FORM NRC-313M (8-78) 10 CFR 35	U.S. NUCLEAR REGULATORY COMMISSION APPLICATION FOR MATERIALS LICENSE – MEDICAL	Approved GAO B0557

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

St. Joseph's Hospital
Department of Radiology
128 Strawberry Hill Ave.
Stamford, Conn 06904

TELEPHONE NO. AREA CODE: 203 327 3500

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

2. PERSON TO CONTACT REGARDING THIS APPLICATION

James McSweeney, M.D.

TELEPHONE NO. AREA CODE: 203 327 3500 X 418

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

a. ☐ NEW LICENSE
b. ☐ AMENDMENT TO LICENSE NO. _____
c. ☒ RENEWAL OF LICENSE NO. 06-06922-02

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

James McSweeney, M.D.
James M. Rini, M.D.
William J. Caragol, M.D.
Frank Lauro, M.D. (Group VI Only)

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.)*

James McSweeney, M.D.
James Rini, 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	0.2
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	2000
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	X	1000

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 INTRA CAVITARY 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	X	2000

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
Cobalt 57	Sealed Source	10	Calibration of Dose Calibrator

8510310449 850926
REG1 LIC30
06-06922-02 PDR

FORM NRC-313M
(8-78)

INFORMATION REQUIRED FOR ITEMS 7 THROUGH 23

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

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

24. PERSONNEL MONITORING DEVICES

TYPE (Check appropriate box)			SUPPLIER	EXCHANGE FREQUENCY
a. WHOLE BODY		FILM	Landauer	Monthly
		TLD		
		OTHER (Specify)		
b. FINGER		FILM		
		TLD	Landauer	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

(2) LICENSE FEE ENCLOSED $ 150.00

b. APPLICANT OR CERTIFYING OFFICIAL (Signature)

(1) NAME (Type or Print)
James J. McSweeney, M.D.

(2) TITLE
Director of Radiology

c. DATE
11-21-78

FORM NRC-313M (8-78)

PRIVACY ACT STATEMENT

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

1. **AUTHORITY.** Sections 81 and 161(b) of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2111 and 2201(b)).

2. **PRINCIPAL PURPOSE(S).** The information is evaluated by the NRC staff pursuant to the criteria set forth in 10 C.F.R. 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 accident 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.

FORM NRC-313M
(8-78)

St. Joseph's Hospital

MEDICAL RADIOISOTOPE COMMITTEE'S DUTIES ARE TO:

a. Review radiation surveys and personnel monitoring records of clinical and research areas that utilize radioisotopes.

b. Recommend to the Medical Board any action necessary to correct deficiencies reported by the Radiation Safety Officer or Inspecting Agency.

c. Review any application for the by-product material.

d. Review any new radioisotope procedure.

e. Review any amendment applications for radioactive material.

f. Review any incidents of infractions of licenses.

ML10

"OFFICIAL RECORD COPY"

ST. JOSEPH HOSPITAL
128 STRAWBERRY HILL AVENUE
STAMFORD, CONNECTICUT 06904

TELEPHONE 327-3500

ISOTOPE COMMITTEE

James J. McSweeney, M.D.	Radiology
William J. Caragol, M.D.	Radiology
James M. Rini, M.D.	Radiology
Paul L. Weinstein, M.D.	Oncology
Joseph M. Gromults, M.D.	Internal Med.
Bill Pollack, A.R.R.T.	Nuclear Med.

APPENDIX C

INSTRUMENTATION

1. Survey meters

a. Manufacturer's name: Nuclear Chicago

Manufacturer's model number: 2650

Number of instruments available: 1

Minimum range: 0 mr/hr to 0.1 mr/hr

Maximum range: 0 mr/hr to [illegible] mr/hr

b. Manufacturer's name: Searle

Manufacturer's model number: 2592

Number of instruments available: 1

ranges: _____

Minimum range 0 mr/hr to [illegible] mr/hr

Maximum range 0 mr/hr to [illegible] mr/hr

2. Dose calibrator

Manufacturer's name: Squibb

Manufacturer's model number: CRC-CA

Number of instruments available: 1

3. Diagnostic instruments

Type of Instrument	Manufacturer's Name	Model No.
Gamma Camera	Searle	LFOV
Gamma Camera	Searle	GP
Multi sample NaI well counter	Searle	1185

4. Other

ML18

CALIBRATION OF SURVEY INSTRUMENTS

Check appropriate items

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

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

✓ 3. Survey instruments will be calibrated

___ a. By the manufacturer

___ b. At the licensee's facility

(i) Calibration source
Manufacturer's name ___
Model no. ___
Activity in millicuries ___
Accuracy ___
Traceability to primary standard ___

(ii) The calibration procedures in Appendix D, Section I will be used.

or

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

✓ c. By a consultant or outside firm

(i) Name James Summers, M.S. (Physicist)

(ii) Location Columbia Presbyterian Medical Center

(iii) Procedures and sources

___ have been approved by NRC and are on file in License No. ___

✓ are attached

METHODS FOR CALIBRATION OF SURVEY METERS, INCLUDING PROCEDURES, STANDARDS AND FREQUENCY

A. Calibration of survey meters shall be performed with radionuclide sources.

1. The sources shall be approximate point sources.
2. The source activities shall be traceable within 5% accuracy to the U.S. National Bureau of Standards (NBS) calibrations.
3. The frequency shall be at least annually.
4. Each scale of the instrument shall be calibrated at approximately 1/3 and 2/3 of full scale.
5. The exposure rate measured by the instrument shall differ from the true exposure rate by less than 10% of full scale (read appropriate section of the instrument manual to determine how to make necessary adjustments to bring instrument into calibration). Readings within $\pm$ 20% will be considered acceptable if a calibration chart or graph is prepared and attached to the instrument.

NOTE: Sources of Cs-137, Ra-226, or Co-60 are appropriate for the performance of calibration. The activity of the calibration standard should be sufficient to calibrate the survey meters on all ranges, or at least up to 1 R/hour.

ML10

B. A reference check source of long nalf-life, e.g. Cs-137 or Ra D and E, shall also be read at the time of the above calibration. The readings shall be taken with the check source placed in specific geometry relative to the detector. A reading of this reference check source should be taken:

1. Before each use.

If any reading with the same geometry is not within ±20% of the reading measured immediately after calibration. The instrument should be recalibrated (see Step A).

C. Records of the above, must be maintained.

D. Use of Inverse Square Law and Radioactive Decay Law

1. A calibrated source will have a calibration certificate giving its output at a given distance measured on a specified date by the manufacturer

   a. The Inverse Square Law may be used with any point source to calculate the exposure rate at other distance.

   b. The Radioactive Decay Law may be used to calculate the output at other times after the specified date.

Section 2

METHODS FOR CALIBRATION OF DOSE CALIBRATOR

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

A. Test for the following:

1. Instrument linearity semiannually.

2. Instrument accuracy semiannually.

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

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

1. Measure and record the activity of at least one reference source (e.g., 1-2 mCi of Co-57). This check should be repeated during the day whenever sample readings are not within 10% of the anticipated assay. Variation greater than 5% in this test will indicate the need for instrument repair, adjustment or recalibration.

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

E. Test of Instrument Linearity

The linearity of a dose calibrator should be ascertained over the entire range of activities employed. This test will utilize a vial of Tc-99m

1. Assay the Tc-99m vial in the dose calibrator and subtract background level to obtain net activity in millicuries.

2. Repeat step 1 at time intervals of 6, 24, 30, and 48 hours after the initial assay.

3. Using the 30 hour activity measurement as a starting point calculate the predicted activities at 0, 6, 24 and 48 hours using the following table:

Assay Time (hrs.)	Correction Factor
0	32
6	16
24	2
30	1
48	0.125

Example: if the net activity measured at 30 hrs. was 15.625 millicuries, then the predicted activity for 6 and 48 hours would be 15.625 mCi x 16 = 250 mCi and 15.625 mCi x 0.125 - 1.95 mCi respectively.

4. Plot the measured net activity for each time interval versus the predicted activity on log-log graph paper.

5. The activities plotted should be within ± 5% of the predicted curve if the instrument is linear and functioning properly. Errors greater than ± 5% indicate the need for repair or adjustment of the instrument.

F. Test For Instrument Accuracy

The accuracy of the dose calibrator should checked for several radionuclides such as Cs-137, Co-57, and Ba-133 using appropriate reference standards whose activity is traceable to NBS. The activity levels of the reference sources used should approximate those levels normally encountered, giving adequate attention to source configuration. The lower energy reference standards (Tc-99m, Xe-133, I-125) must be in vials with the same thickness of glass as the actual samples to be measured for best accuracy.

1. Assay the reference standard in the dose calibrator at the appropriate setting and subtract the background level to obtain the net activity.

2. Repeat step 1 for a total of 3 determinations and average results.

3. The average activity determined in step 2 should agree with the certified activity of the reference source within ± 5% after decay corrections.

4. Keep a log of these calibration checks.

5. Calibration checks which do not agree within ± 5% indicate that the instrument should be repaired or adjusted. If this

is not possible a calibration factor should be calculated for use during routine assays of radionuclides.

G. Test for Instrument Constancy

Two reference sources such as Cs-137 and Co-57 should be assayed using a reproducible geometry before each daily use of the instrument.

1. Assay each reference source using the appropriate instrument setting (i.e., Cs-137 setting for Cs-137).

2. Measure background level at same instrument setting.

3. Calculate net activity of each source subtracting out background level.

4 Log the background levels.

5 Variations greater than ± 5% from the predicted activity indicate the need for instrument repair or adjustment.

6 Higher than normal background levels should be investigated to determine their origin and eliminated if possible by decontamination, relocation, etc.

Sources Used for Instrument Accuracy and Constancy Tests:

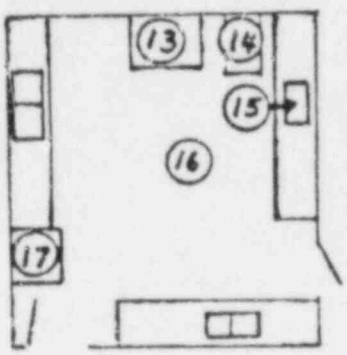
Radionuclide	Activity (mCi)	Accuracy
57 Co	.5	± 5%
133 Ba		
137 Cs	.2	± 5%
other		

ST. JOSEPH'S HOSPITAL

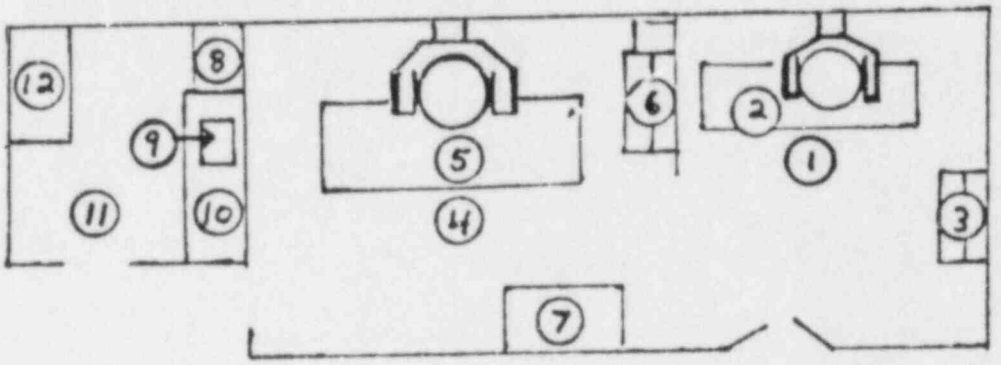
Department of Nuclear Medicine

Date: _____

MONTHLY



WEEKLY



No.	Area	CPM	mR/hr
1	Floor		
2	Stretcher		
3	Console		
4	Floor		
5	Stretcher		
6	Console		
7	Counter		
8	Sink		
9	Counter		

No.	Area	CPM	mR/hr
11	Floor		
12	Hood		
13	Scint. Count.		
14	Centrifuge		
15	Sink		
16	Floor		
17	Refridge.		
Background (Bkg)			
Standard			

COMMENTS:

_____

PROCEDURES FOR ORDERING AND RECEIVING RADIOACTIVE MATERIAL

1. The Chief Nuclear Medicine Technologist will place all orders for radioactive material and will ensure that the requested materials and quantities are authorized by the license and that possession limits are not exceeded.

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

3. During off-duty hours security personnel will accept delivery of radioactive packages and lock them in the appropriate area in either the Nuclear Medicine or X-ray Department.

ML19

PROCEDURES FOR OPENING PACKAGES CONTAINING RADIOACTIVE MATERIAL

1. Visually inspect package for any sign of damage (e.g., wetness, crushed). If damage is noted stop procedure and notify Radiation Safety Officer.

2. Measure surface exposure rate and record. If >200 mR/hr--stop procedure and notify Radiation Safety Officer.

3 Put on gloves.

4 Open the outer package (following manufacturer's directions, if supplied) and remove packing slip. Open inner package to verify contents (compare requisition, packing slips, and label on bottle) check integrity of final source container (inspect for breakage of seals or vials, loss of liquid, discoloration of packing material). Check also that shipment does not exceed possession limits.

37444

5. Monitor the packing material and packages for contamination before discarding:

   a. if contaminated, treat as radioactive waste.

   b. if not, obliterate radiation labels before discarding in regular trash.

Item No. 14
Date: _____

St. Joseph's Hospital

GENERAL INSTRUCTIONS:

All personnel are required to:

a. Wear a monitoring device (i.e. film of TLD badge) while in radiation areas.

b. Keep exposure from radiation to a minimum.

c. To refrain from smoking or eating in radioisotope laboratory areas.

d. Wear protective clothing such as laboratory coats, etc.

e. Wear disposable gloves when handling radioactive material.

f. Utilize lead shielded syringes to reduce exposure to hands.

g. Utilize automatic pipette.

h. Keep work areas covered with plastic backed absorbent paper.

i. Be familiar with the posting of warning signs.

j. Utilize the protective lead barriers.

k. Be familiar with the posted instructions United States Atomic Energy Commission, Part 20, Section 20, 206.

l. Be familiar with survey meters in these areas and to check if they are operational.

97144

St. Joseph's Hospital

PERSONNEL MONITORING:

a. All personnel in a controlled area must wear a personnel monitoring device (i.e., TLD of film badge)

b. Report of badge readings are reviewed by the licensee and Radiation Safety Officer.

c. The reports are maintained as permanent records and must be sent to each employer.

d. Exposures of up to 100mRem total body per week is permissible by regulatory agencies. If exposure are over 1/4 the permissible level, the Radiation Safety Officer or licensee should evaluate the work habits of the individual.

e. Exposures above 100mR em per week must be investigated by the Radiation Safety Officer and all unsafe practices eliminated.

f. The badges are your responsibility. Do not tamper with it.

g. Never wear a badge issued to anyone else.

St. Joseph's Hospital

ATTACHMENT C

EMERGENCY PROCEDURES IN ACCIDENTS

INVOLVING RADIATION MATERIALS

Unsealed Sources:

A. Minor Spills:

1. Notify all persons in the room at once.
2. Permit only the minimum number of persons necessary to deal with the spill in the area.
3. Confine the spill immediately.
   a. Liquid spills:
      1. Don Protective gloves.
      2. Drop absorbent paper on spill.
   b. Dry spills:
      1. Don protective gloves.
      2. Dampen thoroughly, taking care not to spread contamination. (Water may generally be used except where chemical reaction with water would generate an air contaminant. Oil should then be used).
4. Notify the Radiation Safety Officer or user in charge.
5. Decontaminate using a wetting solution and absorbent towels.
6. Monitor all persons involved in the spill and cleansing.
7. Permit no person to resume work in the area until a survey is made and approval of the Radiation Safety Officer is secured.
8. Store all contaminated materials for decay.

EMERGENCY PROCEDURES IN ACCIDENTS

INVOLVING RADIATION MATERIALS

B. Major Spills:

1. Notify all persons not involved in the spill to vacate the room at once.
2. If the spill is liquid, and the hands are protected, right the container. For liquid, absorbent towels should be placed over the solution to contain it.
3. If the spill is on the skin, flush thoroughly.
4. If the spill is on clothing, discard outer or protective clothing at once.
5. Switch off all fans.
6. Vacate the room.
7. Notify the Radiation Safety Officer or user in charge.
8. Wash hands thoroughly. Put on fresh gloves to prevent contamination of monitoring instruments.
9. Take immediate steps to decontaminate personnel involved, as necessary.
10. Decontaminate the area. (Personnel involved in decontamination must be adequately protected.) Store all contaminated materials for decay.
11. Monitor all persons involved in the spill and cleaning to determine adequacy of decontamination.
12. Permit no person to resume work in the area until a survey is made and approval of the Radiation Safety Officer is secured.

ML18

St. Joseph's Hospital

EMERGENCY PROCEDURES IN ACCIDENTS INVOLVING RADIATION MATERIALS

c. Accidents involving Radioactive Dust, Mists, Fumes, and Organic Vapor Gases

1. Notify all other persons to vacate the room immediately.
2. Hold breath and close escape valves, switch air circulation devices, etc., if time permits.
3. Vacate the room.
4. Notify the Radiation Safety Officer of user in charge.
5. Ascertain that all doors giving access to the room are closed and post conspicuous warnings or guards to prvent accidental opening of doors.
6. Report at once all known or suspected inhalations of radioactive materials.
7. Evaluate the hazard and the necessary safety devices for safe re-entry.
8. Determine the cause of contamination and rectify the condition.
9. Decontaminate the area.
10. Perform air survey of the area before permitting work to be resumed.
11. Monitor all persons suspected of contamination.
12. Prepare a complete history of the accident and subsequent activity related thereto for the laboratory records.

D. In Case of Unauthorized Removal, Theft or Loss

In case of unauthorized removal, theft, or loss of a radiation source, notify the Radiation Safety Officer and the user in charge immediately.

SURVEY PROCEDURES

A. Laboratory areas where only small quantities of radioactive material are used (less than 100 μCi) will be surveyed monthly.

B. All other laboratory areas will be surveyed weekly.

C. The weekly and monthly survey will consist of:

1. A measurement of radiation levels with a survey meter sufficiently sensitive to detect 0.1 mR/hr.

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

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

1. Location, date, and type of equipment used.

2. Name of person conducting the survey.

3. Drawing of area surveyed, identifying relevant features such as active storage areas, active waste areas, etc.

4. Measured exposure rates, keyed to location on drawing (point out rates that require corrective action).

5. Detected contamination levels, keyed to locations on drawing.

6. Corrective action taken in the case of contamination or excessive exposure rates, reduced contamination levels or exposure rates after corrective action, and any appropriate comments.

PROCEDURES FOR USE OF GROUPS IV AND V RADIOPHARMACEUTICALS
FOR TREATMENT OF PATIENTS

1. All patients treated with iodine-131 or gold-198 will be placed in a private room with a toilet.

2. The patient's room will be properly posted in accordance with Section 20.203, 10 CFR Part 20.

3. Surveys of the patient's room and surrounding areas will be conducted as soon as practicable after administration of the treatment dose. Exposure rates will be measured at the patient's bedside, three feet away and the entrance to the room. The Radiation Safety Officer or his designate will then determine how long a person may remain at these positions and will post these times.

4. Appropriate nursing procedures shall be provided.

ML18

5. Radiation levels in unrestricted areas will be maintained less than the limits specified in Section 20.105(b), 10 CFR Part 20.

6. All linens will be surveyed for contamination before being removed from the patient's room and will, if necessary, be held for decay.

7. Disposable plates, cups, eating utensils, tissue, surgical dressings, and other similar waste items will be placed in a specially designated container. The material will be collected by the Radiation Safety Officer (or his designate) checked for contamination, and disposed of as normal or radioactive waste, as appropriate.

8. Non-disposable items used for these patients will be held in plastic bags in the patient's room, and checked for contamination by the Radiation Safety Officer or his designate. Items may be returned for normal use, held for decay or decontaminated, as appropriate.

9. Before a therapy patient's room is reassigned to another patient, the room will be surveyed for contamination (and decontaminated if necessary) and all radioactive waste and waste containers will be removed.

PROCEDURES FOR USE OF GROUP VI SOURCES FOR
TREATMENT OF PATIENTS

1. All patients treated with brachytherapy sources will be placed in a private room with toilet.

2. The patient's room will be properly posted in accordance with Section 20.203, 10 CFR Part 20.

3. Surveys of the patient's room and surrounding areas will be conducted as soon as practicable after sources are implanted. Exposure rate measurements will be taken at the patient's bedside, three feet away and at the entrance to the room. The Radiation Safety Officer or his designate will then determine how long a person may remain at these positions and will post these times

4. Appropriate nursing procedures shall be provided.

5. Radiation levels in unrestricted areas will be maintained less than the limits specified in Section 20.105(b), 10 CFR Part 20.

6. Nurses caring for brachytherapy patients will be assigned badges.

7. At the conclusion of treatment, a survey will be performed to ensure that all sources have been removed from the patient and that no sources remain in the patient's room or any other area occupied by the patient. At the same time all radiation signs will be removed and all film and TLD badges assigned to nurses will be collected.

ST. JOSEPH HOSPITAL
128 STRAWBERRY HILL AVENUE
STAMFORD, CONNECTICUT 06904
TELEPHONE 327-3500

January 28, 1976

United States Nuclear Regulatory Commission
Washington, D. C. 20555

Att: John E. Bowyer,
Radioisotopes Licensing Branch
Division of Fuel Cycle & Material Safety

Dear Sir:

In support of our application for Group VI procedures using Cs^{137} the following information is submitted in answer to your letter of 1/22/76.

1. The Cs^{137} sources will be stored in the Nuclear Associates 67-742 Intracavitary Source container which has a lock on it. A product bulletin is enclosed. This container will be mounted on the Mobil Work Station and stored in a locked room posted with appropriate warning stickers. The room will be a very low usage room.

2. The following survey instruments are available:

   Ionization Chambers:
   a) Searle 2595 Low Range Survey Meter with a low range of 0-10 mr/hr.
   b) Searle 2596 Hi Range Survey Meter with a high range of 0-1000 R/hr.

   Geiger Counter:
   c) Searle 2652 Survey Meter

   In addition personnel will wear whole body and wrist film badges as well as TLD ring badges. Pocket dosimeters will also be worn. Since an afterloading technique will be used the sources are removed from the safe and immediately inserted into the patient. This considerably reduces exposure time. The sources to be used are the Nuclear Associates Cs^{137} Micrad Sources. These are on long tubes with color coded ends making it unnecessary to handle the source itself and unlikely that the source could be lost.

3. See attached nurses instructions.

4. A film badge will be worn on the wrist and a TLD badge will be worn on the finger. Sources will be handled at the end of a long tube which is afterloaded. Exposure should be a minimum.

5. Each source is color coded as to its activity, active length and year of manufacture and stored in a special source con-

tainer (see enclosed description) which is locked. Sources will be counted and checked before the safe is locked and stored.

If any additional information is needed we shall be happy to supply it.

Sincerely,

J. J. McSweeney, M.D.

JJM:md

Nurses Instructions For Patients with

Intracavitary Cesium

The applicators for the treatment are put in the patient in the operating room. When the patient is able to leave the recovery room they are to go to the Radiology Department for AP and lateral films to determine if the applicators are in the proper position. The patient is then returned to her room. Up to this point there is no radioactive material in the patient. After the patient returns to her room the radioactive Cs^{137} is loaded into the applicator and the following precautions should be observed.

1. Patient must be in a single room, preferably a corner room, not near the nurse's station, and must remain in the hospital until the cesium is removed.

2. All personnel entering the room shall wear film badges which will be issued by the Radiation Safety Officer. Call the Department of Radiology.

3. Spend as little time near the patient, consistent with good nursing care, as possible. Distance and time are your best safeguards.

4. If a source should fall out - don't touch it - call the Radiation Safety Officer immediately.

5. There is a blue dye in the colpostat. If any is seen leaking out, call the Radiation Safety Officer.

6. No nurses who are pregnant are to enter the room.

7. The room and the bed shall be posted with the proper radiation warning signs by the Radiation Safety Officer.

8. Visitors shall remain at the door to the room.

9. Patient should remain in bed.

10. Excreta are not radioactive.

approved 11-18-77

ML18