

NRC FORM 313M (9-81) 10 CFR 35	U.S. NUCLEAR REGULATORY COMMISSION APPLICATION FOR MATERIALS LICENSE – MEDICAL	Approved by OMB 3150-0041
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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 NEWTON WELLESLEY HOSPITAL 2014 WASHINGTON ST. NEWTON LOWER FALLS, Ma. 02462 TELEPHONE NO.: AREA CODE (617) 964 2800	1.b. STREET ADDRESS(ES) AT WHICH RADIOACTIVE MATERIAL WILL BE USED (If different from 1.a.) INCLUDE ZIP CODE
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2. PERSON TO CONTACT REGARDING THIS APPLICATION EGILDA D. WITHERELL TELEPHONE NO.: AREA CODE (617) 964 2800 ext. 2096	3. THIS IS AN APPLICATION FOR: (Check appropriate item) a. <input type="checkbox"/> NEW LICENSE. b. <input type="checkbox"/> AMENDMENT TO LICENSE NO. _____ c. <input checked="" type="checkbox"/> RENEWAL OF LICENSE NO. <u>20-03615-01</u>
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4. INDIVIDUAL USERS (Name individuals who will use or directly supervise use of radioactive material. Complete Supplements A and B for each individual.) HAROLD SIMON, M.D. GROUPS I, II, III, IV, V IN VITRO STUDIES ¹³⁵ Xe, ¹²⁵ I, ¹⁵³ Gd RALPH SCOTT M.D. GROUP I IN VITRO STUDIES THEODORE SPIELBERG, M.D. ¹³¹ I - treatment cardiac dysfunction	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.) EGILDA D. WITHERELL S.B. CRP HAROLD SIMON, M.D.
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6.a. RADIOACTIVE MATERIAL FOR MEDICAL USE					
RADIOACTIVE MATERIAL LISTED IN:	ITEMS DESIRED "X"	MAXIMUM POSSESSION LIMITS (In millicuries)	ADDITIONAL ITEMS:	MARK ITEMS DESIRED "X"	MAXIMUM POSSESSION LIMITS (In millicuries)
10 CFR 31.11 FOR IN VITRO STUDIES	X	3 mCi	IODINE-131 AS IODIDE FOR TREATMENT OF HYPERTHYROIDISM	X	50 mCi
10 CFR 35.100, SCHEDULE A, GROUP I	X	AS NEEDED	PHOSPHORUS-32 AS SOLUBLE PHOSPHATE FOR TREATMENT OF POLYCYTHEMIA VERA, LEUKEMIA AND BONE METASTASES	X	20 mCi
10 CFR 35.100, SCHEDULE A, GROUP II	X	AS NEEDED	PHOSPHORUS-32 AS COLLOIDAL CHROMIC PHOSPHATE FOR INTRACAVITARY TREATMENT OF MALIGNANT EFFUSIONS.		
10 CFR 35.100, SCHEDULE A, GROUP III	X	3 Ci	GOLD-198 AS COLLOID FOR INTRACAVITARY TREATMENT OF MALIGNANT EFFUSIONS.		
10 CFR 35.100, SCHEDULE A, GROUP IV	X	AS NEEDED	IODINE-131 AS IODIDE FOR TREATMENT OF THYROID CARCINOMA	X	300 mCi
10 CFR 35.100, SCHEDULE A, GROUP V	X	AS NEEDED	XENON-133 AS GAS OR GAS IN SALINE FOR BLOOD FLOW STUDIES AND PULMONARY FUNCTION STUDIES.	X	200 mCi
10 CFR 35.100, SCHEDULE A, GROUP VI					

6.b. RADIOACTIVE MATERIAL FOR USES NOT LISTED IN ITEM 6.a. (Sealed sources up to 3 mCi used for calibration and reference standards are authorized under Section 35.14(d), 10 CFR Part 35, and NEED NOT BE LISTED.)			
ELEMENT AND MASS NUMBER	CHEMICAL AND/OR PHYSICAL FORM	MAXIMUM NUMBER OF MILLICURIES OF EACH FORM	DESCRIBE PURPOSE OF USE
¹²⁵ I	SEALED SOURCE (AECL MODEL C 324 or C 325 or Amersham Corp. MODEL IMC P2)	300 mCi	diagnosing BONE MALADIES
¹⁵³ Gd	SEALED SOURCE GULF NUCLEAR MODEL GD-1)	1500 mCi	DIAGNOSING BONE MALADIES

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. 1 Date: OCT. 1980

7. MEDICAL ISOTOPES COMMITTEE		15. GENERAL RULES FOR THE SAFE USE OF RADIOACTIVE MATERIAL (Check One)	
<input checked="" type="checkbox"/>	Names and Specialties Attached; and	<input type="checkbox"/>	Appendix G Rules Followed; or
<input type="checkbox"/>	Duties as in <u>10 CFR 35 VOL 47 #177, 90199</u> <u>Appendix B; or</u> <u>SEPT. 13, 1982</u> (Check One)	<input checked="" type="checkbox"/>	Equivalent Rules Attached
<input type="checkbox"/>	Equivalent Duties Attached	16. EMERGENCY PROCEDURES (Check One)	
8. TRAINING AND EXPERIENCE		<input type="checkbox"/> Appendix H Procedures Followed; or	
<input type="checkbox"/>	Supplements A & B Attached for Each Individual User; and <u>ONE FILE WITH NRC</u>	<input checked="" type="checkbox"/>	Equivalent Procedures Attached
<input type="checkbox"/>	Supplement A Attached for RSO. <u>ON FILE WITH NRC</u>	17. AREA SURVEY PROCEDURES (Check One)	
9. INSTRUMENTATION (Check One)		<input checked="" type="checkbox"/>	Appendix I Procedures Followed; or <u>REG. GUIDE 10.8 Rev. 1 OCT. 80</u>
<input type="checkbox"/>	Appendix C Form Attached; or	<input type="checkbox"/>	Equivalent Procedures Attached
<input checked="" type="checkbox"/>	List by Name and Model Number	18. WASTE DISPOSAL (Check One)	
10. CALIBRATION OF INSTRUMENTS		<input checked="" type="checkbox"/>	Appendix J Form Attached; or <u>REG GUIDE 10.8 Rev. 1 OCT. 80</u>
<input checked="" type="checkbox"/>	Appendix D Procedures Followed for Survey <u>10.8 REG GUIDE</u> Instruments; or <u>NEIL GAETA</u> <u>20-26143-01</u> <u>NUCLEAR INSTRUMENT CO. ROCKLAND, MA.</u> <u>20-10972201</u> (Check One)	<input type="checkbox"/>	Equivalent Information Attached
<input type="checkbox"/>	Equivalent Procedures Attached; and	19. THERAPEUTIC USE OF RADIOPHARMACEUTICALS (Check One)	
<input checked="" type="checkbox"/>	Appendix D Procedures Followed for Dose Calibrator; or <u>NEIL GAETA</u> <u>4 AIR GROUP</u> <u>REC. GUIDE</u> <u>35 GROVE ST. MEDFORD, MA. 02155</u> (Check One) <u>10.8 Rev. 1 OCT. 80</u>	<input type="checkbox"/>	Appendix K Procedures Followed; or
<input checked="" type="checkbox"/>	Equivalent Procedures Attached	<input checked="" type="checkbox"/>	Equivalent Procedures Attached
11. FACILITIES AND EQUIPMENT		20. THERAPEUTIC USE OF SEALED SOURCES	
<input checked="" type="checkbox"/>	Description and Diagram Attached	<input type="checkbox"/>	Detailed Information Attached; and
12. PERSONNEL TRAINING PROGRAM		<input type="checkbox"/> Appendix L Procedures Followed; or (Check One)	
<input checked="" type="checkbox"/>	Description of Training Attached	Equivalent Procedures Attached	
13. PROCEDURES FOR ORDERING AND RECEIVING RADIOACTIVE MATERIAL		21. PROCEDURES AND PRECAUTIONS FOR USE OF RADIOACTIVE GASES (e.g., Xenon - 133)	
<input checked="" type="checkbox"/>	Detailed Information Attached	<input checked="" type="checkbox"/>	Detailed Information Attached
14. PROCEDURES FOR SAFELY OPENING PACKAGES CONTAINING RADIOACTIVE MATERIALS (Check One)		22. PROCEDURES AND PRECAUTIONS FOR USE OF RADIOACTIVE MATERIAL IN ANIMALS	
<input checked="" type="checkbox"/>	Appendix F Procedures Followed; or <u>REG. GUIDE 10.8 REV 1 OCT. 80</u>	<input type="checkbox"/>	Detailed Information Attached
<input type="checkbox"/>	Equivalent Procedures Attached	23. PROCEDURES AND PRECAUTIONS FOR USE OF RADIOACTIVE MATERIAL SPECIFIED IN ITEM 6.b	
<input type="checkbox"/>	Equivalent Procedures Attached	<input checked="" type="checkbox"/>	Detailed Information Attached

24. PERSONNEL MONITORING DEVICES

	TYPE <small>(Check appropriate box)</small>	SUPPLIER	EXCHANGE FREQUENCY
a. WHOLE BODY	<input checked="" type="checkbox"/> FILM	R. S. LANDAUER JR. & Co.	MONTHLY
	<input type="checkbox"/> TLD		
	<input type="checkbox"/> OTHER (Specify)		
b. FINGER	<input type="checkbox"/> FILM		
	<input checked="" type="checkbox"/> TLD	R. S. LANDAUER JR. & Co.	MONTHLY
	<input type="checkbox"/> OTHER (Specify)		
c. WRIST	<input type="checkbox"/> FILM		
	<input checked="" type="checkbox"/> TLD	R. S. LANDAUER JR. & Co.	MONTHLY
	<input type="checkbox"/> OTHER (Specify)		

d. OTHER (Specify)

PENCIL DOSIMETERS

25. FOR PRIVATE PRACTICE APPLICANTS ONLY

a. HOSPITAL AGREEING TO ACCEPT PATIENTS CONTAINING RADIOACTIVE MATERIAL			
NAME OF HOSPITAL		b. ATTACH A COPY OF THE AGREEMENT LETTER SIGNED BY THE HOSPITAL ADMINISTRATOR.	
MAILING ADDRESS		c. WHEN REQUESTING THERAPY PROCEDURES, ATTACH A COPY OF RADIATION SAFETY PRECAUTIONS TO BE TAKEN AND LIST AVAILABLE RADIATION DETECTION INSTRUMENTS.	
CITY	STATE	ZIP CODE	

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 <small>(See Section 170.31, 10 CFR 170)</small>	b. APPLICANT OR CERTIFYING OFFICIAL (Signature) <div style="text-align: center; margin-top: 10px;"> (1) NAME (Type of Print) JEFFREY KELLY </div>
(1) LICENSE FEE CATEGORY:	(2) TITLE SENIOR VICE PRESIDENT & CHIEF OPERATING OFFICER
(2) LICENSE FEE ENCLOSED: \$	c. DATE 4/23/85

PRIVACY ACT STATEMENT

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

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

(9-81)

TRAINING AND EXPERIENCE AUTHORIZED USER OR RADIATION SAFETY OFFICER

1. NAME OF AUTHORIZED USER OR RADIATION SAFETY OFFICER <i>HAROLD SIMON, M.D.</i> <i>EGILDA D. WITHERELL, S.B.</i>		2. STATE OR TERRITORY IN WHICH LICENSED TO PRACTICE MEDICINE <i>MASS.</i>		
3. CERTIFICATION				
SPECIALTY BOARD A	CATEGORY B	MONTH AND YEAR CERTIFIED C		
<i>FOR</i> <i>HAROLD SIMON, M.D. - AM. BOARD OF NUCLEAR MEDICINE + AM. BOARD OF RADIOLOGY</i>	<i>NUCLEAR MEDICINE RADIOLOGY + MEDALLION IN NUCLEAR MEDICINE</i>	<i>DEC. 1974</i> <i>JUNE 1962</i>		
<i>EGILDA D. WITHERELL - AM. BOARD OF RADIOLOGY + AM. BOARD OF HEALTH PHYSICS</i>	<i>RADIOLOGICAL PHYSICS HEALTH PHYSICS</i>	<i>DEC. 1953</i> <i>DEC. 1960</i>		
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		<i>on file with NRC</i>		
b. RADIATION PROTECTION				
c. MATHEMATICS PERTAINING TO THE USE AND MEASUREMENT OF RADIOACTIVITY				
d. RADIATION BIOLOGY				
e. RADIOPHARMACEUTICAL CHEMISTRY				
5. EXPERIENCE WITH RADIATION. (Actual use of Radioisotopes or Equivalent Experience)				
ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE

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

STREET ADDRESS

CITY

STATE

ZIP CODE

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		<i>on file with NRC</i>
	DETERMINATION OF BLOOD AND BLOOD PLASMA VOLUME		
	LIVER FUNCTION STUDIES		
	FAT ABSORPTION STUDIES		
	KIDNEY FUNCTION STUDIES		
	IN VITRO STUDIES		
OTHER			
I-125	DETECTION OF THROMBOSIS		
I-131	THYROID IMAGING		
P-32	EYE TUMOR LOCALIZATION		
Se-75	PANCREAS IMAGING		
Yb-169	CISTERNOGRAPHY		
Xe-133	BLOOD FLOW STUDIES AND PULMONARY FUNCTION STUDIES		
OTHER			
Tc-99m	BRAIN IMAGING		
	CARDIAC IMAGING		
	THYROID IMAGING		
	SALIVARY GLAND IMAGING		
	BLOOD POOL IMAGING		
	PLACENTA LOCALIZATION		
	LIVER AND SPLEEN IMAGING		
	LUNG IMAGING		
	BONE IMAGING		
OTHER			

PRECEPTOR STATEMENT (Continued)

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

ISOTOPE	CONDITIONS DIAGNOSED OR TREATED	NUMBER OF CASES INVOLVING PERSONAL PARTICIPATION	COMMENTS (Additional information or comments may be submitted in duplicate on separate sheets.)
A	B	C	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	TELETERAPY 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

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

a. NAME OF SUPERVISOR

b. NAME OF INSTITUTION

c. MAILING ADDRESS

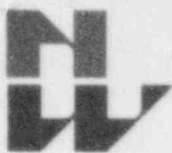
d. CITY

5. MATERIALS LICENSE NUMBER(S)

6. PRECEPTOR'S SIGNATURE

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

8. DATE



Newton-Wellesley
Hospital

An Affiliate of NeWell Health Corporation
2014 Washington Street
Newton, MA 02162
(617) 964-2800

RADIATION SAFETY COMMITTEE OF NEWTON-WELLESLEY HOSPITAL

Edward Moore, M.B.A.	Vice-President for Professional Services
Jane Comerford, R.N.	Nurse Manager
Harold Simon, M.D.	Associate Chief Radiologist, Division Head Nuclear Medicine (Radiology), and Radiation Safety Officer
Ralph Scott, M.D.	Pathologist, Charged with Nuclear Medicine, (Pathology)
Egilda D. Witherell	Radiological Physicist and Radiation Safety Officer

The duties of this Committee are as stated in 10CFR 35,
Volume 47, #177, 40149, September 13, 1982.

APPENDIX C
INSTRUMENTATION

Newton Wellesley Hospital

1. Survey meters

a. Manufacturer's name: William B. Johnson & Assoc. , Inc.

Manufacturer's model number: GSM-5

Number of instruments available: one

Minimum range: 0 mr/hr to 0.2 mr/hr

Maximum range: 0 mr/hr to 20 mr/hr

b. Manufacturer's name: Victoreen Instruments Division

Manufacturer's model number: 498

Number of instruments available: one

Minimum range: 0 mr/hr to 1.0 mr/hr

Maximum range: 0 mr/hr to 1000 mr/hr

c. Manufacturer's name: Victoreen Instruments Division

Manufacturer's model number: 493

Number of instruments available: two

Minimum range: 0 mr/hr to 0.5 mr/hr

Maximum range: 0 mr/hr to 500 mr/hr

d. Manufacturer's name: Victoreen Instrument Division

Manufacturer's model number: 740F

Number of instruments available: one

Minimum range: 0 mr/hr to 25 mr/hr

Maximum range: 0 mr/hr to 1,000 mr/hr

e. Manufacturer's name: Victoreen Instruments Division

Manufacturer's model number: 470 A

Number of instruments available: one

Minimum range: 0 mr/hr to 3 mr/hr

Maximum range: 0 mr/hr to 1000 mr/hr

f. Manufacturer's name: Ludlum

Manufacturer's model number: Scintillation Probe 44-2 with Model 16 analyzer

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2. Dose calibrators

a. Manufacturer's name: Capintec
 Manufacturer's model number: CRC - 17 & printer
 Number of instruments available: one
 Manufacturer's name: _____
 Manufacturer's model number: _____
 Number of instruments available: _____

3. Diagnostic instruments

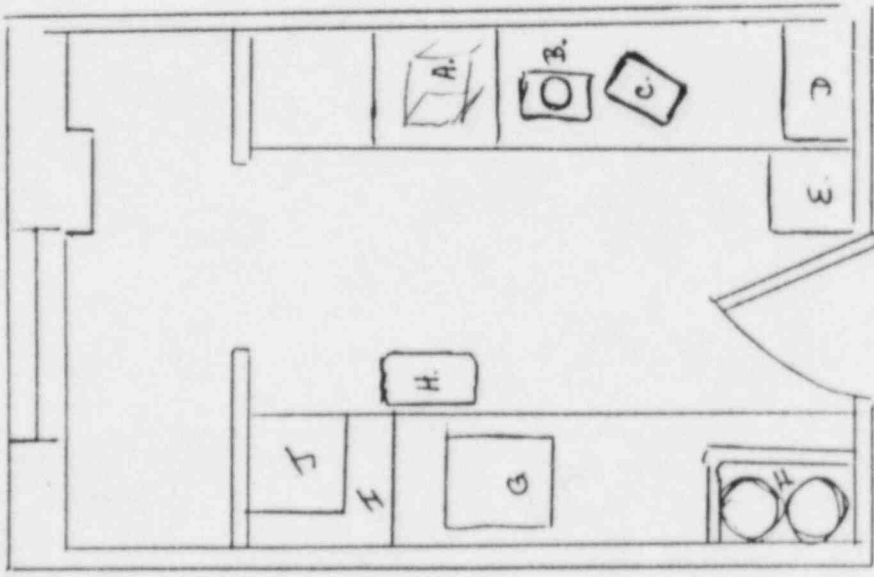
Type of instrument	Manufacturer's Name	Model No.
a. LFOV Maxicamera	General Electric	SM H2500G
b. Gamma Camera	Ohio Nuclear	100
c. Data System	Ohio Nuclear	150
d. Area Scan	Ohio Nuclear	100 - 08
e. Prias Automatic Gamma Counter	Hewlett Packard	PGD
f. AutoLogic - Automatic Well counter/changer	Abbott	121 - A
g. Logic series/well counter	Abbott	111 - B
h. North Star Advantage Computer	Computer Printer Epson Medical Data Systems	FX-80 A-2
i. Video Imager	Matrix Instruments	
j. Video Cassette Recorder	Sony	VO-2600
k. Wrist Scanner	Lunar Radiation Corp.	Model SP -2 1015

4. Other

Type of instrument	Manufacturer's Name	Model No.
a. Vamp Area Monitor	Victoreen Instruments	808 D
b. Pulmonex Xenon System	Atomic Products Corp.	130-500
c. Brattle Physio-logical Synchronizer	Brattle Instruments	202

d. PENCIL DOSIMETERS + CHARGER VICTOREEN 4, BENDIX 6, STEPHENS 4
 e. DIGITAL DOSE MONITOR VICTOREEN

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NUCLEAR MEDICINE HOT LAB

A. Dose Area with 2" Pb block & Pb glass

B. Dose Calibrator

C. Dose Computer/ Printer

D. Hot Plate

E. Injection Chair

F. 99 mTc Generators

G. Stainless Steel Sink

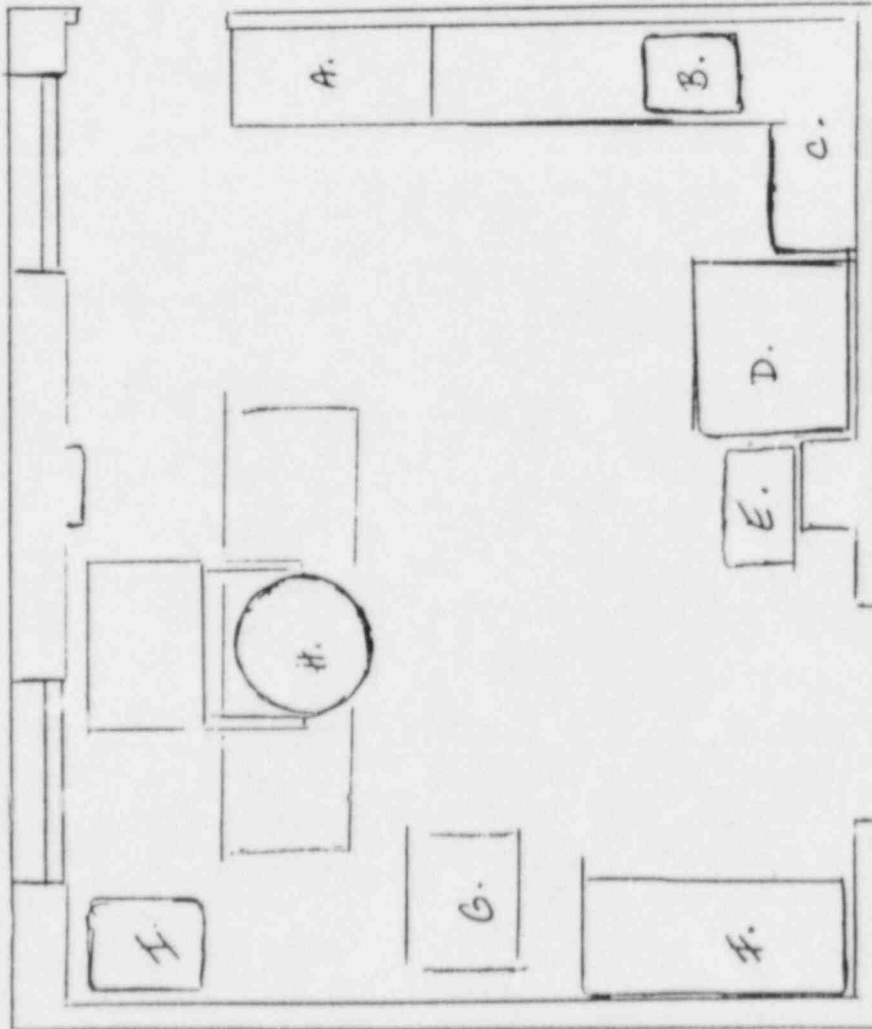
H. Bone Absorptometry source

I. Fume Hood

J. Small Lead lined refrigerator under shelf.

NEWTON WELLESLEY HOSPITAL
NEWTON LOWER FALLS, MA. 02462

Item 11
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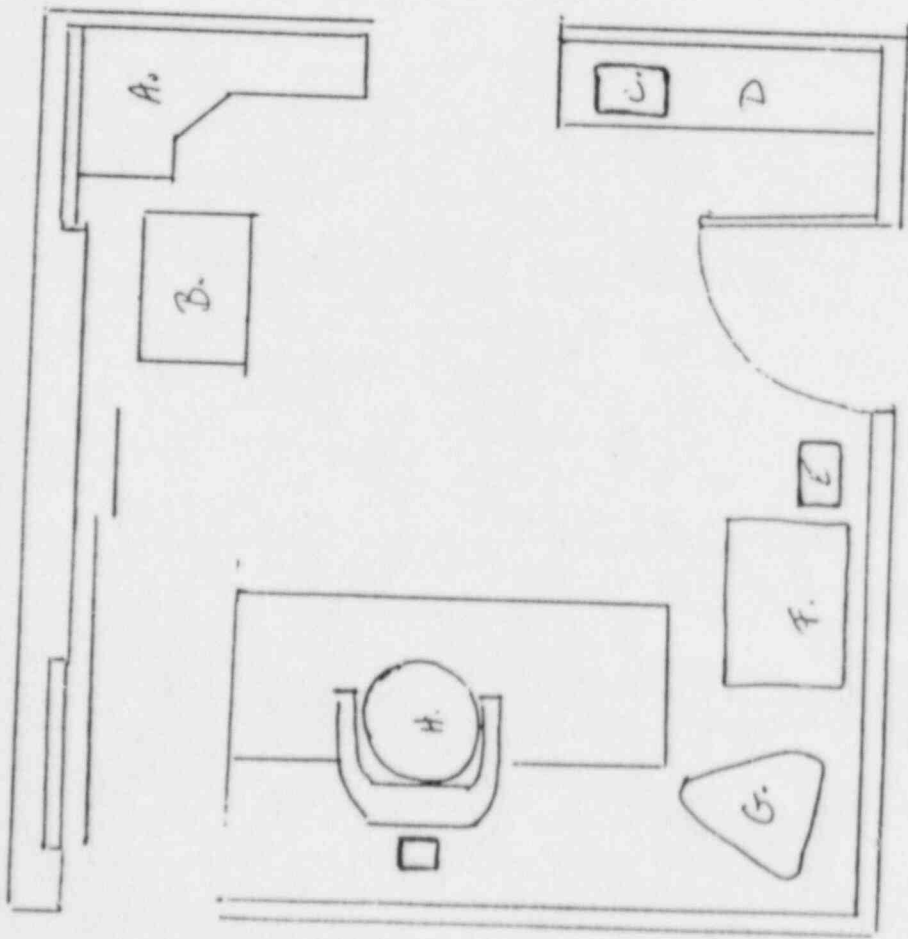
GENERAL ELECTRIC SCAN ROOM

- A. File Cabinet
- B. Stainless Steel Sink
- C. Desk
- D. Collimator Stacker
- E. Dose Tray
- F. Computer
- G. Camera Console
- H. Gamma camera
- I. Xenon administration system

NEWTON WELLESLEY HOSPITAL
NEWTON LOWER FALLS, MA. 02462

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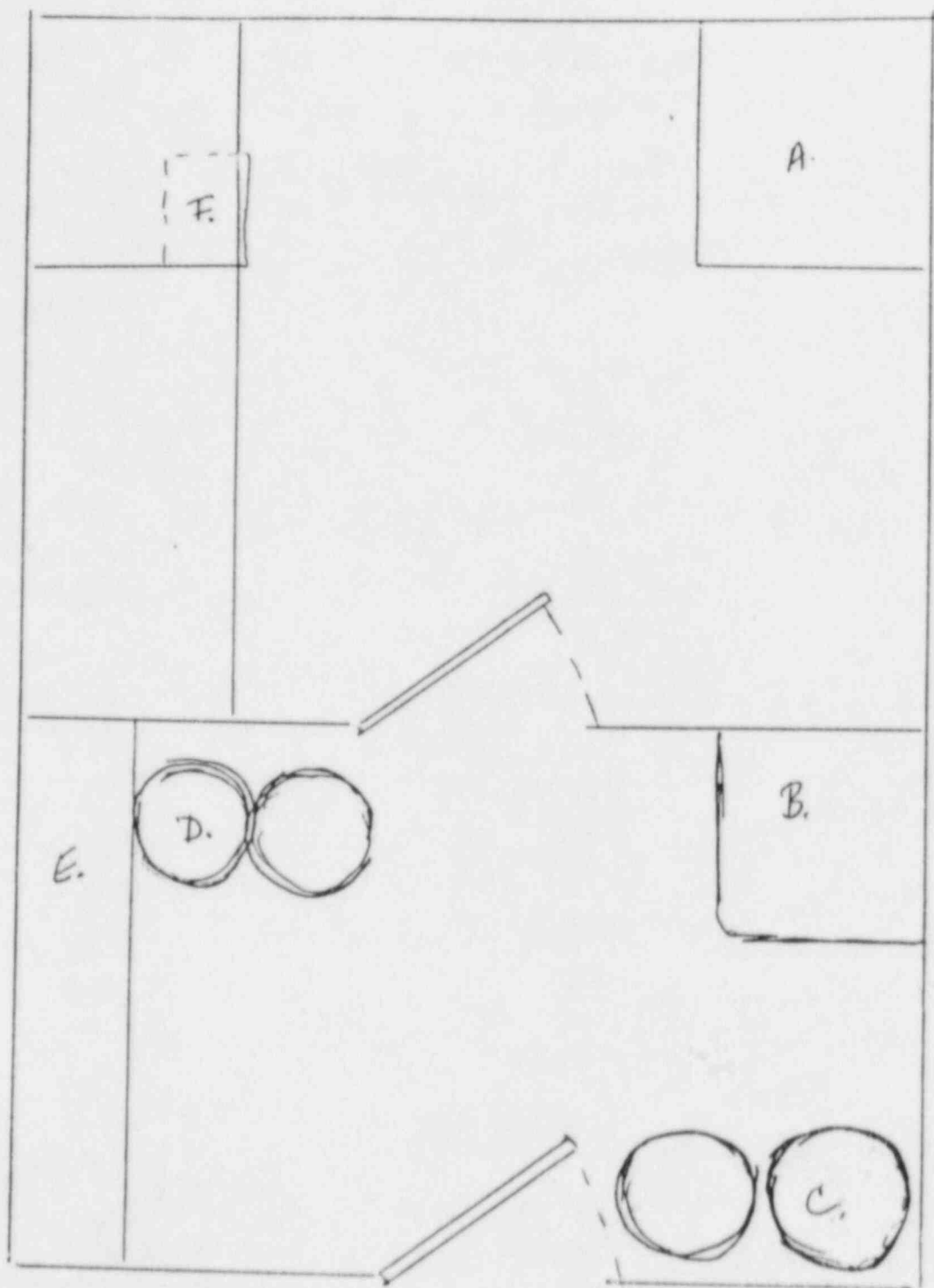


OHIO ROOM

- A. Desk/ shelves
- B. Data system
- C. Stainless steel sink
- D. Shelves
- E. Dose Tray
- F. Gamma console
- G. Collimators
- H. Gamma Camera

NEWTON WELLESLEY HOSPITAL
 NEWTON LOWER FALLS, MA. 02162

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B-60

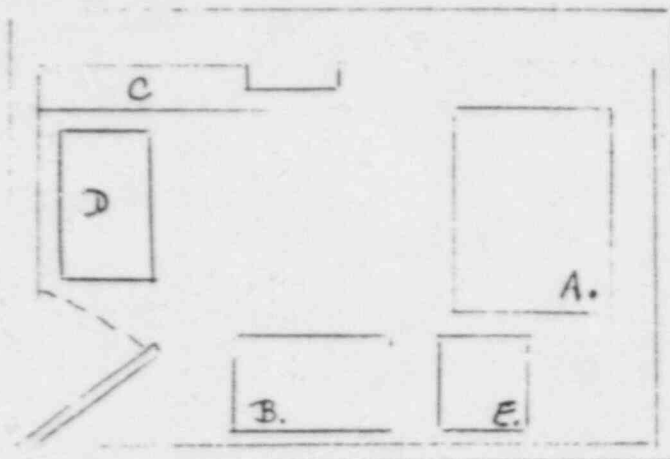
- A. Fume Hood
- B. Sink
- C. Barrels
- D. Barrels
- E. Contaminated
needle storage.
- F. Concrete
vault.

NEWTON WELLESLEY HOSPITAL

NEWTON LOWER FALLS, MA 02462

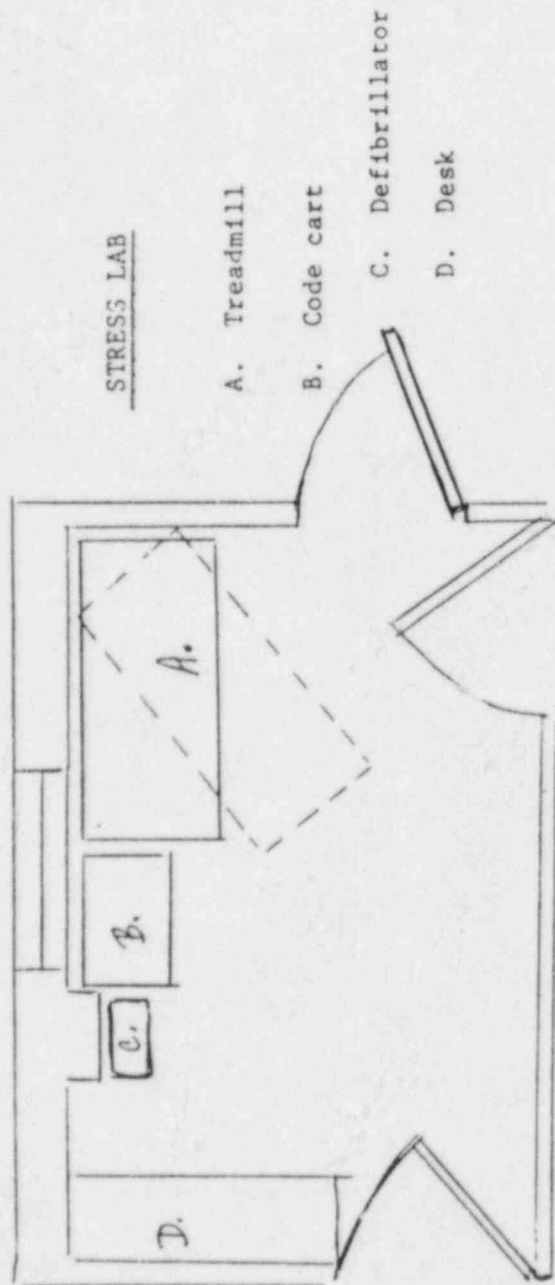
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NUCLEAR MEDICINE COMPUTER ROOM



- A. Computer
- B. Terminal (Portable)
- C. Disk/ Magnetic Tape Storage
- D. Video Recorder (Portable)
- E. Matrix Imager

NEWTON WELLESLEY HOSPITAL
NEWTON LOWER FALLS, Ma. 02462
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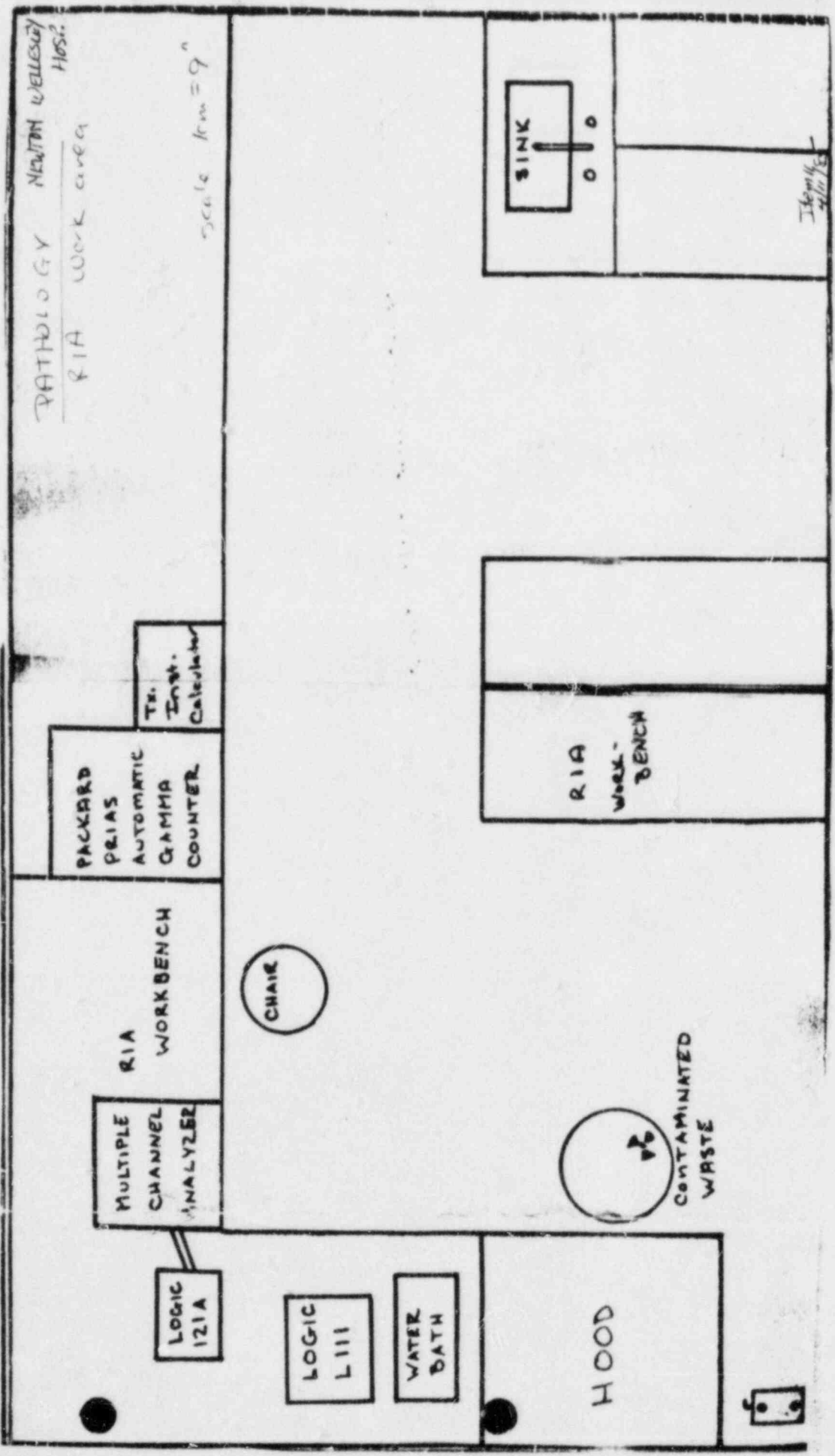


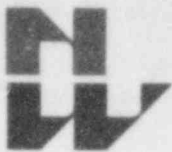
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NEWTON LOWER FALLS, MA. 02462

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PATHOLOGY NEWTON WELLESLEY
HOSP.
RIA WORK AREA

Scale 1cm = 9"





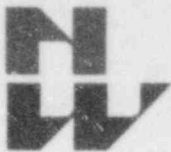
PERSONNEL TRAINING PROGRAM

All nuclear medicine technologists who are employed with the hospital are initially trained for one month informally on a one to one basis in protection principles and the use of protective clothing and the appropriate method and importance of wearing of personnel dosimeters (film badge, wrist badge, ring badge and pencil ionization chambers). These techs are trained in methods of imaging, dose preparation, dose measurement, monitoring techniques, instrumentation, ALARA principles; they are informed of all quantities of radionuclides and hazards associated with them. The technologists are informed of location of use and storage of the radioactive material and of importance of reporting unsafe conditions to the RSO. They are informed of appropriate response to emergency or unsafe conditions, of the right to know their radiation exposure; if and when bioassays are required, they will be informed of their results. The personnel will also be told where NRC-3 is posted and will be told the location of the license, its conditions, regulations, Part 19, 20, 35 and other pertinent regulations including applications and applicable correspondence. All protection procedures and protocols, are discussed at length as well as all pertinent NRC Regulations, our license and conditions, 10FR 19, 20 and 35, transportation requirements, as well as our additional regulations applying to nonreactor produces radionuclides. Specifically, the following materials and protocols are discussed initially and annually thereafter whenever there is a change in the license, in regulations or in significant duties or a new procedure or protocol is initiated, all personnel involved will be adequately instructed. Annual refresher training including an ALARA lecture is held, the license and its conditions are reviewed. Technologists are assigned to participate in an annual management audit. Any information issued from NRC is discussed with all technologists upon receipt of information.

The Protocols are :

10 CFR 19.12 NRC-3 posted in all scan rooms and hot
labs

Rules and Regulations in the use of radioisotopes.



Procedure in the Event of Radioactive Contamination

Delivery of Radioactive Shipments

Preparation of Radioactive Doses for Nuclear Medicine
Scans

Therapeutic Use of Radiopharmaceuticals

Procedure in Event of Fracture of a 133 Xe vial

License and its conditions, application and applicable
correspondence available in Physicist's office

Radiation Precaution Signs for Gallium patients in
House

Procedure for Collection of Urine on 131 I Therapy
Patients

Regulatory Guide 8.10 Operating Philosophy for
Maintaining Occupational Exposure as low as is
reasonably achievable.

Regulatory Guide 8.18 Information Relevant to Insuring
that Occupational Radiation Exposures at Medical
Institutions will be as low as reasonably achievable.

Regulatory Guide 8.13 Instructions Concerning Prenatal
Radiation Exposure.

Regulatory Guide 8.23 Radiation Surveys at Medical
Institutions

Radiation Reports in Physicist's Office

Annual written report given to each employee. Non
technical employees who are transportation orderlies are
instructed to wear their film badge and to use distance
as a method of protection. Housekeeping personnel are
not allowed in the hot labs without direct supervision
by the technologists or physicist. Security personnel
have been issued instructions for handling radioactive
shipments after normal working hours (pick up stainless
steel cart for transport of materials and return cart
and package to scan room.) If package is broken or leaking
put down on cart and call nuclear medicine tech on call.



Procedures for Ordering and Receiving Radioactive Material

The chief nuclear medicine technologist or designate in radiology and chemistry supervisor or designate in pathology place all orders for radioactive materials and ensure that the requested materials and quantities are authorized by the license and that possession limits are not exceeded.

Routinely used materials are ordered under written purchase orders identifying compound, activity levels and suppliers with copies of license given to each supplier. Material is always checked for correct shipment and address. All shipments are logged into notebooks.

Ordering of materials for therapy are placed as requested by the individual users who treat the patients with the radionuclides. A notation of the radionuclide ordered, the compound, and activity level is entered into the log. Upon treatment the patient's name, age, physician, dose (assayed prior to administration) and route of administration), on each individual patient's dose ticket. Dose ticket is attached to label from supplier stating radionuclide, company and lot number, calibration date and expiration date.

During normal working hours, carriers must be instructed to deliver packages directly to the Nuclear Medicine Department.

During off duty hours, security personnel accept deliver of packages as outlined in "Instructions for Receipt of Radioactive Packages" and "Deliver of Radioactive Packages."



INSTRUCTION FOR RECEIPT OF RADIOACTIVE PACKAGES

The U.S. Nuclear Regulatory Commission has issued new regulations concerning receipt of radioactive packages bearing Yellow II or Yellow III Department of Transportation (DOT) labels. All radioisotopes delivered to the hospital by truck drivers for the Nuclear Medicine Department fall in this category. Pathology's radioisotopes are delivered by parcel post and are exempt.

Attached is a copy of instructions for delivery that have been drawn up for the drivers.

All security officers who accept these packages must transport them on a stainless steel cart kept in the Scan Room A, second patient area on right in Nuclear Medicine area, first floor North Building. Enroute to picking up delivery, stop and take the cart out of Scan Room A; place package on the cart and return cart to Scan Room A which must be locked at all times. If a second shipment arrives, transfer first package to countertop of Scan Room A and take cart again for transport of second package.

If you should observe any package that is damaged or leaking, wearing surgical gloves, place on cart, transport to Nuclear Medicine Scan Room A and immediately call Nuclear Medicine Technologist on call (by BEEPER) to report situation. Leave gloves on cart and remain in the corridor by Nuclear Medicine until a technologist arrives and monitors you. Do not touch anything.

Egilda D. Witherell

Egilda D. Witherell
Radiological Physicist

EDW/kdb

Item 13

4/11/85



DELIVERY OF RADIOACTIVE PACKAGES

Effective immediately - all drivers delivering radioactive packages are to follow procedure presented herein. Do not leave packages at Emergency, Information, or any other areas not so designated.

<u>Time of Delivery</u>	<u>Delivery Area</u>
1. Monday through Friday 8:00 a.m. - 4:30 p.m.	Nuclear Medicine Department
a. 4:30 p.m. - 9:00 p.m. - go to switchboard and have telephone operator page security guard. Give package only to security guard.	Security Guard
b. 9:00 p.m. - 7:00 a.m. - Use phone to page a security guard and inform him of the radio- active package.	Security Guard
2. Saturday and Sunday	Security Guard
a. 5:30 a.m. to 8:30 p.m. - go to switchboard and have tele- phone operator page security guard informing him of radio- active package.	
b. Otherwise follow procedure in 1.b.	

Item 13
7/11/85

NEWTON WELLESLEY HOSPITAL

RULES AND REGULATIONS FOR THE USE OF RADIOISOTOPES

1. Pipetting of radioactive materials by mouth is forbidden. Propipettes or other remote methods should be utilized whenever necessary.
2. No smoking, eating or application of cosmetics is allowed in areas where procedures with radioisotopes are carried out.
3. Irrespective of the quantities of radioactive materials being used, surgical gloves or vinyl disposable gloves must be worn at all times. Protective clothing (such as lab coats) should be worn.
4. All personnel working with radioactive materials must wear film badges or dosimeters. Appropriate records must be maintained.
5. All work should be carried out on stainless steel trays covered with absorbent materials such as Chux disposable pads. Taking shipments of unshielded radioactive materials in hand without use of long forceps is prohibited. All stock radioactive isotopes should be kept in protective containers. A protective shield either platinum or Lead must be used on the syringe whenever a dose is drawn. All personnel will wear ring Dosimeters (TLD). See protocol for preparation of Doses for scans.
6. All radioactive materials must be properly labelled stating each radioisotope, the total quantity on a given date, and must have also a "Caution Radioactive Material" tape bearing the conventional radiation symbol in the correct magenta and yellow colors.
7. Records of all shipments of radioisotopes must be logged in notebooks which should be available.

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1. Waste disposal must be in accord with Nuclear Regulatory Commission (NRC) regulations, and records of such disposal must be kept.¹

No incineration of radioactive materials is allowable.

2. Quantity of isotopes received must be recorded; the dosage dispensed, and to whom (patient or research worker).

8. All laboratories using radioactive materials must be routinely monitored.

9. All contamination of real estate must be immediately reported to

Mrs. Witherell, Dr. Simon, Dr. Scott and Joanne

Doherty C.N.M.T.

10. Following completion of handling of radioactive materials, hands should be checked by means of a Geiger Mueller counter capable of detecting the particular isotope involved.

11. In case of an accident involving radioactive material notify

Mrs. Witherell, Dr. Simon, Dr. Scott and Joanne

Doherty ^{RTR, RTH}₂, C.N.M.T., immediately, and do not travel through the building.

12. All areas where radioactive materials are stored and prepared are locked and secured as restricted areas at all times unless the room is attended by qualified personnel.

1. See procedure Radioactive Waste Disposal.

2. See procedure in event of a Radioactive Contamination.

REVIEWED
02-84

Egida D. Witherell
Radiological Physicist

Item 15
4/11/85

NEWTON WELLESLEY HOSPITAL

Procedure in the Event of Radioactive Contamination within
the Nuclear Medicine Department

1. Use the nearest phone to request assistance from Mrs. Witherell, Dr. Simon, , or Joanne Boherty Do not proceed unnecessarily through the corridors.
2. At either end of the "hot" lab are stacks of chux pads (absorbent material). Drop these down on floor and walking on them proceed to outer entrance section of the hot lab.
3. Remove any contaminated clothing from yourself and absorb any liquid on your person with gauze pads. At this point one of the staff listed above should be there to aid you.
4. Of paramount importance is removal of any contamination on your person and the information giving approximate radioactivity content and isotope involved. An ionization chamber will be used to determine radiation rates.

Decontamination will proceed with all assisting wearing surgical gloves and protective clothing and stepping on fresh chux pads to avoid spread of contamination. Stainless steel buckets and long forceps and other: chux pads will be used to remove contaminated waste and keep the radiation from exposing you.

Green soap and gauze pads are very effective in removing contamination from your person.

All persons involved in the spill will be monitored to determine adequacy of decontamination.

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5. Always employ long forceps to handle contaminated equipment.

Drop absorbent material on any large spill. Wash area down with water without spreading it over the entire room, and have contamination checked with a Geiger Mueller counter or other suitable detector to determine effectiveness of decontamination procedure. If there is still residual activity but no external hazard, the area should be covered and labelled so that the contamination will not be spread about.

Disposal of contaminated material must be in accord with Nuclear Regulatory commission Regulations and will be determined by the radiological safety officer.

Prepare a complete history of the accident and subsequent activity related thereto for the laboratory records.

Decontamination facilities: Use shower in Room B-62. *GM COUNTERS ARE FOUND IN HOT LAB AND IN EACH SCAN ROOM.*

REVIEWED 2-84

Egilda E. Witherell

Egilda D. Witherell

Radiological Physicist

Item 16

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APPENDIX J

WASTE DISPOSAL

Note: In view of the recent problems with shallow-land burial sites used by commercial waste disposal firms, NRC is encouraging its licensees to reduce the volume of wastes sent to these facilities. Important steps in volume reduction are to segregate radioactive from nonradioactive waste, to hold short-lived radioactive waste for decay in storage, and to release certain materials in the sanitary sewer in accordance with § 20.303 of 10 CFR Part 20.

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

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

☐ By commercial waste disposal service (see also Item 4 below).

☒ Other (specify): MOST LIQUID WASTE WILL BE STORED & HELD FOR DECAY TO BACKGROUND LEVELS (MEAS. WITH LOW LEVEL SURVEY SM METER) ALL RADIATION LABELS WILL BE REMOVED OR OBLITERATED BEFORE DISPOSAL INTO ROUTINE TRASH.

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

☒ Returned to the manufacturer for disposal.

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

* Be sure that waste storage areas were described in Item 11 and that they are surveyed periodically (Item 17).

** These generators may contain long-lived radioisotopic contaminants. Therefore, the generator columns will be segregated so that they may be monitored separately to ensure decay to background levels prior to disposal.

☐ Disposed of by commercial waste disposal service (see also Item 4 below).

☐ Other (specify): _____

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

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

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

☒ Other (specify): MUST WASTE WILL BE STORED & HELD FOR DECAY UNTIL RAD. LEVELS REACH BACKGROUND LEVELS AS MEAS. WITH LOW LEVEL SM SURVEY METER. NO SHIELDING. ALL RAD. LABELS WILL BE REMOVED OR OBLITERATED BEFORE WASTE IS DISPOSED IN NORMAL TRASH.

4. The commercial waste disposal service used will be

INTEREX CORP. NATICK, Ma. 01760
(Name) (City, State)

NRC/Agreement State License No. 2014-082-02

THERAPEUTIC USE OF RADIOPHARMACEUTICALS

All patients treated with radioisotopes (gamma emitters) in excess of 30 millicuries) must be hospitalized in a private room with toilet.

1. All patients treated with gamma emitting isotopes (I-131) who are hospitalized at the time of treatment must be hospitalized in a private room with toilet (regardless of dose administered).
2. In the event urine collections are ordered, see attached protocol. If collections are not ordered, have patient flush toilet 3 times after each voiding.
3. Nurses may care for a patient for $\frac{1}{2}$ hour per day within a 3 foot distance of the patient; nor are visitors under 18 years.
4. Patient's visitors should sit 5 feet from the patient. Pregnant visitors are not allowed to visit the patient.
5. The patient's room, door and bed will be posted with appropriate radiation signs with pertinent information (dose, date, isotope and instructions).
6. Employ disposable items whenever possible. Hold all linen and items for monitoring and appropriate disposition by RSO or designate.
7. If patient vomits, save all vomitus and call RSO immediately for monitoring.
8. Urine from collections will be transported on a table with wheels and be measured for I-131 content. After measurement (all personnel must wear surgical gloves and lab coats while working with urine). Still employing table (for distance protection) the collections are to be disposed of in sanitary sewer system. Toilet should be flushed at least 5-6 times. Toilet and bathroom will be monitored to insure that there is no contamination remaining.
9. Pathology personnel will be informed that a patient has been treated and blood and urine samples are to be handled with surgical gloves and propipettes.

Pathologist will be given the name of the patient being treated in the event of death and autopsy, permission. Guidelines in NCRP 37 should be followed. RSO will issue specific guidelines in each case.
10. Funeral directors will be issued forms and instructions as in NCRP 37 (for all bodies containing in excess of 5mCi) will be issued.

Item 19
4/11/85

11. Patients treated with radioactive phosphorus, P-32 do not require hospitalization. If they are hospitalized, they should be instructed to flush toilet 3 times after each voiding. Instructions will be issued to nurses regarding handling of urine (if collections are ordered). Bottles will be appropriately labeled; disposable pitcher and chux pads will be used; all personnel aiding in collection will wear surgical gloves which are to be held for monitoring. The patient will be instructed to wash hands thoroughly with soap and water. Patient's room and bedding will be monitored to insure that contamination is not present.

Pathology will be informed that urine should be considered radioactive for a week. Surgical gloves should be worn by all personnel working with urine, and propipettes must be used.

12. Housekeeping - absolutely no admittance to room or bathroom unless instructed or accompanied by Nuclear Medicine, However, arrangements will be made to clean room daily.
13. In specific cases (doses greater than 20mCi) nurses attending patient shall wear Dosimeters while on duty,,and record readings on Dosimeter charts, located at Nurses' station.

REVIEWED 2-84

Item 9
4/11/83

Newton Wellesley Hospital

Procedure For Urine Collection

No pregnant nurse or possibly pregnant worker should attend the patient.
No pregnant visitors or visitors under 18 years of age.

Urine collection will commence immediately following administration of radioactive iodine, I-131.

There will be 2-24 hours collections and the bottles for the collection will have "Caution Radioactive Material" labels affixed to them, and will be set in the patient's bathroom on several thicknesses of chux pads (as absorbent material in the event of a spill). A plastic urinal affixed with a radioactive label will be used and then be poured by patient, wearing surgical gloves into the bottle. The urinal may be rinsed and the liquid from rinse flushed down the toilet. Gloves worn by nurses or patient should be thrown into a plastic bag that has a radioactive label and held in the bathroom for Nuclear Medicine or physicist, to monitor. Please wear a new set of gloves each time.

Instruct the patient to wash his hands thoroughly with soap and water.

In case of a spill or accident, please call Nuclear Medicine days or in evening call Nuclear Medicine Tech on call at home. (call x-ray at night to contact Nuclear Medicine Technologist on call).

In case of vomiting please call the above. Wear surgical gloves in aiding patient. On the first day only bathe the patient prior to administration of the radioactive iodine, I-131. The patient may bathe himself any time. Do not give perineal care at 24 or 48 hours unless absolutely necessary.

*Item 19
4/10/85*

Nurses may attend the patient for 30 minutes within a 3 foot distance of the patient. There is no restriction beyond a 5-6 foot distance.

Please hold the disposal urinal for the nuclear medicine department where it will be held until no radioactivity remains.

Patient is not to be discharged from floor without notifying Nuclear Medicine. The room must be monitored by Nuclear Medicine before housekeeping enters room, and before room is reassigned to another patient.

The room will be monitored to insure that there is no radioactive contamination, following this procedure.

Item 19

4/11/85



August 7, 1980

To whom it may concern:

Patient Room # 614 West has been monitored with a properly calibrated Geiger Counter on August 7, 1980. This follows the discharge of Mr. John Hobby, who was admitted for therapy using radioactive ¹³¹Iodine. The room has been found to be free of any radioactive contamination and may now be reassigned to another patient.

Readings were 50 ~~per min~~ background being

50 ~~per min~~

Sincerely,

Charlotte Palmer RT, NM

Charlotte Palmer, R.T., N.M.
Nuclear Medicine Department

CP/bim

SAMPLE

Item 19
4/11/83

Item 19
4/11/85

Patient Name _____

Doctor _____

#mC1 131 I

Room # _____

[illegible]

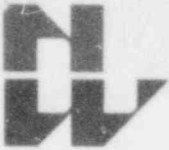
Monitoring of Room and Contents

Room #

[illegible]

Item 19
4/11/85

Item 19
4/11/85



^{133}Xe

Scan Room A - Ohio Nuclear Room
Scan Room B - GE Maxi Camera Room

^{133}Xe studies are performed in either of these rooms, but not simultaneously. A diagram showing these rooms and the Hot Lab, (first floor), and basement Hot Lab, B60, is shown in the Cox Engineering Company report, (dated February 11, 1985), which gives the air balance checks of the Nuclear Medicine area. These reports are performed on a semi-annual basis. Whenever ^{133}Xe is used, the high speed exhaust switch is activated; rates of supply and exhaust shown in this report are used for calculations, we include to demonstrate, that we are below permissible levels as in Title 10, Part 20 of CFR in restricted and unrestricted areas. The Cox Engineering report demonstrates that we operate at negative pressure. The doors connecting the imaging rooms to the Hot Lab will be open during all ^{133}Xe procedures. The exhaust from this dedicated exhaust system is carried to ten feet above the roof of the North Building. There is no occupied space beyond the roof tops. During Xe procedures, air conditioning is shut off in each of the Scan rooms. Activation of the high speed exhaust switch, (☒ 11, 12, and 13 shut off and E-1 and E-2 are activated), does not allow recirculation of air.

In the event of an accidental release of the total contents of the vial, all personnel and patient will be evacuated from the room and the exhaust system will be left to operate for 30 minutes beyond the release, and the door of the room will be locked to preclude any entrance. Before the room is used again, a Geiger counter with a thin window will be used to check radiation levels at the floor and to insure that background levels have been attained. In the event that the patient rips the mask off from his face after inhalation of ^{133}Xe , all personnel will evacuate the room, except for the patient who may be observed from the closed door. The exhaust system will again be left on to operate for 30 minutes and a Geiger counter will be used to monitor the floor of the room.

In the event of power failure, auxiliary power is immediately available in each scanning room.

All ^{133}Xe studies will be performed with the Pulmonex Xenon System 130-500 of Atomic Products Corporation, Center Moriches, N.Y. A descriptive brochure with instruction manual is attached. A facemask is used. A NEN gun filled with ^{133}Xe is used with 20mCi vials of gas. The vials are stored in the hood of the first floor Hot Lab prior to use and the NEN gun and empty vials are placed in this hood for decay. All personnel wear film badges, wrist, and ring TLD badges. A trap-test

is performed weekly on the Pulmonex system; procedures are as indicated on Page four of the enclosed brochure. If the trap-test indicates that the charcoal cartridge is saturated with ^{133}Xe , the Technologist will transport the Pulmonex System to the Basement Hot Lab where the cartridge is held for decay in the hood. A new charcoal cartridge will be inserted in the Pulmonex system, so that studies may be safely performed.

The following calculations are presented to show compliance with 10 CFR, Part 20 in restricted and unrestricted areas.

Assume three patients per week with 20mCi per patient and a 20% loss rate

$$3 \times 20,000 = 60,000 \mu\text{Ci/week} = 6 \times 10^4 \mu\text{Ci}$$

$$V = \frac{AF}{C} = \frac{6 \times 10^4 \times 0.20}{1 \times 10^{-5}} = 1.2 \times 10^9 \text{ ml/week}$$

$$\frac{1.2 \times 10^9}{40} \div \frac{1.7 \times 10^6 \text{ ml/hr}}{\text{Cu ft/min.}} = 17.6 \text{ Cu feet required; we have } 1,898 \text{ Cu ft. in restricted area}$$

For Unrestricted area from first floor hood permissible level is $3 \times 10^{-7} \mu\text{Ci/ml}$ air assume a possible loss of 70mCi ^{133}Xe in one year

$$70,000 \mu\text{Ci} = 7 \times 10^4 \mu\text{Ci}$$

600 Cu ft./min. exhaust rate

$$600 \times 1.5 \times 10^{10} = 9 \times 10^{12} \text{ ml air/yr}$$

$$\frac{7 \times 10^4}{9 \times 10^{12}} = 7.8 \times 10^{-9} \mu\text{Ci/ml}$$

Unused vials of ^{133}Xe are transferred seven days later from the hood of the first floor Hot Lab to the hood of the basement Hot Lab, B60, and held for further decay.

Assume a total of 320mCi per year. Decay seven days later gives 128mCi. Assume 20% loss.

$$128 \times 0.20 \times 1,000 = 2.56 \times 10^4 \mu\text{Ci } ^{133}\text{Xe}$$

Exhaust rate is 539 Cu feet/min.

$$\frac{2.56 \times 10^4}{539 \times 1.5 \times 10^{10}} = 3.17 \times 10^{-9} \mu\text{Ci/ml}$$

$3 \times 10^{-7} \mu\text{Ci/ml}$ is allowable level in unrestricted area.

COX ENGINEERING COMPANY

FAN BLOWERS
AIR CONDITIONING
SHEET METAL WORK
MARINE INDUSTRIAL



COOLING
DRYING-HEATING
VENTILATING-CONVEYING
BLOW PIPE SYSTEMS

77 GUEST STREET, BOX 189, BRIGHTON, MA 02135
(617) 782-0700

February 11, 1985

Newton Wellesley Hospital
2014 Washington Street
Newton, Massachusetts 02161

ATTENTION: MR. WAYNE COOK

Dear Mr. Cook,

Attached is a copy of the report of the first of four Air Balance checks of the Nuclear Medicine Area.

Thank you for the opportunity to have been of service. If I can be of any further assistance please do not hesitate to call.

Very truly yours,
COX ENGINEERING COMPANY

John Coffey
Manager, Testing & Balancing

JC/kma



ALL CONTRACTS AND AGREEMENTS ARE CONTINGENT UPON STRIKES, ACCIDENTS, OR OTHER DELAYS BEYOND OUR CONTROL
QUOTATIONS GIVEN ARE SUBJECT TO CHANGE WITHOUT NOTICE

Stem at
4/11/85

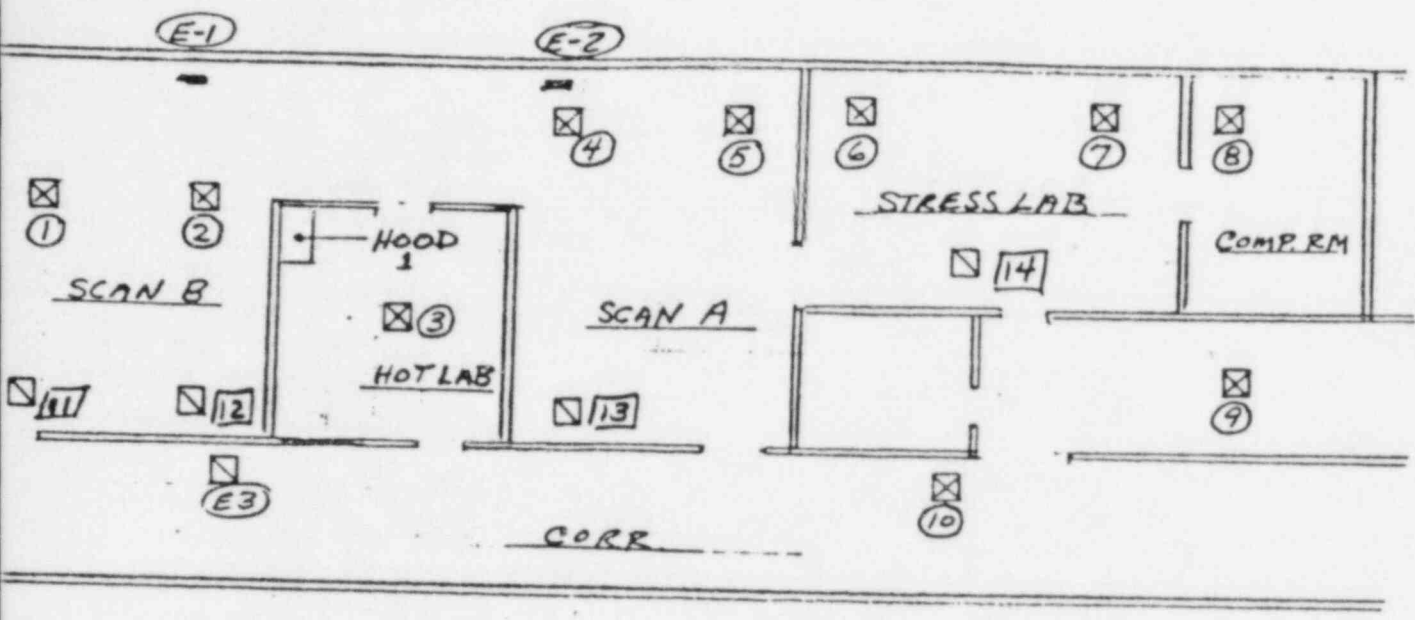
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COX ENGINEERING COMPANY

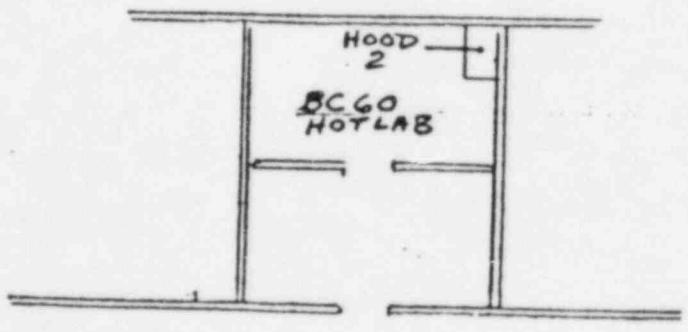
77 GUEST STREET • BOX 189 • BRIGHTON, MA 02135

SHEET 2 OF 2

NO. 0020	JOB NAME NEWTON WELLESLEY HOSPITAL
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PLAN NUCLEAR MEDICINE



PLAN BASMT.

☒ SUPPLY
☒ RETURN

Item 21
4/11/85

COX ENGINEERING COMPANY

AIR OUTLET TEST REPORT

PROJECT NEWTON WELLESLEY HOSPITAL SYSTEM NUCLEAR MEDICINE

OUTLET MANUFACTURER _____ TEST APPARATUS ALNOR AT C.D. & REG
MODEL FLORITE AT HOODS

AREA SERVED	OUTLET				DESIGN		PRELIMINARY		EXHAUST		NORMAL		REMARKS
	NO.	TYPE	SIZE	AK	CFM	VEL	VEL OR CFM	VEL OR CFM	VEL	CFM	VEL	CFM	
SCAN B	1	CD	12X12	.49					833	409	850	417	SUPPLY
	2								775	380	787	386	
HOT LAB	3		6X6	.12					1150	138	1200	144	
SCAN A	4		12X12	.49					950	465	975	478	
	5								1033	506	1033	506	
STRESS LAB	6		6X6	.12					825	99	813	98	
	7								850	102	850	102	
COMP. RM	8		15X15	.77					1150	886	1125	867	
WAITING	9		6X6	.12					1100	132	1100	132	
CORR.	10		9X9	.28					1300	364	1225	343	
SCAN B	11	REG	10X10	.27					-	-	1350	365	RETURN
	12								-	-	1750	473	
SCAN A	13		12X12	.40					-	-	1650	660	
STRESS LAB	14		10X10	.27					675	183	650	176	
SCAN B	E1	REG	12X12	.40					2500	1000	-	-	EXHAUST
SCAN A	E2								2500	1000	-	-	
CORR	E3								2500	1000	-	-	
HOT LAB	1	HOOD	12X24	2.0					275	550	300	600	HOOD EXH
B.C. 60 HOT LAB	2	HOOD	12X8 3/4	.77					1250	963	700	539	HOOD EXH

REMARKS: B.C. 60 - * CFM WITH RM DOOR OPEN. ** CFM WITH DOOR SHUT.

TEST DATE 2/6/85 READINGS BY R.D. FLYNN

Atomlab

*Newton Wellesley Hospital
Newton Lower Falls, Ma 02462*

130-500

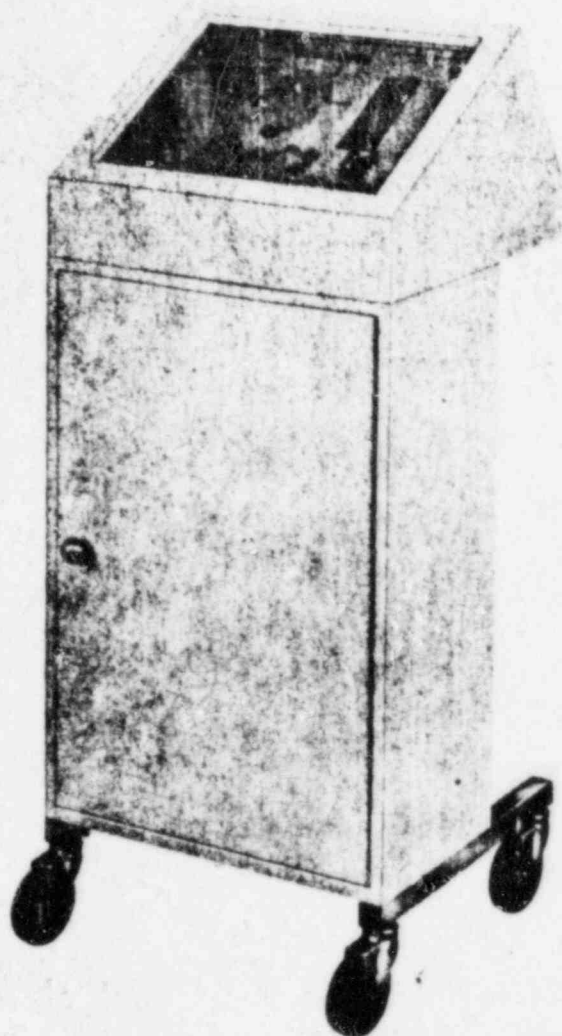
PULMONEX XENON SYSTEM INSTRUCTION MANUAL

Atomic Products Corporation

Center Moriches, New York 11934, U.S.A.
(516) 878-1074

*Item 21
4/11/85*

PULMONEX XENON SYSTEM

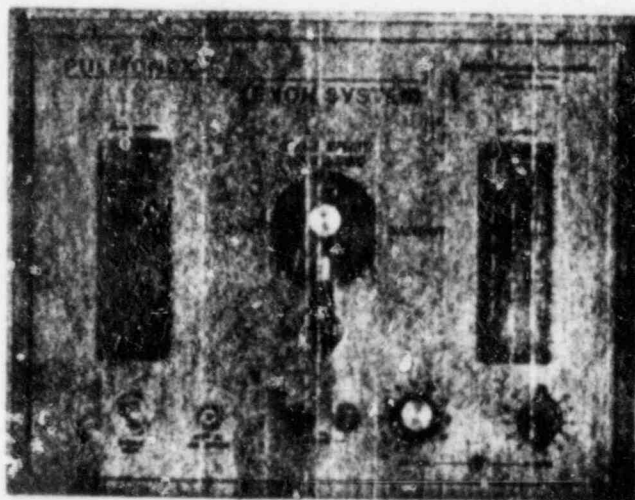


ALL FUNCTIONS ARE CONTROLLED BY A SINGLE HANDLE ON THE FRONT PANEL. ALL CONTROLS ARE CLEARLY MARKED FOR EASE OF OPERATION.

COMPLETE XENON DELIVERY SYSTEM WITH INTEGRATED XENON GAS TRAP

3-STEP SIMPLICITY OF OPERATION

1. Start: Set timer • Patient adjusts to breathing on system • Add oxygen • Set "Airflow" control. Switch handle to 2.
2. Single Breath-Equilibrium: Patient is breathing on closed loop • inject xenon at Mouthpiece • Patient breathes until equilibrium (about 2 minutes) • More oxygen may be added during 2 if necessary • Switch to 3.
3. Washout: Patient breathes room air through unit, exhales into trap. Study is complete.



PULMONEX XENON SYSTEM INSTRUCTIONS

To thoroughly familiarize yourself with the equipment and methodology, it is suggested that you run through the procedure several times; first without any patient, then with a colleague as a "patient" without actually using xenon.

When you are completely familiar with the routine, you can start doing xenon studies on patients with confidence.

FOLLOW THESE SIMPLE STEPS CAREFULLY:

A. Setting Up Your Pulmonex

1. Open the top rear door. Inspect the interior. All hoses should be connected to their respective ports. Bags should be lying flat. Hoses should not be kinked.
2. Open the lower front door. All hoses should be connected to their respective ports.
3. Remove the empty plastic cartridge that hangs from the top of the lower compartment. Fill the cartridge about 1/2 with the blue drierite (139-101) and return the cartridge to the hose fittings. This serves as a moisture trap for the air going into the charcoal cartridge. Close the lower compartment. Replace the drierite when it changes color (from blue to pink). Failure to change the drierite will significantly shorten the life of the charcoal cartridge.
4. Remove the empty plastic cartridge that is within the top compartment. Fill 1/2 with white granule soda-lime (available in your hospital pharmacy or respiratory service department). Return it to the hose fittings. This serves as a carbon dioxide trap. Close the top rear door. Change the soda-lime between each patient. Failure to change the soda-lime will cause the patient to rebreathe too much carbon dioxide, causing hyperventilation.
5. Bring the unit to the area of operation. Make sure the timer is on "0" and plug into a nearby electrical outlet.
6. At the rear of the unit, there are two white hose connections, side by side. Attach the breathing tube/bacteria filter/mouthpiece assembly to the hose connections. The plastic plug and warning label *must* be facing up. You can use longer tubes (supplied) for a supine patient. It is advisable to use hose clamps to tighten the hoses to the hose connections. At the rear of the unit, just below the overhang, is the trap final vent. Connect a hose from the trap vent to your room vent as a safety precaution.
7. Attach an oxygen tank to the "Oxygen Inlet" port on the front panel. (Clamp a 1/4 inch oxygen hose to the port). Turn the oxygen valve to 5 PSI or 6 - 8 liters/minute and leave on. If possible, use a pediatric regulator on the oxygen tank.

B. Performing a Study

8. Position the patient in front of the scintillation camera. Using a source, see that both the lungs are within the crystal area.

9. Set the camera for Xe-133. Record all data on tape.
10. Place the Pulmonex as close to the patient as possible and set the handle to the "Start" position. The number "1" will appear under the handle.
11. Set the "Air Flow" control to 70 (an arbitrary figure that can be changed to accommodate the patient's breathing pattern).
12. Set the timer to 9 minutes (an arbitrary figure that can be changed at any time depending on the study procedure you prefer).
13. Place the mouthpiece in the patient's mouth. Clip the patient's nose closed. A facemask may be used, if preferred. Place a vertex cape on the patient.
14. Have the patient breathe briefly on "Start" to become accustomed to breathing with a mouthpiece. The "from patient" bag will move slightly as the patient exhales.
15. Press the button on the front panel to add oxygen to the "to patient" bag. Only add a small amount of oxygen. Hold the button for a second or, at the most, two seconds. (The bag will only move slightly, do not fill it up). More oxygen can be added later if the patient requires. In many cases, it is possible not to add any oxygen and perform the entire study on ambient air. In all cases, the oxygen is only to enrich the air in the circuit.
16. Switch the handle to "Single Breath, Equilibrium, #2". With a NEN Gun or syringe filled with xenon, puncture the mouthpiece's rubber with the needle and add the xenon as you have the patient take a deep inspiration. Have the patient hold his breath for as long as possible and then continue to breathe normally. Advise the patient to breathe slowly and normally. Observe both breathing bags moving through the front panel windows. Add oxygen if the patient requires it. An alternative to puncturing the mouthpiece is to use the luer adapter plug provided.
17. When the patient reaches equilibrium (1 or 2 minutes, the counting rate on the camera stabilizes), switch to "Washout, #3". Take washout data on the camera (typical framing: first picture, 15 seconds; second, 30 seconds; third 30 seconds). Have the patient breathe normally slowly.
18. Carefully watch the "from patient" bag. If it blows up tight, the patient is breathing too fast. Advise him to normalize his breathing and increase the "Air Flow" speed. If the bag continues to expand against the glass, the patient will feel back pressure and resistance. To relieve this effect, open the lower cabinet. On the upper side there is a motor control. Turn it clockwise until the breathing bag deflates. Return the control to about 1/2 of its range. The use of the motor control will be a rare occurrence. Do not adjust it unless it is absolutely necessary. If it is used, be sure to return it to its original position. To be effective, the increase in motor speed must be done immediately, so watch the "From Patient" bag carefully during washout.
19. When the washout is complete, remove the patient and let the system run for a few more seconds or until both bags are empty.

TESTING THE GAS TRAP

1. Trap effluent exits from the port located just beneath the overhang.
2. A general trap test should be performed once a week.
3. Fill two plastic bags or balloons with trap effluent. One at the beginning of washout, one toward the end of washout.
4. Use the scintillation detector to determine if the samples are significantly above background.

5. Document as # 35 in restricted surge tests

ACCESSORIES FOR XENON DELIVERY SYSTEMS

Cat. No.	Description	For Use With		Price
		130-330 Economy Xenon System	130-500 Pulmonex Xenon System	
130-550	Mouthpiece without Hose (Disposable)	✓	✓	\$ 1.00 ea.
130-700	Disposable Bacteria Filter	✓	✓	2.95 ea.
130-543	39" Hose	✓	✓	.75 ea.
130-545	8" Hose	✓	✓	.25 ea.
139-680	Corrugated Tubing (100'/case), can be cut each 6"	✓	✓	11.50 cs.
130-555	Trap Cartridge for Drierite or Soda Lime	✓	✓	1.25 ea.
130-603	Rubber Breathing Bag, 5 liter	✓		20.00 ea.
139-101	Drierite, Indicating Moisture Absorber	✓	✓	4.30 lb.
130-019	Soda Lime, CO ₂ Absorber	✓	✓	2.00 lb.
130-691	Hose to Mouthpiece "T" Adapter	✓	✓	1.00 ea.
139-102	"Y" Manifold with One-Way Valve		✓	5.00 ea.
139-195	"T" Adapter with One-Way Valve	✓		5.00 ea.
139-305	Oxygen Tank Adapter	✓	✓	40.00 ea.
139-676	Adult Face Mask Retainer	✓	✓	13.50 ea.
139-690	Pediatric Face Mask Retainer	✓	✓	13.50 ea.
139-033	Disposable Face Mask - small	✓	✓	2.45 ea.
139-034	Disposable Face Mask - medium	✓	✓	2.45 ea.
139-035	Disposable Face Mask - large	✓	✓	2.45 ea.
130-939	Nose Clamps	✓	✓	7.50 ea.

Pulmonex system - to Hospital B60

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Procedures and Precautions for Use of Radioactive Material in Item 6~~8~~

The ^{125}I source in the Lunar Corporation wrist scanner is smear tested upon initial receipt of source and measurements and calculations made to insure that not more than 0.005 microcuries is in each smear. If more than 0.005 μCi . is measured, the equipment will be removed from use and NRC informed. Smear testing is performed semi annually and written records are maintained. The smear tests are also performed on ^{125}I sources (to be replaced) as they are removed from the equipment and on new sources. Depleted sources are placed in original protective containers and properly labelled, then transported to the basement hot lab hood of Room B60 and held for complete decay. Disposal will be as indicated in Item 18 waste disposal. Work with the wrist scanner is carried out in the Stress Room and at end of each work day the wrist scanner is returned to the 1st floor hot lab where it is stored. This hot lab is locked at all times when it is not under supervision of nuclear medicine personnel.

The ^{153}Gd source in the dual photon spine scanner (for which we are licensed but do not yet have this scanner) will be smear tested initially, semiannually upon removal and replacement of the source and all readings of radioactivity will be expressed as microcurie quantities. Any value in excess of 0.005 μCi will be reported to the NRC and the equipment will be removed from use.