delivery carrier and the vendor.

B. Procedures for Package Inspection (continued)

5) If radiation levels of the outer container are within prescribed limits, open the outer package and remove packing slip.

6) Open inner package to verify contents (compare packing slip, purchase order, label or inner container) and integrity of final source container (inspect for breakage of seals or vials, loss of content, discoloration of packing material).

7) Wipe external surface of final source container with moistened filter paper held with forceps, assay and record in log book. If internal contamination (> 500 dpm) is found, the shipment should be decontaminated by the Radiation Safety Officer or senior technician prior to use. However, contaminated shipments should not be used in patient studies but will be disposed of as radioactive waste.

8) Monitor the packing material and empty packages for contamination before discarding. Record meter reading in log book.

a. If contaminated (any reading above background level), treat as radioactive waste.

b. If not contaminated, obliterate radiation labels before discarding to regular trash.

C. Radioisotope Receipt Record

The results of wipe testing monitoring shall be recorded in the Radioisotope Use Record (see attached sample).

RADIOISOTOPE USE RECORD

Vendor's Label

Isotope Receipt Information

mR/hr. _____ Surface _____ 3 ft. _____ empty box

Wipe Test _____ cpm Source Leak stains visible on outer package ___/___ Yes No

umber	Patient Name	Procedure	Date	Time	Assay (mCi/ml)	Patient Dose		Balance Remaining (mCi)	Disposal Information	Administered By (initial)
						Activity (mCi)	Volume (ml)			

Item 14
6-20-79

STANDARDS FOR RADIOSOTOPES CONTROLS

A. General

1. All individuals assigned to work with radioactive materials shall be informed of the nature of the radiation hazards involved and be instructed regarding radiation safety procedures to be observed.

2. In addition to complying with the limits set forth in pertinent regulations, guides, and standards, supervisors and users of radiation sources shall make every reasonable effort to maintain radiation exposures, and releases of radioactive material to unrestricted areas as low as reasonably achievable.

3. All areas where radioactive materials are used and stored shall be conspicuously posted with radiation caution signs and labels in accordance with the provisions of pertinent federal and state radiation control regulations.

4. Shipments containing radioisotopes will be delivered directly to the Nuclear Medicine Clinic. and inspected for damage or leakage prior to being opened.

5. The laboratory will be secured from unauthorized entry during other than normal hours. The names and telephone numbers of persons to be notified in case of emergency shall be posted on the door.

6. In each area where radioactive materials are used and stored, there shall be immediately available a radiation survey meter suitable for the detection and monitoring of the radiation exposure in the area. This requirement may be waived by the radiation safety officer, when in his opinion, its use is not appropriate.

7. Radiation safety surveys of radioisotope facilities shall be performed periodically to ensure conformance with pertinent regulations and good health physics practices.

8. A copy of the following documents shall be conspicuously posted at locations where radioactive materials are used:

A. General

8. (continued)

a. The radioactive material license and supporting documents

b. 10CFR Parts 19 and 20 and/or applicable State regulations.

c. NRC Form 3: "Notice to Employees and/or applicable State Form.

d. These procedures for radiation safety

e. Any federal or state notice of licensee violation

B. Radioisotope Laboratory Routine Safety Procedures

1. All work with radioactive materials shall be performed utilizing protective clothing and gloves.

2. Work surfaces shall be covered with absorbent paper where radioactive materials are being used.

3. Radioactive solutions shall be confined in covered containers plainly identified and labeled with name of compound, radionuclide, date, activity, and radiation level, if applicable.

4. Mechanical devices only shall be used in pipetting radioactive solutions (not by mouth).

5. Eating, drinking, smoking or the application of cosmetics shall be prohibited in the radioisotope work areas. Failure to do so may lead to accidental ingestion of radioactive material.

6. Refrigerators containing radioisotopes shall not be used for the storage of food or other consumable items.

7. Records shall be maintained for receipt, inspection, use, transfer, and disposal of radioactive material.

8. Film badges (personnel dosimeters) shall be worn at all times during duty hours, except for medical and dental X-ray appointments. Clearance will be obtained from the Radiation Protection Officer before wearing the film badge after completion of radioisotope treatment. Film badges will be protected from damage and not tampered with.

9. Radioactive waste shall be deposited in the designated waste container.

10. Assay each patient dose in the dose calibrator prior to administration (unless provided as precalibrated doses for RIA tests). Do not use any doses that differ from the prescribed dose by more than 10%.

11. Keep "hot" vials and syringes in shielded containers. Syringe shields should be used for preparation and administration of radioactive material in millicurie quantitites.

12. Confine work with gaseous, volatile or dust-forming radioactive material to fume hood.

13. At the close of each work period, the laboratory work surfaces shall be carefully monitored.

14. Before leaving the laboratory after working with uncontained radioactive materials, each person shall wash his hands thoroughly and check them with a laboratory monitor for contamination.

15. Review pertinent safety practices frequently, especially before using a new radioactive compound.

C. Use of Moly/Tech Generators and Preparation of Reagent Kits and Dose Administration

1. In all cases, all instructions supplied by the manufacturers of the generators and radiopharmaceutical kits will be followed precisely, including procedures for elution, assay, kit preparation, radiation precautions and the use of special equipment such as syringes, shields, and other accessories.

2. Areas used for elution of Mo-99 /Tc-99m generators, for preparation of radiopharmaceuticals from reagent kits, and for preparation of individual patient doses will be surveyed for contamination after each procedure or at the end of each work day.

3. Every elution of generators will be assayed by use of the dose calibrator for technetium-99m activity and molybdenum-99 breakthrough contamination. The eluates will not be used if there is more than one (1) microcurie of Moly-99 per millicurie of technetium-99m or more than five (5) microcuries of Moly-99 per administered dose of technetium-99m.

4. Individuals who elute Mo-99/Tc-99m generators prepare radiopharmaceuticals from reagent kits, and all personnel who prepare patient doses or work in areas used for elution of generators, preparation of radiopharmaceuticals or preparation of individual patient doses will monitor their hands and clothing for contamination before leaving those areas.

5. The activity of all radionuclides or radiopharmaceutical doses to be administered to patients will first be determined by mathematical calculations. Once drawn, the total activity contained in the syringe will be double checked by use of the dose calibrator. Except for this determination, the syringe will be kept in the syringe shield and/or pig. All radiopharmaceuticals will be assayed just prior to administration to the patient.

6. Patient dose information of administered technetium-99 and all other administered radioactive materials will be recorded in the patient dose log.

D. Bioassay Procedures

1. Bioassay studies of occupationally exposed personnel will be performed when there is believed to be a reasonable risk of significant internal radioactive exposure. As a minimum, the type of bioassay, frequency of administration, and action levels are as follows:

A. Any individual who at one time handles more than five (5) millicuries of uncontained high-specific activity Iodine-131 or Iodine-125, shall have the total radioactive iodine content (microcuries) of the thyroid gland measured using an uptake probe system. This shall be done under the supervision of the Chief, Nuclear Medicine Service within 96 hours after each work period (for intermittent exposure), and monthly (for continuous exposure).

A total thyroid radioactive iodine content equal to or greater than 0.04 microcuries will require further investigation by the Radiation Protection Officer. Thyroid gland radioactive iodine content will also be determined, under the supervision of the Chief, Nuclear Medicine Service, in any occupationally exposed individual suspected of accidental ingestion of inhalation of radioactive iodine. This will be done within 96 hours of the accidental exposure. A total thyroid radioactive iodine content in excess of 0.14 microcuries will result in the individual being removed from duties involving radioactive iodine exposure until the thyroid content has dropped to less than 0.04 microcuries.

B. In the case of uncontained tritium labeled organic compounds, urinalysis with a liquid scintillation detection system will be effected weekly whenever the amount used in a single test is greater than 10 millicuries. Any urinalysis revealing in excess of 25 microcuries/liter in 24 hours, urine collection will result in the individual being removed from duties involving tritium exposure until the urine concentration has dropped to 5 microcuries/liter as revealed by subsequent liquid scintillation tests.

2. Additional bioassay procedures will be accomplished as specified in appropriate regulations and standards. Records of bioassay studies will be maintained for review by appropriate officials.

E. Iodine-131 Handling Procedures

1. In order to minimize the potential volatilization and contamination during patient dose preparation, the use of radioiodine will mainly be in the physical form of capsules.

2. When uncontained high specific activity is used, such as in treatment of thyroid carcinoma, the following additional procedures will be followed:

   a. The vial containing the radioiodine will remain unopened and stored in the lead shipping container in the isotope storage area until just prior to patient administration.

   b. When ready for patient administration, while using rubber gloves and forceps, the vial will be opened in the fume hood to allow any volatized buildup of Iodine to escape. The vial will then be closed, and the surface of the unshielded container will be wiped with alcohol sponge pad to remove any possible contamination. It will then be assayed in the dose calibrator and replaced in its shield. Smears will be taken to assure that no contamination has occured in the work area.

   c. The unopened vial will be taken to the patient administration area in its shield. While using rubber gloves, the vial will be opened and a straw inserted. The shielded container will be given to the patient to drink.

   d. When the dose has been administered, the shielded vial will be placed in a plastic bag, sealed and returned to the isotope storage area for decay and disposal.

   e. Several smears of the patient administration area will be taken to check for contamination.

   f. Individuals involved with dose administration will wash their hands thoroughly with soap and water and will have their thyroid checked for possible uptake as described in the Bioassay Procedures.

   g. The procedures described in the Health Physics Aspects of Nursing Care of Therapy Patients with Unsealed Sources will be followed when the patient is hospitalized.

ENCLOSURE NO. 1

NUCLEAR MEDICINE RESPONSE TO SPILLS OF RADIOACTIVE MATERIAL

The following guidelines for response to radiation emergencies are established as a minimum requirement for the Nuclear Medicine staff. The policy is designed as a brief outline of simple procedures to be followed in case of a spill or other accident involving the use of radioactive material.

A spill may be the result of a loaded syringe falling on the floor and breaking, a broken vial, leaking generator, etc. Immediate response by the technologist on duty should include the following steps:

1. Clear the area of extra staff personnel and patients.
2. Notify the radiologist
3. Define the area of the spill, i.e., bench top, middle of floor, etc.
4. Remove extra supplies and equipment from the immediate area to insure that cross contamination does not occur.
5. Wear protective gloves and a laboratory coat.
6. Wipe up the spill carefully using any available absorbing material, from the outer perimeter toward the center of the involved area. All materials used should be placed in a plastic lined container.
7. Use any common detergent and scrub the entire area involved. A minimal amount of water should be used in order to avoid unnecessary spread of radioactive material.
8. Survey the entire area of the spill with an end-window geiger tube survey meter. If radiation levels are detected above normal background, repeat Step 6., above.
9. Upon completion of above, remove protective clothing and place in radioactive waste container.
10. The technologist should monitor her/himself completely to insure that contamination is not present on clothing, shoes, hands, etc.
11. Review the circumstances surrounding the spill to determine appropriate preventive measures for the future.

AREA SURVEYS

A. GENERAL

1. Radiation safety surveys shall be performed periodically to insure conformance with pertinent regulations and good health physics practices.

2. In each area where radioactive materials are used and stored, there shall be immediately available a radiation survey meter suitable for the detection and monitoring of the radiation exposure level in the area. This requirement may be waived by the radiation safety officer, when, in his opinion, its use is not appropriate.

B. SURVEY PROCEDURES

1. Areas used for elution of Molybdenum-99/Technetium-99m generators, for preparation of radiopharmaceuticals from reagent kits, and for preparation of individual patient doses shall be surveyed for contamination after each procedure or at the end of each work day, and decontaminated if necessary.

2. Laboratory areas where radioactive materials are used and stored shall be surveyed weekly by the assistant radiation safety officer (chief, technologist). This survey will consist of:

a. Measurement of radiation levels with a survey meter sufficiently sensitive to detect at least 0.1 mR/hr.

b. A series of wipe tests to measure contamination levels. The method for performing wipe tests will be sufficiently sensitive to detect at least 100 dpm.

c. Areas will be cleaned if the contamination level exceeds 100 dpm per $100cm^2$.

C. RECORDS A permanent record will be kept of all survey results including negative results. The record will include:

1. Date, instrument used, and name of person conducting the survey.

2. Drawing of area surveyed, identifying relevant features such as radioisotope storage areas, radioactive waste storage, generators, etc.

3. Measured exposure rates and contamination levels keyed to location on drawing (point out areas that need corrective action).

4. Comments on corrective action taken to reduce excessive exposure levels of contamination.

RADIOACTIVE WASTE PROGRAM

Radioactive waste will be divided into two groups, i.e., long-lived and short-lived. Adequate lead or other suitable shielding will be provided as necessary to reduce the radiation exposure levels to the lowest practical limit while radioactive waste is in temporary storage.

Short-lived isotopes will be stored until the radiation level from the surface of their unshielded container, plastic bag/cardboard box, etc., is measured with a low-level GM survey meter, and is equal to or less than natural radiation background levels. Once this level has been determined, all radiation labels and symbols will be removed prior to disposal as non-radioactive waste. Appropriate documentation will be maintained on file in the department utilizing radioactive material.

Long-lived radioactive waste will be stored in a suitable container properly shielded until disposed of through a licensed commercial vendor of radioactive waste, such as Radiac Research Corp., Brooklyn, New York.

Records of such disposal will also be properly maintained and reviewed as necessary by the Radiation Safety Officer.

All radioactive waste generated at the hospitals where radiopharmaceuticals are administered will be collected there and returned to the Nuclear Medicine Hot Lab for disposal.

Health Physics Aspects of Nursing Care of Radiation Therapy Patients with Unsealed Sources

PURPOSE: To familiarize the nursing staff with their responsiblities to the patient and themselves in the prevention of unnecessary exposure to ionizing radiation.

GENERAL:

A. This type of radioactive material is administered in liquid form and, therefore, classified as an unsealed source. The material will remain in the patient until it decays by radioactive hald-life and/or is excreted, therefore, contamination of linen, etc., is possible.

B. Therapeutic quantities of radioactive materials will be administered by a physician specifically trained in Nuclear Medicine to perform such procedures.

C. The Chief, Nuclear Medicine Service and the Radiation Safety Officer will select a private room most suitable for the radiation protection requirements for the type of radioactive therapy to be administered.

D. The Radiation Safety Officer shall monitor the patient area, provide anticontamination material, and provide radiation protection special instructions and materials to the patient and ward personnel. He shall notify ward personnel when the residual radioactive material in the patient's body is sufficiently low enough to permit the patient to be discharged.

E. The Radiation Safety Officer will monitor the patient area and will indicate a "safe distance" line for visitors.

SPECIFIC GUIDELINES FOR NURSING PERSONNEL:

A. Pregnant nursing personnel will not be assigned the duties of caring for radiation therapy patients.

B. Consistent with adequate patient care, carry out only minimal nursing procedures close to the patient. If the patient's clinical status requires constant observation, rotate personnel required to perform adequate nursing care in order to minimize exposure to personnel. (The Radiation Safety Officer shall advise). The patient's bed should be approached only when required by nursing duties.

C. WEAR YOUR film badge or dosimeter when entering the area. DO NOT use the film badge of another employee. Film badges/dosimeters will be supplied by the Radiation Safety Officer.

D. A television set, telephone, books, etc., may be provided the patient.

Specific Guidelines for Nursing Personnel (continued)

E. The food tray will be prepared entirely with disposable components. The tray will be disposed of as waste within the patient's room. Uneaten food WILL NOT be given to other patients or staff members.

F. Notify the Radiation Safety Officer AND the physician who administered the radioactive material if any of the following occur:

1. Major surgery
2. Transfer of the patient
3. Death of the patient

G. The patient may have visitors. Visitors should stay on the "safe" side of the line indicated on the floor.

H. Necessary contamination control measures are very similar to isolation techniques.

I. Cover the mattress and pillow on the bed with plastic or rubber material.

J. Wear gloves when changing bed linen, dressings, etc.

K. The patient must wear hospital pajamas.

L. Place a plastic-lined waste basket and linen hamper in the patient's room.

M. Place waste, soiled linen, etc., in the designated containers for monitoring and disposal by the Radiation Safety Officer.

N. Personal items for patient care (thermometer, bedpan, etc.) will be kept in the patient's room. Bath water may be disposed of in the commode.

O. Ambulatory patients will use the commode in THEIR room only. The commode should be flushed three times after use when Iodine is the radioactive material.

P. Diagnostic samples of blood, urine, and feces should only be obtained when authorized by the radiotherapist.

Q. The urine excreted by the patient is radioactive. Spills, bedwetting, or any accident with urine are radiation hazards. Wear gloves. In the event of an accidental spill of urine, cover it with absorbent material, then place the material in the designated waste container. Notify the Radiation Safety Officer.

R. Call the hospital Engineer AND the Radiation Safety Officer for correction of plumbing problems. Blocked drains may be a radiation hazard.

S. The room will not be returned to general use, i.e., another patient, until cleared by the Radiation Safety Officer.

REFERENCE: NCRP Report No. 48

PATIENT RADIATION SURVEY SHEET

PATIENT'S NAME _____ ROOM NO. _____ THERAPY START DATE _____

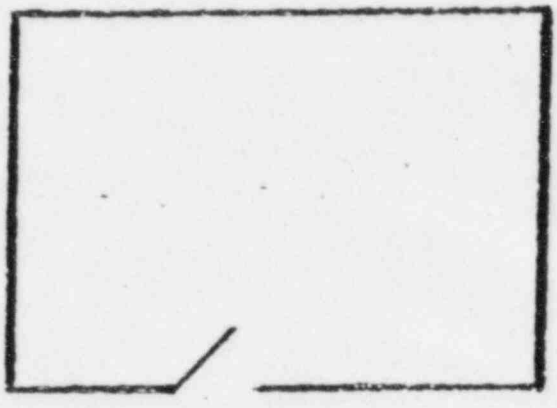
ISOTOPE: _____ ACTIVITY: _____ (mCi, or mg Ra eq.)

NUMBER OF SEALED SOURCES: _____ (if applicable)

DATE SOURCES TO BE REMOVED: _____

SKETCH OF PATIENT'S ROOM/BED

Adjacent Room? Yes
No



Adjacent Room? Yes
No

Indicate specific location of bed in the room.

SURVEY METER MEASUREMENTS: At Bedside: _____ mR/hr.

Doorway: _____ mR/hr.

Occupied adjacent room(s): _____ mR/hr.

1 meter from source: _____ mR/hr.

THERAPY TERMINATION DATE: _____; CONDUCTED BY _____

All sealed sources used have been accounted for and returned to proper storage. Yes___ No___

Radiation survey of patient and room confirmed removal of all sealed sources or other radioactive materials. Yes___ No___

All radiation CAUTION signs removed. Yes___ No___

Film badges or dosimeters collected Yes___ No___

NOTE: If radiation levels are detected above natural background levels, notify the radiiation safety officer and therapist IMMEDIATELY.

GENERAL

Have nurses been given film badges or dosimeters and log? Yes___ No___

Has the 5 mR/hr. tape been placed on the floor? Yes___ No___

Has the patient been positioned in such a way that exposure to others is minimal? Yes___ No___

Have the nurses received a copy of appropriate protocol for Nursing Care of Radiation Therapy Patients? Yes___ No___ (Supply as required)

Iodine - 131 Therapy Procedures

1. In order to minimize the potential volatilization and contamination during patient dose administration, the use of radioiodine for therapeutic purposes will be in the physical form of capsules.

2. The radiological safety precautions to be given to the nursing staff are attached.

MEMORANDUM TO NURSING SERVICE

Radiological Safety Precautions for In-patients with Small Therapeutic Quantities of Radioisotopes

1. Nursing care of in-patients who have received small (less than 20 millicuries) therapeutic quantities of radioisotopes generally presents no significant radiation problem.
2. Due to the short half-lives of radioisotopes administered, radiation exposures received by nursing personnel and patients in adjoining beds is minimal from these patients.
3. If urine, feces or blood is to be saved for laboratory analysis, water-proof gloves should be used in the collection or placement of the material into proper containers.
4. Gloves should be worn during cleaning of bedpans, urinals, or any other items which might be contaminated.
5. In case the patient dies in the hospital, vomits, or any other incident in which the nursing staff may have some concern, the admitting physician and/or chief radiologist should be contacted immediately.
6. Continue these safety precautions until informed by the radiologist that they are no longer necessary, i.e., radioactivity remaining in patient is less than 2 millicuries.

(To be submitted to the Atomic Energy Commission or [illegible] as appropriate)

Date February 4, 1975

Gentlemen:

We plan to participate in the College of American Pathologists Nuclear Medicine Quality Control Program.

Please amend my specific Byproduct Material License No. 45-02888-01 to provide for the receipt, possession, and use of byproduct material listed on the existing license for reference and calibration standards.

The activity of such byproduct material received under this program will not be in excess of that which is routinely contained in a diagnostic dose of the particular radionuclide.

Further, please amend the license to permit my receipt, possession and use of the material received under the College of American Pathologists Nuclear Medicine Quality Control Program with the following label:

STANDARD

RADIATION

SYMBOL

CAUTION RADIOACTIVE MATERIAL

Less than _____ microcuries of any isotope specified in §35.100, Schedule A, 10 CFR Part 35, or specified in Appendix D of the AEC Medical Licensing Guide for diagnostic tests.

REFERENCE STANDARD
NOT FOR HUMAN USE

Sincerely yours,

Russell O Briere
(Signature)

(Please Print)

Name Russell O. Briere, M.D.

Laboratory Johnston-Willis Laboratory

Hospital Johnston-Willis Hospital

Address 2908 Kensington Avenue

City Richmond, Virginia State Virginia

Zip Code 23221

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