NRC FORM 313
(7-87)
10 CFR 30, 32, 33, 34, 35 and 40

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED BY OMB
3150-0120
Expires: 6-30-90

APPLICATION FOR MATERIAL LICENSE

INSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION. SEND TWO COPIES OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

APPLICATIONS FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

U.S. NUCLEAR REGULATORY COMMISSION
DIVISION OF FUEL CYCLE AND MATERIAL SAFETY, NMSS
WASHINGTON, DC 20555

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS. IF YOU ARE LOCATED IN:

CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, MAINE, MARYLAND, MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, PENNSYLVANIA, RHODE ISLAND, OR VERMONT, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION I
NUCLEAR MATERIALS SAFETY SECTION B
631 PARK AVENUE
KING OF PRUSSIA, PA 19406

ALABAMA, FLORIDA, GEORGIA, KENTUCKY, MISSISSIPPI, NORTH CAROLINA, PUERTO RICO, SOUTH CAROLINA, TENNESSEE, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION II
NUCEAR MATERIALS SAFETY SECTION
101 MARIETTA STREET, SUITE 2900
ATLANTA, GA 30323

IF YOU ARE LOCATED IN:

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION III
MATERIALS LICENSING SECTION
799 ROOSEVELT ROAD
GLEN ELLYN, IL 60137

ARKANSAS, COLORADO, IDAHO, KANSAS, LOUISIANA, MONTANA, NEBRASKA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, SOUTH DAKOTA, TEXAS, UTAH, OR WYOMING, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
MATERIAL RADIATION PROTECTION SECTION
611 RYAN PLAZA DRIVE, SUITE 1000
ARLINGTON, TX 76011

ALASKA, ARIZONA, CALIFORNIA, HAWAII, NEVADA, OREGON, WASHINGTON, AND U.S. TERRITORIES AND POSSESSIONS IN THE PACIFIC, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION V
NUCLEAR MATERIALS SAFETY SECTION
1450 MARIA LANE, SUITE 210
WALNUT CREEK, CA 94596

PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S. NUCLEAR REGULATORY COMMISSION JURISDICTION.

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

- [ ] A. NEW LICENSE
- [ ] B. AMENDMENT TO LICENSE NUMBER _____
- [X] C. RENEWAL OF LICENSE NUMBER 13-09788-01

2. NAME AND MAILING ADDRESS OF APPLICANT *(Include Zip Code)*

Lafayette Home Hospital
Department of Radiology and Pathology
2400 South Street
Lafayette, Indiana, 47904

3. ADDRESS(ES) WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

Lafayette Home Hospital
Department of Radiology and Pathology
2400 South Street
Lafayette, Indiana 47904

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Stanley R. Metzger

TELEPHONE NUMBER: (317) 447-9610

SUBMIT ITEMS 5 THROUGH 11 ON 8½ x 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

5. RADIOACTIVE MATERIAL
a. Element and mass number, b. chemical and/or physical form, and c. maximum amount which will be possessed at any one time.

6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED.

7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING AND EXPERIENCE.

8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS.

9. FACILITIES AND EQUIPMENT.

10. RADIATION SAFETY PROGRAM.

11. WASTE MANAGEMENT.

12. LICENSEE FEES *(See 10 CFR 170 and Section 170.31)*
FEE CATEGORY: 7C
AMOUNT ENCLOSED: $ 580.00

13. CERTIFICATION. *(Must be completed by applicant)* THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT.

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, AND 40 AND THAT ALL INFORMATION CONTAINED HEREIN, IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.

WARNING: 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1948, 62 STAT. 749 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

SIGNATURE–CERTIFYING OFFICER	TYPED/PRINTED NAME	TITLE	DATE
John R. Walling	John R. Walling	President	03/23/88

8906230219 880810
REG3 LIC30
13-09778-01 PDR

RECEIVED
MAR 25 1988
REGION III

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	COMMENTS	APPROVED BY
REN	MAR 24	7C	Code 23	CP
AMOUNT RECEIVED	CHECK NUMBER	CONTROL NO. 85114		DATE
$580	078990			3/31/88

MAR 27 1988

RADIOACTIVE MATERIAL AND PURPOSE

Byproduct Material	Amount	Purpose
5.a Material in § 35.100	As needed	6.a Medical use
5.b Material in § 35.200	As needed	6.b Medical use
5.c Material in § 35.300	As needed	6.c Medical use
5.d Material in § 35.500	As needed	6.d Medical use

CONTROL NO 85114

Authorized Users for Medical Use	Reference Item 5
William J. Miller, M.D.	5.a, 5.b, 5.c, 5.d
Credentials on file with NRC reference license #13-09788-01 Item 8 dated 10/05/77	
John A. Knote, M.D.	5.a, 5.b, 5.c, 5.d
Credentials on file with NRC reference license #13-09788-01 Item 8 dated 10/05/77	
Paul W. Elliott, M.D.	5.a, 5.b
Credentials on file with NRC reference license #13-09788-01 Item 8 dated 10/05/77	

CONTROL NO 85114

Radiation Safety Officer
William J. Miller, M.D. Director of Radiology Services
Credentials on file with NRC reference license #13-09788-01
Item 8 dated 10/05/77

RADIATION SAFETY TRAINING PROGRAM

Personnel will be instructed:

1. Before assuming duties with, or in the vicinity of, radioactive materials.

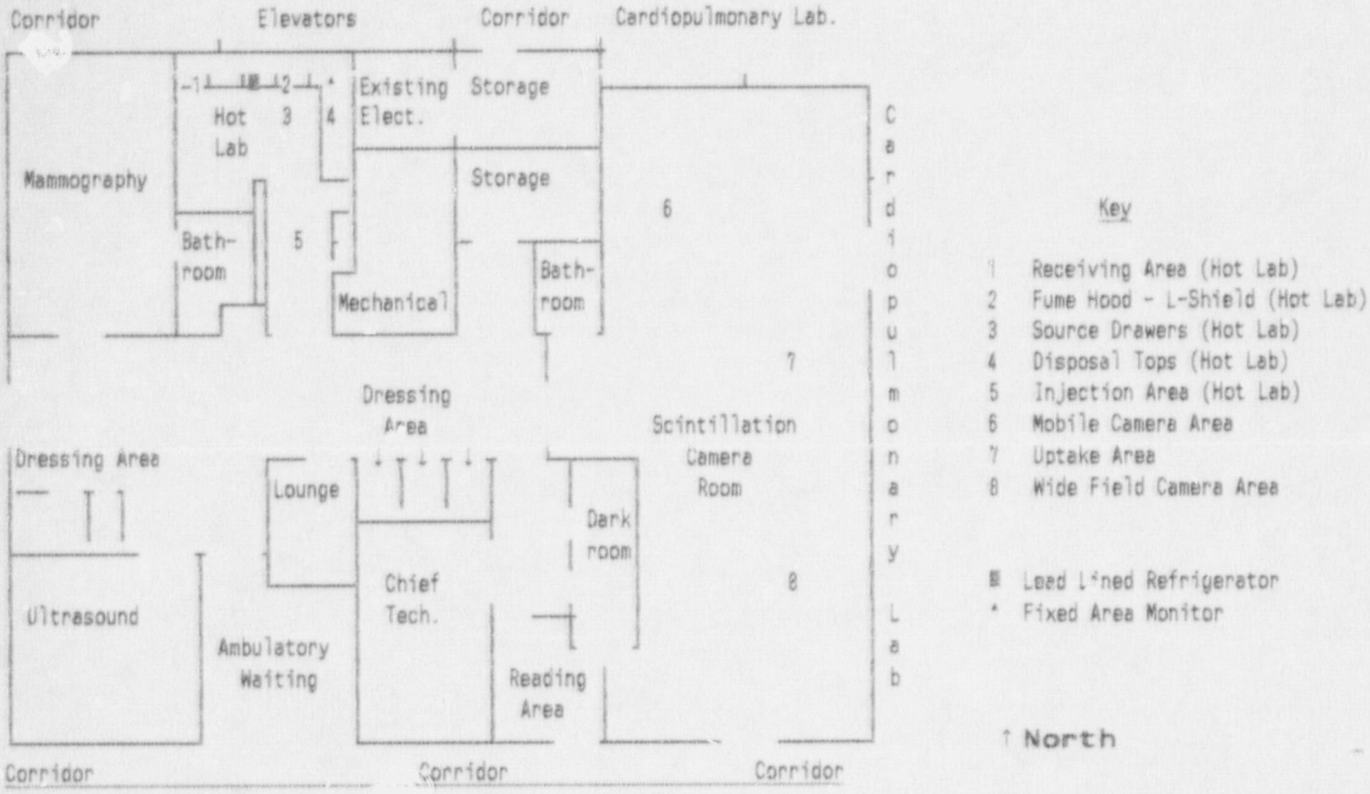
2. During annual refresher training.

3. Whenever there is a significant change in duties, regulations or the terms of the license.

4. The following category of personnel will receive training included are topics covered in category:

   a. Housekeeping
      1.) Potential risks of radiation exposure
      2.) The ALARA concept
      3.) Procedures using radioactive material
      4.) When to contact RSO
      5.) Sources of ionizing radiation
      6.) What are not sources of ionizing radiation
      7.) Potential sources of ionizing radiation at this institution
      8.) Good working practices
      9.) Relative dosages
   b. Nuclear Medicine Technologists
      1.) Potential risks of radiation exposure
      2.) The ALARA concept
      3.) Procedures using radioactive material
      4.) When to contact RSO
      5.) Personnel dosimeter procedures and precautions
      6.) General Safety Measures
      7.) Specific Safety Measures
      8.) End of day safety measures
      9.) Waste handling procedures
      10.) Emergencies
      11.) Safety measures in the pharmacy
      12.) Ues of radioactive aerosols
      13.) I^{131} Radiopharmaceutical Therapy
      14.) Relative dosages
   c. Nursing
      1.) Potential risks of radiation exposure
      2.) The ALARA concept
      3.) Procedures using radioactive material
      4.) When to contact RSO
      5.) Personnel dosimeter procedures and precaution
      6.) Sources of ionizing radiation
      7.) What are not sources of ionizing radiation
      8.) Potential sources of ionizing radiation at this institution
      9.) General Safety measures
      10.) Specific safety measures
      11.) I^{131} Radiopharmaceutical Therapy
      12.) Relative dosages
   d. Security
      1.) Potential risks of radiation exposure
      2.) The ALARA concept

3.) Procedures using radioactive material
4.) When to contact RSO
5.) Sources of ionizing radiation
6.) Potential for radiation hazards
7.) The radiation symbol
8.) Emergency situations
9.) Package receipt policy and procedures
10.) Relative dosages



- All radionuclide storage cabinets in Hot Lab are ½ inch lead lined.
- Fume Hood has built in L-Shield contains ½ inch lead and leaded glass

Survey Instrument Calibration

All survey instruments will be calibrated annually by Syncor International Corporation, reference NRC license number 13-192290-01 MD.

or

Returned to Manufacturer for calibration annually

or

We will establish and implement the model procedure for calibrating survey instruments that was published in Appendix B to regulatory Guide 10.8, Revision 2.

When calibrating a survey instrument, the point shall be considered as calibrated if the indicated exposure rate differs from the calculated exposure rate by not more than 20 percent, and shall conspicuously attach a correction chart or graph to the instrument

Procedure for Calibrating Dose Calibrator

1. Test frequency and trigger levels (repairs, replacement, or arithmetic correction will be considered should the dose calibrator fall outside the trigger levels).

   a. Constancy at least once each day prior to assay of patient dosages (+/- 5%)

   b. Linearity at installation and at least quarterly thereafter (+/- 5%)

   c. Geometry dependence at installation (+/- 5%)

   d. Accuracy at installation and at least annually thereafter (+/-5%)

2. After repair, adjustment, or relocation of the dose calibrator, repeat the above tests as appropriate.

3. Constancy means reproducibility in measuring a constant source over a long period of time. Assay at least one relatively long-lived source such as Cs^{137}, Co^{60}, Co^{57}, or Ra^{226} using a reproducible geometry each day before using the calibrator. Use the following procedure:

   a. Assay each reference source using the appropriate dose calibrator setting (i.e., use Cs^{137} setting to assay Cs^{137}).

   b. Measure background at the same setting, and subtract or confirm the proper operation of the automatic background subtract circuit if it is used.

   c. For each source used, either plot on graph paper or log in a book , or spreadsheet the activity of each constancy source.

   d. Using one of the sources, repeat the above procedure for all commonly used radioisotope settings. Plot or log the results.

   e. Should the recorded measurement exceed +/- 5%, the chief technologist will be informed of a suspected malfunction of the calibrator. These action levels should be written in the log book or posted on the calibrator. The calibrator will be repaired or replaced if the error exceeds 10%.

4. Inspect the instrument on a quarterly basis to ascertain that the measurement chamber liner is in place and that the instrument is zeroed according to the manufacturer's instructions.

5. Linearity means that the calibrator is able to indicate the correct activity over the range of use of that calibrator. This test is done using a vial or syringe of Tc^{99m} whose activity is at least as large as the maximum activity normally assayed in a prepared

radiopharmaceutical kit, in a unit dosage syringe, or in a radiopharmaceutical therapy, whichever is largest.

Decay Method

a. Assay the Tc^{99m} syringe or vial in the dose calibrator, and subtract background or use the automatic background subtract to obtain the net activity in millicuries. Record the date, time to the nearest minute, and net activity. This first assay should be done in the morning at a regular time.

b. Repeat the assay at about noon, and again at about 4 P.M. Continue on subsequent days until the assayed activity is less than 10 µCi.

c. Convert the time and date information recorded to hours elapsed since the first assay.

d. On a sheet of semilog graph paper, label the logarithmic vertical axis in mCi and label the linear horizontal axis in hours elapsed. At the top of the graph, note the date and the manufacturer, model number, and serial number of the dose calibrator. Plot the data.

e. Draw a "best fit" straight line through the data points. For the point farthest from the line, calculate its deviation from the value on the line. (A observed - A line)/(A line)= deviation.

f. If the worst deviation is more than 10%, the dose calibrator will be repaired or adjusted if the dosage is greater then 10 µCi.

Shield Sleeve Method - LINEATOR 086-507 Atomic Products Corp.

The Lineator consists of four tubes, three of which are lead lined, which can be arranged concentrically. The smallest diameter tube is labeled 0 and is used to contain and position a source of Tc^{99m} of the maximum activity to be measured in the dose calibrator in normal service. The lead lined tubes, labeled A, B, and C, slide over the central tube and are used singularly, or in combination. Each of these outer tubes absorbs some of the radiation from the source and reduces the effective source activity seen by the dose calibrator. Use of the lineator thus allows the operator to simulate a total of eight different source strengths with only one source. The effective reduction increases from tubes A to B to C, and is affected slightly by the shape of the source used, and by the characteristics of the isotope calibrator.

The principal of operation of the Linearator is reproducibility over a wide dynamic range, rather than absolute calibration. Initially the linearity of the dose calibrator must be established by conventional means, such as dilution or decay of a Tc^{99m} source. The initial calibration using the lineator establishes the effective reductions in activity (ratios of activity with lead tube(s) inserted relative to source in central tubes alone). All subsequent

use of the Lineator will show the same effective ratios unless:

1. The dose calibrator becomes defective, at which time it must be repaired, or
2. The Lineator components are damaged or replaced. Care should be taken that the bottom end of the Lineator components are not damaged.

Operation

General Instructions

1. Remove all sources form the region of the calibrator to be tested.

2. Remove the source holder/hanger from the calibrator. Remove the chamber liner, if necessary, to allow insertion of the central Lineator tube, tube 0.

3. Set the calibrator to Tc^{99m}, check background reading using most sensitive scales. Zero out the background reading or note the value for later calculations. Check zero on all ranges. Note the background readings which vary widely may indicate a defective machine or a changing radiation environment which will affect the calibration.

4. The Lineator is designed for use ONLY with Tc^{99m}. Load tube 0 with a source of Tc^{99m} of the largest actively which is normally measured in the calibrator. The base is formed to center a 10ml or a 20ml vial. Place the tube in the calibrator chamber with the open end up. Use caution to avoid damaging the calibrator or the Lineator. The source and central tube will stay in place until the calibration procedure is complete.

5. Be prepared to work quickly. Arrange Lineator components, data sheets and clock for ease of operation. A complete calibration requires less than 5 minutes. Completion in 7 minutes introduces only a 1% total error due to decay of Tc^{99m}.

6. Set the range switch as necessary, to read the activity to three significant figures if possible.

CALIBRATION PROCEDURE

Having established the linearity of the calibrator by standard means, an initial calibration provides the factors to be expected for all future linearity checks, so long as the calibrator maintains its linearity and the Lineator components are not damaged.

After performing the steps given in the General Instructions continue with the following steps:

7. Record the time and the initial activity with the source in the central tube, and only the central tube inserted in the calibrator.

8. Place tube A over the central tube and lower gently. Record the reading A.

9. Remove tube A and place tube B carefully over the central tube, recording reading B.

10. Insert tube A between central tube and tube B, record reading.

11. Remove tubes A and B, insert tube C, record reading C.

12. Add tube A, record reading AC.

13. Remove tube A, add tube B record reading BC.

14. Add tube A, record reading ABC.

15. Record time.

16. Repeat steps 8 thru 15 with 5-6 mCi of Tc^{99m} to achieve a final reading of less than 10 µCi.

17. Remove and store lineator components, store source in shield.

18. Calculate the eight factors as follows:
    a. Divide the value for the central tube only by the value for each reading for each tube combination and enter results in column headed "Present Factors". Be sure <u>all</u> readings are in the same units (eg. mCi). If this is an initial calibration the factors should be retained for future reference and transferred to a master work sheet in the column labeled "initial Factors". Copies of this master work sheet will be used for subsequent calibrations.

    If not performing an initial calibration continue with the following steps:

19. Divide each entry in "Present Factors" column by corresponding entry in column labeled "Initial Factors". Enter results times 100 in column labeled "Percent Ratio". The ratios should have values near 100.

20. Enter all readings into the <u>Linearity Check</u> portion of the database program.

21. If any value of the "Percent Ratio" is outside the 95 to 105 range, immediately report the problem to the Chief Technologist. If the values are outside the 90 to 110 range the unit must be removed from service and replaced or repaired.

22. Obtain a printout and place in the NRC Records manual.

23. Obtain signature of RSO on report.

<u>Geometry independence</u> means that the indicated activity does not change with volume or configuration.

Syringe/Vial Calibration Procedure

1. In a small vial, mix 2 ml of a solution of Tc^{99m} with an activity concentration between 1 and 10 mCi/ml.

2. Draw .5 ml of the Tc^{99m} solution into the syringe and assay it. Record the volume and millicuries.

3. Remove the syringe from the calibrator, draw an additional .5 ml of nonradioactive saline or tap water, and assay again. Record the volume and millicuries indicated.

4. Repeat the process until you have assayed a 2 ml volume.

5. Select as a standard the volume closest to that normally used for injections. For all the other volumes, divide the standard millicuries by the millicuries indicated for each volume. The quotient is a volume correction factor.

6. If any correction factors are greater than 1.10 or less than .90 it will be necessary to make a correction table that will allow for conversion from "indicated activity" to "true activity". If this is necessary, be sure to label the table "syringe geometry dependence," and note the date of the test and the model number and serial number of the calibrator.

7. To test the geometry dependence for a 30 ml vial, draw 1 ml of Tc^{99m} solution into a syringe and then infect it into the vial. Assay the vial. Record the volume and millicuries indicated

8. Remove the vial from the calibrator and, using a clean syringe, inject 2 ml of nonradioactive saline or tap water, and assay again. Record the volume and millicuries indicated.

9. Repeat the process until a 19 ml volume has been assayed. This entire process must be completed within 10 minutes.

10. Select as a standard volume closest to that normally used for mixing radiopharmaceutical kits. For all the other volumes, divide the standard millicuries by the millicuries indicated for each volume. The quotient is a volume correction factor.

11. If any correction factors are greater than 1.10 or less than .90 it will be necessary to make a correction table that will allow for conversion from "indicated activity" to "true activity". If this is necessary, be sure to label the table "vial geometry dependence," and note the date of the test and the model number and serial number of the calibrator.

Accuracy means that, for a given calibrated reference source, the indicated millicurie value is equal to the millicurie value determined by the National Bureau of Standards (NBS) or by the supplier who has compared that source to a source that was calibrated by the NBS. Two sources with different principal photon energies will be used, with one having principal photon energy between 100 keV and 500 keV. Sources will be at least 50 µCi.

1. Assay a calibrated reference source at the appropriate setting, and them remove the source and measure background or set the automatic background subtraction. Subtract background from the indicated activity to obtain the net

activity if automatic background subtraction is not used. Record this measurement. Repeat for a total of three determinations.

2. Average the three determinations. The average value should be within 5% of the certified activity of the reference source, mathematically corrected for decay.

3. Repeat the procedure for other calibrated reference sources.

4. If the average value does not agree, within 5%, with the certified value of the reference source, the dose calibrator may need to be repaired or adjusted. If the error is 10% or greater the unit will be removed from service and repaired or replaced.

The RSO will review and sign the records of all geometry, linearity, and accuracy tests.

Personnel External Exposure Monitoring Program

1. The RSO or designee will promptly review all exposure reports to look for workers of groups of workers whose exposure is unexpectedly high or low. This procedure does not apply to backup monitor records, for example, pocket ionization chambers, when the monitor of record is a film or thermoluminesence dosimeter.

2. All individuals who are occupationally exposed to ionizing photon radiation on a regular basis will be issued a film or TLD whole body monitor that will be processed by a contract service on a monthly basis.

3. All individuals who, on a regular basis, handle radioactive material that emits ionizing photons will be issued a film or TLD finger monitor that will be processed by a contract service on a monthly basis.

4. All individuals who are occupationally exposed to radiation on an occasional basis, such as nurses caring for radiopharmaceutical therapy or implant patients, will be provided with a Victoreen Personal Digital Alarm Dosimeter Model 06-505 or other suitable radiation monitoring device (e.g. film badges, TLDs, pocket ionization chambers etc.) when caring for such patients.

5. Records will be maintained for individual exposures.

6. Other individuals who are exposed to radiation on an occasional basis such as security personnel who deliver packages, secretarial personnel who work in the nuclear medicine clinic but do not work with patients, and nurses who occasionally care for patients who have received diagnostic dosages will not normally be issued exposure monitors.

Imaging Equipment

NA

Other Equipment and Facilities

Kewanee ½ inch lead lined cabinetry in the hot lab for the storage and decay of radioactive materials.

Lead lined refrigerator for storage of radiopharmaceuticals

Fume hood

Radiation Safety Committee

Charge

The Radiation Safety Committee has been established to:

1. Ensure that licensed material will be used safely. This includes review as necessary of training programs, equipment, facility, supplies, and procedures.

2. Ensure that licensed material is used in compliance with NRC (Nuclear Regulatory Commission) regulations and the institutional license.

3. Ensure that the use of licensed material is consistent with the ALARA (As Low As Reasonably Achievable) philosophy and program.

4. Establish a table of investigational levels for individual occupational radiation exposures.

5. Identify program problems and solutions.

Administrative Requirements:

1. Membership will consist of at least three individuals, including the Radiation Safety Officer (RSO), a representative of the nursing service, a representative of management who is neither an authorized user or the Radiation Safety Officer, and an authorized user for each type of use authorized by the license.

2. The Committee will meet as often as necessary to conduct its business, but not less than once in each calendar quarter.

3. To establish a quorum and conduct business, at least one-half of the Committee's membership, including the RSO and the management representative, must be present.

4. To the extent that they do not interfere with the mission of the Committee, management may assign other responsibilities, such as x-ray radiation safety, to the Committee.

Responsibilities:

The Committee shall:

1. be familiar with all pertinent NRC regulations, the license application, the license, and amendments.

2. review, on the basis of safety and with regard to the training and experience standards in Subpart J of 10 CFR Part 35, and approve or disapprove any individuals who is to be listed as an authorized user or Radiation Safety Officer, before submitting a license application or request for amendment of renewal.

3. review, on the basis of safety, and approve or disapprove minor changes in radiation safety procedures that are not potentially important to safety and are permitted under 10 CFR Part 35.31, e.g.,

   a. editing policies and procedures

   b. adoption of model programs published in Regulatory Guides

   c. replacement of equipment

   d. reassignments of tasks among employees

   e. assignments of service contracts for film badges, survey meter calibration, waste disposal, and safety surveys

4. review and approve or disapprove, on the basis of safety and consistent with the limitations of the regulations, the license, and the ALARA philosophy and program, all requests for authorization to use radioactive material within the institution.

5. prescribe special conditions that may be required during a proposed use of radioactive material, such as requirements for physical examinations of users, bioassays or other special monitoring procedures.

6. review quarterly, with the assistance of the RSO, a summary of the occupational radiation dose records of all personnel working with byproduct material.

7. review quarterly, with the assistance of the RSO, all incidents involving radioactive material with respect to cause and subsequent actions taken.

8. review at least annually, with the assistance of the RSO, the entire radiation safety program and recommend remedial action to correct any deficiencies identified.

9. establish a program to ensure that all persons whose duties may require them to work in or frequent areas where radioactive materials are used are appropriately instructed as required by 10 CFR part 19.12.

10. ensure that the byproduct material license is amended, if required, prior to any changes in facilities, equipment, policies, procedures, and personnel.

11. maintain written minutes of all Committee meetings including members in attendance and members absent, a summary of discussions, actions, recommendations and numerical results of all votes taken.

Radiation Safety Officer

The Radiation Safety Officer (RSO) is the authorized representative of the Radiation Safety Committee (RSC) regarding the development and enforcement of rules and procedures to ensure that all use of radioactive material

within the institution is conducted in a safe manner, consistent with the ALARA (As Low As Reasonably Achievable) philosophy and program, and in accordance with Nuclear Regulator Commission (NRC) regulations and the institutional byproduct materials license.

The RSO has the authority to immediately suspend any activities involving radioactive material when they are deemed unsafe, provided the suspension does not interfere with life-saving medical procedures that may warrant overriding priority before the radiation safety problems can be alleviated.

Responsibilities:

The Radiation Safety Officer shall:

1. investigate overexposures, accidents, spills, losses, thefts, unauthorized receipts, uses, transfers, disposals, misadministrations, and other deviations from approved radiation safety practices and implement corrective actions, as necessary.

2. establish, collect in one binder or file, and implement written policies and procedures for:

    a. authorizing the purchase of byproduct material

    b. receiving and opening packages of byproduct material

    c. storing byproduct material.

    d. keeping and inventory record of byproduct material

    e. using byproduct material safely

    f. taking emergency action if control of byproduct material is lost.

    g. performing periodic radiation surveys

    h. performing checks of survey instruments and other safety instruments

    i. disposing of byproduct material

    j. training personnel who work in or frequent areas where byproduct material is used or stored.

    k. keeping a copy of all records and reports required by the NRC regulations, a copy of these regulations, a copy of each licensing request and the license and amendments, and the written policies and procedures required by the regulations.

3. brief management at least once each year on the radiation safety program

4. establish personnel exposure investigational levels that, when exceeded, will initiate a prompt investigation by the RSO of the cause of the exposure.

5. establish personnel exposure investigational levels that, when exceeded, will initiate a prompt investigation by the RSO of the cause of the exposure and a consideration of actions that might be taken to reduce the probability of recurrence

6. assist the RSC in the performance of its duties.

ATT 10.2
March 30, 1988

ALARA Program

We will establish and implement the model ALARA program that was published in Appendix G to Regulatory Guide 10.8, Revision 2.

ATT 10.3
March 30, 1988

Procedure for Leak-Testing Sealed Sources

We will establish and implement the model procedure for leak-testing sealed sources that was published in Appendix H to Regulatory Guide 10.8, Revision 2.

Rules for Safe Use of Radiopharmaceuticals

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. After each procedure or at least at the end of the day, monitor hands and clothing for contamination in a low-background area with a GM survey meter.

4. Use syringe shields for routine preparation of multi-dose vials and administration of radiopharmaceuticals to patients, except in those circumstances in which they are is contraindicated.

5. Do not eat, drink, smoke, or apply cosmetics in any area where radioactive material is stored or used.

6. Do not store food, drink, or personal effects in areas where radioactive material is stored or used.

7. Wear personal monitoring devices at all times while in areas where radioactive materials are used or stored. These devices should be worn as prescribed by the Radiation Safety Officer. When not being worn to monitor occupational exposures, personnel monitoring devices should be stored in the work place in a designated low-background area.

8. Wear a finger exposure monitor during the elution of generators; during the preparation, assay, and injection of radiopharmaceuticals; and when holding patients during procedures.

9. Dispose of radioactive waste only in designated, labeled, and properly shielded receptacles.

10. Never pipette by mouth.

11. Wipe-test byproduct material storage, preparation, and administration areas weekly for contamination. If necessary, decontaminate or secure the area for decay.

12. With a radiation detection survey meter, survey the generator storage, kit preparation, and injection areas daily for contamination. If necessary, decontaminate or secure the area for decay as appropriate.

13. Confine radioactive solutions in shielded containers that are clearly labeled. Radiopharmaceutical multidose diagnostic vials and therapy vials should be labeled with the isotope, the name of the compound, and the date and time of receipt or preparation. A log book should be used to record the preceding information and the generic name, trade name, or abbreviation of the radiopharmaceutical, its lot number, and expiration dates and the radionuclide; the patients name, and identification number if one has

been assigned; the prescribed dosage and activity of the dosage at the time of measurement, or a notation that the total activity is less than 10 microcuries; the date and time of the measurement; and initials of the individual who made the record.

14. Assay each patient dosage in the dose calibrator before administering it. Do not use a dosage if it is more than 10% off from the prescribed dosage, except for prescribed dosages of less than 10 µCi. When measuring the dosage, you need not consider the radioactivity that adheres to the syringe wall or remains in the needle. Check the patient's name and identification number and the prescribed radionuclide, chemical form, and dosage before administering.

15. Always keep flood sources, syringes, waste, and other radioactive material in shielded containers when possible

Spill Procedures

Minor Spills of Liquids and Solids

1. Notify persons in the area that a spill has occurred.

2. Prevent the spread of contamination by covering the spill with absorbent paper.

3. Clean up the spill using disposable gloves and absorbent paper. Carefully fold the absorbent paper with the clean side out and place in a plastic bag for transfer to a radioactive waste container. Also put contaminated gloves and any other contaminated disposable material in the bag.

4. Survey the area with a low-range radiation detector survey meter. Check the area around the spill. Also check your hands, clothing, and shoes for contamination.

5. Report the incident to the RSO.

6. The RSO will follow up on the cleanup of the spill and will review the Radioactive Spill Report and the Radioactive Spill Contamination Survey.

Major Spills of Liquids and Solids

1. Clear the area. Notify all persons not involved in the spill to vacate the room.

2. Prevent the spread of contamination by covering the spill with absorbent paper, but do not attempt to clean it up. To prevent the spread of contamination, limit the movement of all personnel who may be contaminated.

3. Shield the source if possible. This should be done only if it can be done without further contamination or a significant increase in radiation exposure.

4. Close the room and lock or otherwise secure the area to prevent entry.

5. Notify the RSO immediately.

6. Decontaminate personnel by removing contaminated clothing and flushing contaminated skin with lukewarm water and the washing with mild soap. If contamination remains, induce perspiration by covering the area with plastic. Then wash the affected area again to remove any contamination that was released by the perspiration.

7. The RSO will supervise the cleanup of the spill and review the Radioactive Spill Report and the Radioactive Spill Contamination Survey.

Ordering and Receiving Radioactive Materials

1. All radionuclides covered by the by-product medical license issued by the Nuclear Regulatory Commission shall be obtained by ordering from NRC approved suppliers. No other means of procurement is acceptable. The Chief Technologist in the Nuclear Medicine section will maintain records under the supervision of the Director and Radiation Safety Officer. These records should include the following information on all incoming shipments: Radionuclide, pharmaceutical, supplier, date of receipt, and assay.

2. The responsibility of radionuclide inventory is that of the medical isotope committee; however, immediate approval for request of a purchase order for by-product material is delegated to two authorities: 1) Chief Technologist and 2) The Director of Nuclear Medicine. The Chief Technologist is responsible for the inventory of all by-product material used routinely. This inventory will usually be systematically replenished by a standing order from one or more NRC approved radiopharmaceutical suppliers. This standing order policy is arranged so that maximum possession limits are not exceeded.

3. No radioactive materials can be transferred from user's laboratory to another unless the nuclear medicine section is notified so that appropriate record entries can be made.

4. Radioactive materials must be stored in appropriate shielded containers in securely locked areas accessible only to and under direct control of the user or his technical staff. These areas will be labeled with standard radiation warning signs.

HANDLING OF RADIOACTIVE SHIPMENTS FOR THE NUCLEAR MEDICINE DEPARTMENT

1. Radioactive shipments will be received at the general receiving area.

2. Should the general receiving area be closed, radioactive shipments will be received by the Security Guard for the hospital.

3. The package or packages should be logged in and initialed by the person receiving them.

4. Packages will be taken immediately to the Nuclear Medicine Department Hot Lab (Rm# 1135.6) and placed in the cabinet drawer marked **Receiving** (upper right hand drawer). Should shipments require refrigeration, they shall be placed in the refrigerator immediately to the right of the receiving cabinet.

5. Shipments of radioactive material are not to be unpacked by anyone in the Receiving Department nor by the Security

Guard. The packages are to be delivered unopened to the Nuclear Medicine Department.

6. If a shipment is expected that would require special handling, the Receiving Department and Security will be notified of the special requirements.

7. If a shipment is received which shows any sigh of damage, it shall not be handled. The Radiation Safety Officer (Dr. W.J. Miller, Ext.2424 or after hours 474-3008) should be summoned at once.

Procedure for Safely Opening Packages Containing Radioactive Material

1. Special requirements must be followed for packages containing quantities of radioactive material in excess of the Type A quantity limits specified in paragraph 20.205(b) of 10 CFR Part 20.

20 Curies	3 Curies
Mo^{99}	Xe^{133}
Tc^{99m}	I^{131}
Xe^{133} (uncompressed)	

Such packages must be monitored for external radiation levels and surface contamination within 3 hours after receipt if received during working hours or within 18 hours if received after working hours. The NRC Regional Office must be notified if removable contamination exceeds .01 µCi (22,000 dpm)/100 cm^2.

2. For packages received under the specific license, the following procedure for opening each package will be followed:

   a. Put on gloves to prevent hand contamination.

   b. Visually inspect the package for any sign of damage. If damage is noted, stop the procedure and notify the RSO.

   c. Measure the exposure rate from the package at 1 meter and at the package surface. If it is higher than expected, stop and notify the RSO. The "transport index" noted on packages with "Yellow II" or "Yellow III' labels is the approximate dose rate, in mr/hr, at 1 meter from the package surface; the surface dose rate from packages with "White I" labels should be less than .5 mr/hr at the package surface.

   d. Open the package with the following precautionary steps:

      1. Remove the packing slip.

      2. Open the outer package following the supplier's instructions, if provided.

      3. Open the inner package and verify the contents agree with the packing slip.

      4. Check the integrity of the final source container. Look for broken seals or vials, loss of liquid, condensation, or discoloration of the packing material.

      5. If anything is other than expected, stop and notify the RSO.

e. If there is any reason to suspect contamination, wipe the external surface of the final source container and remove the wipe sample to a low-background area. Assay the wipe sample to determine if there is any removable radioactivity. These samples should be measured with either of the following thin-end-window GM survey meters:

1. Eberline Model E-520 2. Ludlum Model 3

Take precautions against the potential spread of contamination.

f. Check to ensure that the material received is the material that was ordered.

g. Monitor the packing material and the empty packages for contamination with a radiation detection survey meter before discarding.

1. If contaminated, treat this material as radioactive waste.

2. If not contaminated, remove or obliterate the radiation labels before discarding in in-house trash.

h. Make record of the receipt.

Unit Dosage and Multidose Vial Records
Records of Byproduct Material Use

1. When receiving radiopharmaceuticals follow the **Procedure for Safely Opening Packages Containing Radioactive Materials.**

2. Record the appropriate receiving information at the top of the Receiving and Dispensation form. Figure 1.

LAFAYETTE HOME HOSPITAL INC.

"R" Indicates these doses were transferred to Syncor Corp. for storage and disposal

Date_____ mR/hr empty container_____
Pkg. Cond.___ Wipe Test Results_____
Label T.I.___ Technologist_____
mR/hr contact_____ Residue transferred to Syncor Corp. for storage and disposal
mR/hr @ 3'_____

Attach "Record of Receipt" label on this side of form	Attach "Return for Credit" label on this side

Figure 1

---

3. Attach the "Record of Receipt" label to the left hand side of the page as indicated above for all doses received.

4. When a dose is used, attach the "Return for Credit" label to the right hand side of the page as indicated above. In order to be issued credit, the "Return for Credit" label must be attached to all unused doses.

5. Measure the patient dosage in a dose calibrator and record the following information at the bottom of the "Return for Credit" label:
   a. Patient Name
   b. ID #
   c. Prescribed Dosage
   d. Dispensed Dosage
   e. Time of calibration
   f. Technologists Initials

5. For radiopharmaceuticals made form cold kits and Kit Pertechnitate, use the supplemental Sodium Pertechnetate Data sheet and enter the appropriate data. Figure 2.

ATTACH
RETURN FOR CREDIT SLIP
IN THIS AREA

Sodium Pertechnetate Data		
Pharmaceutical	Activity Dispensed mCi	Tech

All residue transferred to Syncor Corp. for storage and disposal.

Radiopharmaceutical/Patient Data					
Tc^{99m} **	Lot#:	Exp. Date:		Date:	
Calb. Time:	Total Act.: mCi	Act. Conc.: mCi/ml			
Patient Name	ID #	Rx Dosage mCi	Dispensed mCi	Time	Tech

** Enter Generic name, Abbreviation or Trade Name

Figure 2

6. Leave the "Container Label" attached to the syringe container.

7. For all unused doses that are returned to Syncore Corp. for storage and disposal, mark an "R" on the bottom of the "Record of Receipt" label.

Molybdenum Concentration Records

We will establish and implement the model procedure for measuring and recording molybdenum concentration that was published in Appendix M.3 to Regulatory Guide 10.8, Revision 2.

Procedure for Area Surveys

Ambient Dose Rate Surveys

1. Survey Areas

   a. At the end of each day of use, survey the radiopharmaceutical elution, preparation, administration, storage and disposal areas with a radiation detection survey meter. Diagnostic administrations can occasionally be made in patients' rooms without a survey being required, if special care is taken to remove all paraphernalia.

   b. Survey monthly with a radiation detection survey meter laboratory areas where only small quantities (less than 200 µCi at a time) of gamma emitting radioactive material are processed.

   c. Record exposure rate (mR/hr) results along with the date, area surveyed, equipment used, the name or initials of the surveyor, and a drawing showing the areas surveyed and exposure rate action levels.

Removable Contamination Surveys

1. Survey Areas

   a. In radiopharmaceutical elution, preparation, and administration areas, storage and disposal areas, survey weekly for removable contamination.

   b. In laboratory areas where only small quantities of gamma-emitting radioactive material are processed (less than 200 µCi at a time), survey monthly for removable contamination.

2. The wipe sample assay procedure should be sufficiently sensitive to detect the presence of 2000 dpm/100 cm^2 (200 dpm/100 cm^2 for isotopes of iodine).

3. Record contamination levels (in dpm/100 cm^2) results along with the date, area surveyed, equipment used, name or initials of the surveyor, and a drawing showing the areas surveyed and removable contamination action levels.

General Comments

1. Notify the RSO or designee if unexpectedly high levels are found.

2. Record actions taken and followup survey information in the case of excessive exposure rates or removable contamination.

3. The RSO will review and initial the record at least quarterly.

4. Areas used only for in-vitro testing under 10 CFR Part 31.11 are exempt from these survey requirements.

Procedure for Monitoring, Calculating and Controlling Air Concentrations

Worker Dose From Noble Gases

We will collect spent noble gas in a shielded trap and monitor the trap effluent with an air contamination monitor that we will check regularly according to the manufacturer"s instructions.

Worker Dose From Aerosols

We will collect spent aerosols into a shielded single-use radioaerosol device.

Calculating Worker Dose From Concentrations Of Gases In Work Areas

Calculations on file with NRC reference admendment to license #13-09788-01 dated March 24, 1982.

Procedure for Radiation Safety During I^{131} Therapy Over 30 mCi

1. The patient's room will be as far away from the nursing station and heavy traffic hallways as is consistent with good medical care. It will be a private room with private sanitary facilities.

2. Prepare the room for the procedure as follows:

   a. Use leak-proof absorbent paper to cover large surfaces (e.g. the floor around the toilet) that are likely to be contaminated. Small items (telephone, door knobs, bed remote control, television control, and nurse call cord) may be covered with absorbent paper or plastic bags.

   b. Prepare separate container for linen, disposable waste, and nondisposable contaminated items. Place a single large reclosable plastic bag in each box, or supply several small plastic bags.

   c. In the event of urine collection the following procedure will be followed:

      1. Containers should be unbreakable and closable.

      2. If there is no need for assay or volumetric determination and urine will be decayed in storage, add to each container an absorbent such as vermiculite.

      3. To avoid room contamination in the case of a spill, place containers in a box or deep tray that has been lined with a plastic bag and absorbent paper or vermiculite.

      4. Supply a few half-value layers of shielding for each container. (I^{131} HVL is approximately 3mm of lead.)

      5. Supply a wide-mouth antisplash funnel.

   d. Stock additional disposable gloves, absorbent paper, and radioactive waste labels in the room for use as necessary by nursing, nuclear medicine, and radiation safety personnel.

3. Order disposable table service for the duration of the patient's stay. Inform the Housekeeping Office that personnel should stay out of the room until otherwise notified.

4. Supply the nurses with Victoreen Personal Digital Alarm Dosimeter Model 06-505 or other suitable radiation monitoring device (film badges, TLDs, pocket ionization chambers etc.)

5. Brief the nurses on Nursing Instructions for Patients Treated with I^{131}. A copy of the radiation safety precautions as reviewed in Annual Irservice training will be posted on the chart.

6. Brief the patient on radiation safety procedures for the dosage administration, visitor control, radioactive waste, and other items as applicable.

7. Only those persons needed for medical, safety, or training purposes should be present during the administration.

8. Mark a visitor's "safe line" on the floor with tape as far from the patient as possible.

9. Following administration of the dosage, measure the exposure rate in mR/hr at bedside, at 1 meter from bedside, at the visitors'"safe line," and in the surrounding hallways and rooms. Record this and any other necessary information on the Radiation Exposure Rates form and the Radiation Safety Monitoring for Nursing Staff form. Post the room with a "Radioactive Materials" sign.

10. For patients treated with liquid or gelatin-capsuled I^{131}, within 3 days after the dosage administration, measure the thyroid burden of all personnel who were present for the administration.

11. As the therapy proceeds, pick up waste for transfer to a decay-in-storage or decontamination area.

12. Do not release any patient until either the exposure rate from the patient is less than 5mR/hr at 1 meter or the retained radioactivity is less than 30 mCi. If the exposure rate standard is used for release criterion, measure it with a radiation measurement survey meter at a distance of 1 meter from the umbilicus while the patient is standing or, if the patient is not ambulatory, 1 meter from the bedside with the patient supine.

13. Before using the room for general occupancy, it must be decontaminated and released to the Admitting Office.

    a. Remove all absorbent paper, and place it in the appropriate container.

    b. Transfer all containers to a decay-in-storage or decontamination area.

    c. Use a radiation detection survey meter to check for room contamination. Clean contaminated areas until removable contamination is less than 200 dpm/100 cm^2.

    d. Call the Housekeeping Office to remove the cleaning restriction and the Admitting Office to return the room to the vacant list.

Nursing Instructions for Patients Treated with I^{131}

Patient Name:_____ Patient Number:_____
Physician:_____ Room Number:_____
Dose:_____mCi Administered at ___:___ am/pm Date_____

Nursing Instructions

Visitor Restrictions:

- ☐ No visitors
- ☐ No visitors under 18 or pregnant.
- ☐ _____ minutes each day maximum for each visitor
- ☐ Visitor must stay behind line on floor at all times

Nursing Restrictions:

- ☐ Patient is restricted to room
- ☐ No nurses who are pregnant may render care.
- ☐ _____ minutes each day per nurse in the room.

Patient Care:

- ☐ Wear disposable gloves. Wash your hands after caring of patient.
- ☐ Discard linen, bedclothes, plates, utensils, dressings, etc. in wastebaskets provided in room.
- ☐ Discard urine and feces in toilet. Flush three times.
- ☐ Housekeeping personnel are not permitted in the room.
- ☐ Only RSO may release room to admitting office.
- ☐ Wear radiation monitor when caring for patient. Leave at nursing station. Be sure to check monitor upon entering and leaving patients room and enter information on form provided.
- ☐ Notify the RSO immediately in the event of a medical emergency or death.
- ☐ _____

In case of emergency, or if you have a question, call:

RSO: Stanley R. Metzger C.N.M.T. Work: Ext. 3632 Home: 447-9174
MD: William J. Miller M.D. Work: Ext. 3627 Home: 474-3008

Radiation Exposure Rates for Patients Treated with I^{131}

Patient Name:_____ Patient Number:_____

Physician:_____ Room Number:_____

Dose:_____ mCi Administered at ____:____ am/pm Date_____

Radiation Exposure Rates

Initial Survey

LOCATION	EXPOSURE RATE mr/hr
1. 1 meter from patient	
2. 6 feet from patient	
3. Bedside of patient	
4. Adjacent room at 18 inches from wall (Indicate exposure rates for adjacent patient if applicable)	
5. Corridor	
6. Other (specify) _____	

Survey Instrument: ☐ Eberline Model E-520 ☐ Ludlum Model 3

Surveyor: _____

I^{131} Output Data

Time and Date	Exposure Rate	Millicuries Remaining

Radiation Exposure Rates

Final Survey

LOCATION	EXPOSURE RATE	REMOVABLE CONTAMINATION

☐ Survey indicated that no significant radiation levels or removable contamination was present.

☐ Room was decontaminated and all radioactive material was removed for decay and disposal.

Date:_____ Time:_____ Surveyor:_____

Check List for Patients Treated with I^{131}

Initial Preparation

- ☐ Room Preparation
- ☐ Patient Briefing
- ☐ Nurses Briefing
- ☐ Personnel monitoring
- ☐ Waste set-up

Routine Monitoring

- ☐ Patient
- ☐ Outside Room
- ☐ Inside Room

Follow-up

- ☐ Patient discharge brief
- ☐ Instructions for family
- ☐ Room waste removal
- ☐ Room survey
- ☐ Recommendations
- ☐ Release for normal use

I^{131} Thyroid Cancer Therapy
Radiation Safety Monitoring for Nursing Staff

Patient Name:_____ Patient Number:_____
Physician:_____ Room Number:_____
Dose:_____ mCi Administered at ____:____ am/pm Date_____

Radiation Exposure Data
mr/hr

Bedside:_____ 1 meter: _____ 6 feet: _____

Date	Name	Entrance Reading	Exit Reading

PROCEDURE FOR HANDLING PATIENTS RECEIVING I^{131} FOR THYROID CANCER

1. Radioactive iodine is administered orally. That portion of the dose which is not retained by the thyroid or tumor tissue is almost entirely excreted in the urine.

2. The patient must have a single room with a private bathroom.

3. Should the patient vomit during the first 24 hours after administration, the vomitus and sputum should be collected in a waterproof container and saved for the Nuclear Medicine Department. Call the Nuclear Medicine Department in this event, **immediately**.

4. The Nuclear Medicine Department will tape some plastic-backed absorbent paper down on the floor around the toilet to absorb any possible urine spillage.

5. Any urine spillage should be wiped up immediatily with paper towels which should be placed in a marked container and saved for the Nuclear Medicine Department. Use rubber gloves whenever handling excretia of a patient or contaminated materials. Place used gloves in a marked container and save. Wash hands thoroughly before and after removing contaminated gloves.

6. Urine should be collected, when requested, directly into a wide mouth jar which is kept in a lead cart. The Nuclear Medicine Department will dispose of urine.

7. Encourage the patient to take care of his own collection if possible.

8. Visitors should be limited to no more than 30 minutes per day per visitor unless approval has been obtained from the doctor. Visitors should remain 6 feet away from the patient.

9. Nursing personnel should attend the patient for routine purposes, but if special nursing care is required, the problem of nursing exposure will be worked out with the Nuclear Medicine Department.

10. Unless specifically ordered by the doctor, the bath should be omitted for the first 48 hours.

11. Pregnant nurses or visitors are not permitted.

12. A sign will be placed on the door of the room saying, "**Caution Radioactive Material**". No visitors under the age of 18.

13. The patient will be surveyed by the Nuclear Medicine Department regularly. They will determine when the amount of radioactive iodine remaining in the patient is small enough that no special precautions are necessary.

14. Disposable bed sheets and gowns should be used and saved for later checking by the Nuclear Medicine Department.

15. Disposable dishes and table service must be used and likewise saved for the Nuclear Medicine Department.

16. Any bandages, sanitary napkins, and other articles must be saved as well for the Nuclear Medicine Department.

17. Notify the RSO immediately in the event of a medical emergency or death.

18. After the patient is dismissed, the Nuclear Medicine Department must be called so that the empty room, bedding, and articles in the room, may be checked for any radioactive iodine contamination. The room must not be cleaned until this is done.

PERSONS RECEIVING INSTRUCTION IN I[illegible] PATIENT CARE

Patient Name:_____ Patient Number:_____

Physician:_____ Room Number:_____

Instructor:_____ Date of Instruction:_____

Name of individual receiving instruction:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Procedure for Waste Disposal

General Guidance

1. All radioactivity labels must be defaced or removed from containers and packages prior to disposal in in-house waste. If waste is compacted, all labels that are visible in the compacted mass must be defaced or removed.

2. Nonradioactive waste such as leftover reagents, boxes, and packing material should not be mixed with radioactive waste.

3. Occasionally monitor all procedures to ensure that radioactive waste is not created unnecessarily. Review all new procedures to ensure that waste is handled in a manner consistent with established procedures.

4. In all cases, consider the entire impact of various available disposal routes. Consider occupational and public exposure to radiation, other hazards associated with the material and routes of disposal, and expense.

Disposal of Liquids and Gases

Liquids may be disposed of by release to the sanitary sewer or evaporative release to the atmosphere. Compliance with other regulations regarding the toxic and hazardous properties of these materials must be considered.

1. Regulations for disposal in the sanitary sewer appear in 20.303. Material must be readily soluble or dispersible in the water. There are daily and monthly limits based on the total sanitary sewerage release of this facility. (Excreta from patients undergoing medical diagnosis or therapy is exempt from all the above limitations; see paragraph 20.303(d).) Record the date, radionuclide, estimated activity that was released (in mCi or μCi), and of the sink or toilet at which the material was released.

2. Limits on permissible concentrations in effluents to unrestricted areas are enumerated in Table II of Appendix B to 10 CFR part 20. These limits apply at the boundary of the restricted area. Record the date, radionuclide, estimated concentration, and of the vent site at which the material was released.

Disposal by Decay-in-Storage (DIS)

Short-lived material (physical half-life less than 65 days) may be disposed of by DIS.

1. Consider using separate containers for different types of waste, e.g., needles and syringes and unused doses in one container and vials in another. Waste will be surveyed with all shielding removed, the containers in which waste will be disposed of must not provide any radiation shielding for the material.

CONTROL NO 85114

2. When container is full, date, initial and note the longest-lived radioisotope in the container. The container will be stored in the DIS cabinet.

3. Decay the material for at least 10 half-lives.

4. Prior to disposal as in-house waste, monitor each container as follows:

   a. Check radiation detection survey meter for proper operation;

   b. Monitor in a low-level (less than .05 mR/hr) area.

   c. Remove any shielding from around the container.

   d. Monitor all surfaces of each individual container.

   e. Discard as in-house waste only those containers that cannot be distinguished from background. Record the date on which the container was sealed, the disposal date, and type of material. Check to be sure no radiation labels are visible.

   f. Containers that can be distinguished from background radiation levels must be returned to the storage area for further decay or transferred for burial.

CONTROL NO 85114

I HEREBY CERTIFY TH[illegible] THE PROPERTY DESCRIBED BELOW IS [illegible]O BE USED FOR AN EXEMPT PURPOSE AS SPECIFIED IN THE STATE GROSS RETAIL TAX ACT. CERTIFICATE # 705885-03

PURCHASE ORDER

LAFAYETTE HOME HOSPITAL

2400 SOUTH ST.

LAFAYETTE, INDIANA 47904

No. 153953

THIS NUMBER MUST APPEAR ON YOUR INVOICE AND PACKAGE

Check Enclosure

ORDERED FROM

U.S. Nuclear Regulatory Commission

DATE March 16, 1988

TERMS: 2% TEN DAYS CASH DISCOUNT UNLESS OTHERWISE STATED.

F.O.B. HOSPITAL RECEIVING DOCK UNLESS OTHERWISE STATED.

MONTHLY STATEMENTS REQUESTED

DELIVERY REQUIRED 3/24/88

QUANTITY	DESCRIPTION	PRICE	PER	AMOUNT	FOR DEPT.	ACCOUNT	RECEIVED 1	2	3
	Nuclear Regulatory Commission License Renewal Check must be ready no later than March 24. When check is ready notify Stan Metzger-Nuclear Medicine 3632			580.00	NuclMed	724.700			

MERCHANDISE MUST BE DELIVERED TO RECEIVING ROOM--REAR OF 2400 SOUTH ST--BETWEEN 8:30 AM AND 4:30 PM.

LAFAYETTE HOME HOSPITAL

DATE RECEIVED

BY [signature] PURCHASING AGENT

ORIGINAL

I HEREBY CERTIFY THAT THE PROPERTY DESCRIBED BELOW IS TO BE USED FOR AN EXEMPT PURPOSE AS SPECIFIED IN THE STATE GROSS RETAIL TAX ACT.
CERTIFICATE # 705885-03

PURCHASE ORDER

No. 153953
THIS NUMBER MUST APPEAR ON YOUR INVOICE AND PACKAGE

LAFAYETTE HOME HOSPITAL

2400 SOUTH ST.

LAFAYETTE, INDIANA 47904

Check Enclosure

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U.S. Nuclear Regulatory Commission

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LAFAYETTE HOME HOSPITAL

BY _____ PURCHASING AGENT

DATE RECEIVED

ORIGINAL