

FORM NRC-313M (8-78) 10 CFR 35	U.S. NUCLEAR REGULATORY COMMISSION <b>APPLICATION FOR MATERIALS LICENSE – MEDICAL</b>	Approved: GAO R0557
--------------------------------------	--	------------------------

**INSTRUCTIONS** – Complete items 1 through 26 if this is an initial application or an application for renewal of a license. Use supplemental sheets where necessary. Item 26 must be completed on all applications and signed. Retain one copy. Submit original and one copy of entire application to: Director, Office of Nuclear Materials Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Upon approval of this application, the applicant will receive a Materials License. An NRC Materials License is issued in accordance with the general requirements contained in Title 10, Code of Federal Regulations, Part 30, and the Licensee is subject to Title 10, Code of Federal Regulations, Parts 19, 20 and 35 and the license fee provision of Title 10, Code of Federal Regulations, Part 170. The license fee category should be stated in Item 26 and the appropriate fee enclosed.

1.a. NAME AND MAILING ADDRESS OF APPLICANT (institution, firm, clinic, physician, etc.) INCLUDE ZIP CODE  Good Shepard Hospital 650 W. Highway 22 Barrington, Illinois 60010  TELEPHONE NO.: AREA CODE (312) 381 9608	1.b. STREET ADDRESS(ES) AT WHICH RADIOACTIVE MATERIAL WILL BE USED (if different from 1.a.) INCLUDE ZIP CODE  NEW HL 12-18809-01 030-14196
2. PERSON TO CONTACT REGARDING THIS APPLICATION  Radiation Protection Consultants Ronald Edwards, Health Physicist TELEPHONE NO.: AREA CODE (312) 282 1888	3. THIS IS AN APPLICATION FOR: (Check appropriate item) a. <input checked="" type="checkbox"/> NEW LICENSE b. <input type="checkbox"/> AMENDMENT TO LICENSE NO. _____ c. <input type="checkbox"/> RENEWAL OF LICENSE NO. _____
4. INDIVIDUAL USERS (Name individuals who will use or directly supervise use of radioactive material. Complete Supplements A and B for each individual.)  George E. Cassidy, M.D. Raja Bahu, M.D. (Group I 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.)  George Cassidy, M.D.

**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		IODINE-131 AS IODIDE FOR TREATMENT OF HYPERTHYROIDISM	X	100
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		
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		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	
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.		
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
8511180671 851001 REG3 LIC30 12-18809-01	PDR		

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

## 24. PERSONNEL MONITORING DEVICES

TYPE (Check appropriate box)		SUPPLIER	EXCHANGE FREQUENCY
a. WHOLE BODY	<input checked="" type="checkbox"/> FILM	R. S. Landauer	Monthly
	<input type="checkbox"/> TLD		
	<input type="checkbox"/> OTHER (Specify)		
b. FINGER	<input type="checkbox"/> FILM		
	<input checked="" type="checkbox"/> TLD	R. S. Landauer	Monthly
	<input type="checkbox"/> OTHER (Specify)		
c. WRIST	<input type="checkbox"/> FILM		
	<input type="checkbox"/> TLD		
	<input type="checkbox"/> 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: \$ 100.00

b. APPLICANT OR CERTIFYING OFFICIAL (Signature)

Darryl Schlei

(1) NAME (Type of Print)

Darryl Schlei

(2) TITLE

Assistant Administrator

c. DATE

9/17/79

## PRIVACY ACT STATEMENT

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

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

MEDICAL ISOTOPES COMMITTEE

1. NAME George Cassidy, M.D. DUTY RSO  
Medical Specialty Radiologist
2. NAME Raja Bahu, M.D.  
Medical Specialty Pathologist
3. NAME Glen Galbus, M.D.  
Medical Specialty Internal Medicine
4. NAME Mark Smedley, M.D.  
Medical Specialty Emergency Room
5. NAME Daryl Schlei  
Medical Specialty Assistant Administrator
6. NAME Henry Aphelbach, M.D.  
Medical Specialty Orthopedic Surgeon
7. NAME Ian Katamay  
Medical Specialty Radiology Technologist
8. NAME \_\_\_\_\_  
Medical Specialty \_\_\_\_\_
9. NAME \_\_\_\_\_  
Medical Specialty \_\_\_\_\_
10. NAME \_\_\_\_\_  
Medical Specialty \_\_\_\_\_

Hospital Good Shepard Hospital NRC License NO. \_\_\_\_\_

Date: \_\_\_\_\_

## MEDICAL ISOTOPES COMMITTEE

### Responsibility:

The Committee is responsible for:

1. Ensuring that all individuals who work with or in the vicinity of radioactive material have sufficient training and experience to enable them to perform their duties safely and in accordance with NRC regulations and the conditions of the license.
2. Ensuring that all use of radioactive material is conducted in a safe manner and in accordance with NRC regulations and conditions of the license.

### Duties:

The Committee shall:

1. Be familiar with all pertinent NRC regulations, the terms of the license, and information submitted in support of the request for the license and its amendments.
2. Review the training and experience of any individual who uses radioactive material (including physicians, technologists, physicists, and pharmacists) and determine that the qualifications are sufficient to enable them to perform their duties safely and in accordance with NRC regulations and the conditions of the license.
3. Establish a program to ensure that all individuals whose duties may require them to work in the vicinity of radioactive material (e.g., nursing, security and house-keeping personnel) are properly instructed as required by Section 19.12, of 10 CFR Part 19.

4. Review and approve all requests for use of radioactive material within the institution.
5. Prescribe special conditions that will be required during a proposed use of radioactive material such as requirements for bioassays, physical examinations of users and special monitoring procedures.
6. Review the entire radiation safety program at least annually to determine that all activities are being conducted safely and in accordance with NRC regulations and the conditions of the license. The review shall include an examination of all records, reports from the radiation safety officer, results of NRC inspection, written safety procedures and management control system.
7. Recommend remedial action to correct any deficiencies identified in the radiation safety program.
8. Maintain written records of all committee meetings, actions recommendations, and decisions.
9. Ensure that the byproduct material license is amended, when necessary, prior to any changes in facilities, equipment, policies, procedures, and personnel.

Meeting Frequency:

The medical isotopes committee shall meet as often as necessary to conduct its business, but not less than once in each calendar quarter.

## PERSONNEL TRAINING PROGRAM AND FREQUENCY

All personnel who will be involved in the receipt, handling, use or disposal of radionuclides will be instructed in all or parts of the following subjects:

- a. Areas where radioactive material is used or stored.
- b. Potential hazards associated with radioactive material.
- c. Radiological safety procedures appropriate to their respective duties.
- d. Pertinent NRC regulations.
- e. The rules and regulations of the licensee.
- f. The pertinent terms of the license.
- g. Their obligation to report unsafe conditions.
- h. Appropriate response to emergencies or unsafe conditions.
- i. Their right to be informed of their radiation exposure and bioassay results.

Training will be such that clerical, nursing, housekeeping and security personnel will have lectures to their understanding.

The time involved for the lectures or the listed topics will total approximately eight hours.

Personnel will also be instructed on the above topics during:

- a. Annual refresher course.
- b. Before assuming their duties in the vicinity of radioactive material.
- c. Whenever a significant change in duties, regulations or conditions of the license occurs.

Hospital Good Shepard Hospital NRC License NO. \_\_\_\_\_  
Date \_\_\_\_\_



## INSTRUMENTATION

### 1. Survey meters

a. Manufacturer's name: Victoreen  
Manufacturer's model number: 498  
Number of instruments available: 1

Minimum range: 0 mr/hr to 50 mr/hr  
Maximum range: 0 mr/hr to 1000 mr/hr

b. Manufacturer's name: \_\_\_\_\_  
Manufacturer's model number: \_\_\_\_\_  
Number of instruments available: \_\_\_\_\_  
ranges: \_\_\_\_\_

Minimum range: \_\_\_\_\_ mr/hr to \_\_\_\_\_ mr/hr  
Maximum range: \_\_\_\_\_ mr/hr to \_\_\_\_\_ mr/hr

### 2. Dose calibrator

Manufacturer's name: Nuclear Associates  
Manufacturer's model number: -  
Number of instruments available: 1

3. Diagnostic instruments

<u>Type of Instrument</u>	<u>Manufacturer's Name</u>	<u>Model No.</u>
Gamma Camera	Picker	

4. Other

## CALIBRATION OF SURVEY INSTRUMENTS

Check appropriate items

- X 1. Survey instruments will be calibrated at least annually and following repair.
- X 2. Calibration will be performed at two points on each scale. The two points will be approximately 1/3 and 2/3 of full scale. A survey instrument may be considered properly calibrated when the instrument readings are within + 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.
- X 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.
- X c. By a consultant or outside firm
- (i) Name Instrument Calibration Center
- (ii) Location 5213 West Lawrence Avenue  
Chicago, Illinois 60630
- (iii) Procedures and sources
- X have been approved by NRC and are on file in License No. 12-14821-01
- are attached

CALIBRATION OF DOSE CALIBRATOR

A. Sources Used for Linearity Test:

Check as appropriate

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

or

       other\* (specify) Calibrated Source

B. Sources Used for Instrument Accuracy and Constancy Tests:

Radionuclide	Activity (mCi)	Accuracy
57 Co	5 mCi	+/-5%
133 Ba	200 uCi	+/-5%
137 Cs	1 mCi	+/-5%

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

or

       Equivalent procedures are attached.

\*Must be equivalent to the highest activity used.

Good Shepard Hospital

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.
3. During off-duty hours, security personnel will accept delivery of radioactive packages in accordance with the procedures outlined in memorandum (attached).

RECEIPT OF PACKAGES CONTAINING RADIOACTIVE MATERIAL

Any packages containing radioactive material that arrives between 4:30 P.M. and 7:00 A.M., or on Sundays, shall be signed for by the Security guard on duty and taken immediately to the Nuclear Medicine Department. Unlock the door, place the package on top of the counter immediately to the right of the door, and relock the door.

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

RADIATION SAFETY OFFICER: George E. Cassidy, M.D.

OFFICE PHONE: \_\_\_\_\_

HOME PHONE: \_\_\_\_\_

RADIOACTIVE SHIPMENT RECEIPT REPORT

1. P.O.# \_\_\_\_\_ SURVEY DATE \_\_\_\_\_ TIME \_\_\_\_\_  
SURVEYOR \_\_\_\_\_
2. CONDITION OF PACKAGE:  
\_\_\_\_\_ O.K. \_\_\_\_\_ PUNCTURED \_\_\_\_\_ STATUS \_\_\_\_\_ WET  
\_\_\_\_\_ CRUSHED \_\_\_\_\_ OTHER \_\_\_\_\_
3. RADIATION UNITS OF LABEL: \_\_\_\_\_ UNITS (mR/hr)
4. MEASURED RADIATION LEVELS: a. Package surface \_\_\_\_\_ mR/hr  
b. 3' from surface \_\_\_\_\_ mR/hr
5. DO PACKING SLIP AND VIAL CONTENTS AGREE?
  - a. Radionuclide \_\_\_\_\_ yes \_\_\_\_\_ no difference \_\_\_\_\_
  - b. Amount \_\_\_\_\_ yes \_\_\_\_\_ no difference \_\_\_\_\_
  - c. Chem Form \_\_\_\_\_ yes \_\_\_\_\_ no difference \_\_\_\_\_
6. WIPE RESULTS FROM: a. Outer \_\_\_\_\_ CPM = \_\_\_\_\_ DPM  
eff = ( )  
b. Final source container \_\_\_\_\_ CPM = \_\_\_\_\_ DPM
7. SURVEY RESULTS OF PACKING MATERIAL AND CARTONS \_\_\_\_\_ mR/hr. CPM.  
eff = ( )
8. DISPOSITION OF PACKAGE AFTER INSPECTION \_\_\_\_\_.
9. IF NRC/CARRIER NOTIFICATION REQUIRED, GIVE TIME, DATE AND PERSONS NOTIFIED.

## 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 exposure rate at three (3) feet from package surface--record. If  $>10$  mR/hr--stop procedure and notify Radiation Safety Officer.
3. Measure surface exposure rate and record. If  $>200$  mR/hr--stop procedure and notify Radiation Safety Officer.
4. Put on gloves.
5. 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.
6. Wipe external surface of final source container with moistened cotton swab or filter paper held with forceps, assay and record.
7. 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.



LABORATORY RULES FOR THE USE OF  
RADIOACTIVE MATERIAL

1. Wear laboratory coats, or other protective clothing at all times in areas where radioactive materials are used.
2. Wear disposable gloves at all times while handling radioactive materials.
3. Monitor hands and clothing for contamination after each procedure or before leaving the area.
4. Use syringe shields for preparation of patient doses and administration to patients except in circumstances, such as pediatric cases, where their use would compromise the patient's well-being.
5. Do not eat, drink, smoke or apply cosmetics in any area where radioactive material is stored or used.
6. Assay each patient dose in the dose calibrator prior to administration. Do not use any doses that differ from the prescribed dose by more than 10%.
7. Wear personnel monitoring devices (Film badge or TLD) at all times while in areas where radioactive materials are used or stored. These should be worn at chest or waist level.
8. Wear TLD finger badges during elution of generator and preparation, assay, and injection of radiopharmaceuticals.
9. Dispose of radioactive waste only in specially designated receptacles.

10. Never pipette by mouth.
11. Survey generator, kit preparation, and injection areas for contamination after each procedure or at the end of the day. Decontaminate if necessary.
12. Confine radioactive solutions in covered containers plainly identified and labelled with name of compound, radionuclide, date, activity, and radiation level if applicable.
13. Always transport radioactive material in shielded containers.
14. When opening containers of liquid radiiodine:
  - a. gloves will be worn
  - b. open only in well ventilated room
  - c. use lead shield protection barrier.

## EMERGENCY PROCEDURES

### Minor Spills:

1. NOTIFY: Notify persons in the area that a spill has occurred.
2. PREVENT THE SPREAD: Cover the spill with absorbent paper.
3. CLEAN UP: Use disposable gloves and remote handling tongs. Carefully fold the absorbent paper and pad. Insert into a plastic bag and dispose of in the radioactive waste container. Include all other contaminated materials such as disposable gloves.
4. SURVEY: With a G.M. Survey Meter, check the area around the spill, your hands and clothing for contamination.
5. REPORT: Report incident to the Radiation Safety Officer.

### Major Spills:

1. CLEAR THE AREA: Notify all persons not involved in the spill to vacate the room.
2. PREVENT THE SPREAD. Cover the spill with absorbent pads, but do not attempt to clean it up. Confine the movement of all personnel potentially contaminated to prevent the spread.
3. SHIELD THE SOURCE. If possible, the spill should be shielded, but only if it can be done without further contamination or without significantly increasing your radiation exposure.

4. CLOSE THE ROOM. Leave the room and lock the door(s) to prevent entry.
5. CALL FOR HELP. Notify the Radiation Safety Officer immediately.
6. PERSONNEL DECONTAMINATION. Contaminated clothing should be removed and stored for further evaluation by the Radiation Safety Officer. If the spill is on the skin, flush thoroughly and then wash with mild soap and lukewarm water.

RADIATION SAFETY OFFICER George E. Cassidy, M.D.

OFFICE PHONE: \_\_\_\_\_

HOME PHONE: \_\_\_\_\_

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 in the patient's chart and on his door. The results of daily surveys will be used to recalculate permitted times which will be posted on the patient's chart and on his door.
4. The form, Nursing Instructions for Patients Treated with Phosphorus-32, Gold-198, or Iodine-131, will be completed immediately after administration of the treatment dose. A copy will be posted in the patient's chart.
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 daily 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. Urine and vomitus, from iodine-131 therapy patients will be stored for decay in our radioactive waste storage area. When it has reached background levels as measured with a low-level survey meter, it will be released to the sanitary sewer system.
10. 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.
11. Nursing Instructions
  - a. Nurses should spend only that amount of time near the patient required for ordinary nursing care. Special restrictions may be noted on the precaution sheet in the patient's chart. Nurses should read these instructions before administering to the patients. Call the Nuclear Medicine Department if you have any questions about the care of these patients.
  - b. Visitors will be limited to those 18 years of age or over, unless other instructions are noted on the precautions sheet in the patient's chart.
  - c. Patients must remain in bed while visitors are in the room and visitors should remain at least three feet from the patient.
  - d. Radioactive patients are to be confined to their rooms except for special medical or nursing purposes approved by the Nuclear Medicine Department.

- e. No nurse, visitor or attendant who is pregnant should be permitted in the room of a patient who has received a therapeutic amount of radioactivity until the patient no longer presents a radiation hazard. Female visitors should be asked whether they are pregnant.
- f. Attending personnel must wear rubber or disposable plastic gloves when handling urinals, bedpans, emesis basins or other containers having any material obtained from the body of the patient. Wash gloves before removing and then wash hands. The gloves must be left in the patient's room in the designated waste container. These gloves need not be sterile or surgical in type.
- g. Disposable items should be used in the care of these patients, whenever possible. These items should be placed in the designated waste container. Contact the Nuclear Medicine Department for proper disposal of the contents of the designated waste container.
- h. All clothes and bed linens used by the patient should be placed in the laundry bag provided and left in the patient's room to be checked by a member of the Nuclear Medicine Department.
- i. All non-disposable items should be placed in a plastic bag and left in the patient's room to be checked by a member of the Nuclear Medicine Department.
- j. Surgical dressings should be changed only as directed by physician. Gold-198 leaking from a puncture wound will stain the dressings dark red or purple. Such dressings should not be discarded but should be collected in plastic bags and turned over to the Nuclear Medicine Department. Handle these dressings only with tongs or tweezers. Wear disposable gloves.

- \_\_\_\_ 8. Gloves must be worn while attending patient.
- \_\_\_\_ 9. Patient must use disposable utensils.
- \_\_\_\_ 10. All items must remain in room until okayed by  
Radiation Safety Officer.
- \_\_\_\_ 11. Smoking is not permitted.
- \_\_\_\_ 12. Do not release room to admitting until okayed by  
Radiation Safety Officer.
- \_\_\_\_ 13. Other instructions.

In case of an emergency contact:

RSO George E. Cassidy, M.D.  
name

/  
on/off duty telephone no.



k. For iodine-131 patients:

- (1) Urine from iodine-131 patients will be collected in special containers provided by the Nuclear Medicine Department. The patient should be encouraged to collect his own urine in the container. If the patient is bedridden, a separate urinal or bed pan should be provided. The urinal or bed pan should be flushed several times with hot soapy water after use.
- (2) If the nurse helps to collect the excreta, she should wear disposable gloves. Afterwards she should wash her hands with the gloves on and again after the gloves are removed. The gloves should be placed in the designated waste container for disposal by the Nuclear Medicine Department.
- (3) Disposable plates, cups, and eating utensils will be used by patients who are treated with iodine-131.
- (4) Vomiting within 24 hours after oral administration, urinary incontinence, or excessive sweating within the first 48 hours may result in contamination of linen and/or floor. In any such situations or if radioactive urine and/or feces is spilled during collection, call the Nuclear Medicine Department, Ext. \_\_\_\_\_. Meanwhile, handle all contaminated material with disposable gloves and avoid spreading contamination.
- (5) All vomitus must also be kept in the patient's room for disposal by the Nuclear Medicine Department. Feces need not be routinely saved, unless ordered on the chart. The same toilet should be used by the patient at all times and it should be well flushed (3 times).

1. Utmost precautions must be taken to see that no urine or vomitus, is spilled on the floor or the bed. If any part of the patient's room is suspected to be contaminated, notify the Nuclear Medicine Department.
- m. If a nurse, attendant or anyone else knows or suspects that his skin, or clothing, including shoes, is contaminated, notify the Nuclear Medicine Department immediately. This person should remain in the patient's room and not walk about the hospital. If the hands become contaminated, wash immediately with soap and water.
- n. If a therapy patient should need emergency surgery or should die, notify the Nuclear Medicine Department immediately.
- o. When the patient is discharged call the Nuclear Medicine Department and request that the room be surveyed for contamination before remaking the room.

NURSING INSTRUCTIONS FOR PATIENTS TREATED WITH  
PHOSPHORUS-32, GOLD-198, or IODINE-131

Patient's Name: \_\_\_\_\_

Room No.: \_\_\_\_\_ Physician's Name: \_\_\_\_\_

Radioisotope Administered: \_\_\_\_\_

Date and Time of Administration: \_\_\_\_\_

Dose Received: \_\_\_\_\_ Method of Administration: \_\_\_\_\_

Exposure Rates in mR/hr

<u>Date</u>	<u>3 feet from bed</u>	<u>10 feet from bed</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

(Comply with all Check Items)

- \_\_\_\_\_ 1. Visiting time permitted: \_\_\_\_\_
- \_\_\_\_\_ 2. Visitors must remain \_\_\_\_\_ from patient.
- \_\_\_\_\_ 3. Patient may not leave room.
- \_\_\_\_\_ 4. Visitors under 18 not permitted.
- \_\_\_\_\_ 5. Pregnant visitors not permitted.
- \_\_\_\_\_ 6. Film badges must be worn.
- \_\_\_\_\_ 7. Use and complete the following tags:
  - \_\_\_\_\_ door
  - \_\_\_\_\_ bed
  - \_\_\_\_\_ chart
  - \_\_\_\_\_ wrist

## SURVEY PROCEDURES

- A. All elution, preparation and injection areas will be surveyed daily with G-M survey meter and decontaminated if necessary.
- B. Laboratory areas where only small quantities of radioactive material are used (less than 100 uCi) will be surveyed monthly.
- C. All other laboratory areas will be surveyed weekly.
- D. 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.
- E. 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.
- F. Area will be cleaned if the contamination level exceeds 100 dpm/100 cm<sup>2</sup>.

WASTE DISPOSAL PROCEDURES

1. Liquid Waste will be disposed of

Check as appropriate

- ☒ By commercial waste disposal service (see also No. 4 below)  
☒ In the sanitary sewer system in accordance with Section 20.303 of 10 CFR Part 20.  
Other (specify): \_\_\_\_\_.

2. Mo-99/Tc-99m generators will be:

Check as appropriate

- ☒ Returned to the manufacturer for disposal  
☒ Held for decay until radiation levels as measured with a low-level survey meter and with all shielding removed, have reached background levels. All radiation labels will be removed or obliterated and the generators disposed of as normal trash. (Note: this method of disposal may not be practical for generators containing long-lived radioactive contaminants)  
\_\_\_\_ Disposed of by commercial waste disposal service (see also No. 4 below)  
\_\_\_\_ Other (specify): \_\_\_\_\_.

3. Other Solid Waste will be:

Check as appropriate

- ☒ Held for decay until radiation levels as measured with a low-level survey meter and with all shielding removed) have reached background levels. All radiation labels will be removed or obliterated and the waste will be disposed of in normal trash.  
☒ Disposed of by commercial waste disposal service (see also No. 4 below)  
\_\_\_\_ Other (Specify): \_\_\_\_\_.

4. The commercial waste disposal service used will be: \_\_\_\_\_

Nuclear Engineering  
(Name)

Louisville, Kentucky  
(City, State)

NRC/Agreement State License No. \_\_\_\_\_