

APPLICATION FOR BYPRODUCT MATERIAL LICENSE
INDUSTRIAL

a. NEW LICENSE

See attached instructions for details.

Completed applications are filed in duplicate with the Division of Fuel Cycle and Material Safety, Office of Nuclear Material Safety, and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555 or applications may be filed in person at the Commission's office at 1717 H Street, NW, Washington, D. C. or 7915 Eastern Avenue, Silver Spring, Maryland.

b. AMENDMENT TO:
LICENSE NUMBER

XXX 20-15215-01

c. RENEWAL OF:
LICENSE NUMBER

2. APPLICANT'S NAME (Institution, firm, person, etc.)

Gamma Diagnostic Laboratories, Inc.

TELEPHONE NUMBER: AREA CODE - NUMBER EXTENSION
617-226-1402

3. NAME OF PERSON TO BE CONTACTED REGARDING THIS APPLICATION

Robert C. Ferris

TELEPHONE NUMBER: AREA CODE - NUMBER EXTENSION
617-226-1402

4. APPLICANT'S MAILING ADDRESS (Include Zip Code)

P.O. Box 1349
Attleboro Falls, MA 02763

5. STREET ADDRESS WHERE LICENSED MATERIAL WILL BE USED (Include Zip Code)

50 Walton Street
Attleboro, MA 02703

(IF MORE SPACE IS NEEDED FOR ANY ITEM, USE ADDITIONAL PROPERLY KEYED PAGES.)

6. INDIVIDUAL(S) WHO WILL USE OR DIRECTLY SUPERVISE THE USE OF LICENSED MATERIAL

(See Items 16 and 17 for required training and experience of each individual named below)

FULL NAME

TITLE

a. Robert C. Ferris

President

b. Vincent W. DiSpigno

Radiation Safety Officer

7. RADIATION PROTECTION OFFICER

Robert C. Ferris

Attach a resume of person's training and experience as outlined in Items 16 and 17 and describe his responsibilities under Item 15.

8. LICENSED MATERIAL

LINE NO.	ELEMENT AND MASS NUMBER	CHEMICAL AND/OR PHYSICAL FORM	NAME OF MANUFACTURER AND MODEL NUMBER (If Sealed Source)	MAXIMUM NUMBER OF MILLICURIES AND/OR SEALED SOURCES AND MAXIMUM ACTIVITY PER SOURCE WHICH WILL BE POSSESSED AT ANY ONE TIME
(1)	Ra-226	Radium Needle	NA	3 mCi
(2)	Co-57	Liquid	NES 360	200 uCi
(3)	Co-60	Liquid	New England Nuclear	50 uCi
(4)	Cs-137	Liquid	New England Nuclear	300 uCi

Lines (5) - (7) See Attached. DESCRIBE USE OF LICENSED MATERIAL

- (1) Lines (1) - (4):
Ra-226 will be used to calibrate survey instruments. Co-57, Co-60,
(2) and Cs-137 will be used to calibrate dose calibrators for low,
(3) medium and high energy response. (See Attached)

- (4) Lines (5) - (7):
See Attached.

8008180245 XA

9. STORAGE OF SEALED SOURCES

LINE NO.	CONTAINER AND/OR DEVICE WHICH EACH SEALED SOURCE WILL BE STORED OR USED. A.	NAME OF MANUFACTURER B.	MODEL NUMBER C.
(2)	Type E vial	New England Nuclear	NES-354
(3)	Type E vial	New England Nuclear	NES-354
(4)	Type E vial	New England Nuclear	NES-354

10. RADIATION DETECTION INSTRUMENTS

LINE NO.	TYPE OF INSTRUMENT A.	MANUFACTURER'S NAME B.	MODEL NUMBER C.	NUMBER AVAILABLE D.	RADIATION DETECTED (alpha, beta, gamma, neutron) E.	SENSITIVITY RANGE (milliroentgens/hour or counts/minute) F.
(2)	Ion Chamber	Eberline	PIC 6A	1	Beta, Gamma	0 - 1000 R/hr
(3)	Pocket Dosimeter	Baird Atomic	907-867	6	X Ray, Gamma	0 - 500 Rem
(4)	Personnel Dosimeter	Victoreen	885	1	X Ray, Gamma	0 - 1000 Rem

11. CALIBRATION OF INSTRUMENTS LISTED IN ITEM 10

a. CALIBRATED BY SERVICE COMPANY
 NAME, ADDRESS, AND FREQUENCY
 Robert U. Johnson
 Harvard University
 Cambridge, MA 02138

b. CALIBRATED BY APPLICANT
 Attach a separate sheet describing method, frequency and standards used for calibrating instruments.

12. PERSONNEL MONITORING DEVICES

TYPE (Check and/or complete as appropriate.) A.	SUPPLIER (Service Company) B.	EXCHANGE FREQUENCY C.
<input checked="" type="checkbox"/> (1) FILM BADGE	Robert U. Johnson Harvard University Cambridge, MA 02138	<input type="checkbox"/> MONTHLY
<input checked="" type="checkbox"/> (2) THERMOLUMINESCENCE DOSIMETER (TLD)		<input type="checkbox"/> QUARTERLY
<input type="checkbox"/> (3) OTHER (Specify): _____		<input checked="" type="checkbox"/> OTHER (Specify): <u>Every 2 weeks</u>

13. FACILITIES AND EQUIPMENT (Check where appropriate and attach annotated sketch(es) and description(s).)

- a. LABORATORY FACILITIES, PLANT FACILITIES, FUME HOODS (Include filtration, if any), ETC.
- b. STORAGE FACILITIES, CONTAINERS, SPECIAL SHIELDING (fixed and/or temporary), ETC.
- c. REMOTE HANDLING TOOLS OR EQUIPMENT, ETC.
- d. RESPIRATORY PROTECTIVE EQUIPMENT, ETC.

14. WASTE DISPOSAL

a. NAME OF COMMERCIAL WASTE DISPOSAL SERVICE EMPLOYED
Interex

b. IF COMMERCIAL WASTE DISPOSAL SERVICE IS NOT EMPLOYED, SUBMIT A DETAILED DESCRIPTION OF METHODS WHICH WILL BE USED FOR DISPOSING OF RADIOACTIVE WASTES AND ESTIMATES OF THE TYPE AND AMOUNT OF ACTIVITY INVOLVED. IF THE APPLICATION IS FOR SEALED SOURCES AND DEVICES AND THEY WILL BE RETURNED TO THE MANUFACTURER, SO STATE.

INFORMATION REQUIRED FOR ITEMS 15, 16 AND 17

Describe in detail the information required for Items 15, 16 and 17. Begin each item on a separate page and key to the application as follows:

15. **RADIATION PROTECTION PROGRAM.** Describe the radiation protection program as appropriate for the material to be used including the duties and responsibilities of the Radiation Protection Officer, control measures, bioassay procedures *(if needed)*, day-to-day general safety instruction to be followed, etc. If the application is for sealed source's also submit leak testing procedures, or if leak testing will be performed using a leak test kit, specify manufacturer and model number of the leak test kit.

16. **FORMAL TRAINING IN RADIATION SAFETY.** Attach a resume for each individual named in Items 6 and 7. Describe individual's formal training in the following areas where applicable. Include the name of person or institution providing the training, duration of training, when training was received, etc.
 - a. Principles and practices of radiation protection.
 - b. Radioactivity measurement standardization and monitoring techniques and instruments.
 - c. Mathematics and calculations basic to the use and measurement of radioactivity.
 - d. Biological effects of radiation.

17. **EXPERIENCE.** Attach a resume for each individual named in Items 6 and 7. Describe individual's work experience with radiation, including where experience was obtained. Work experience or on-the-job training should be commensurate with the proposed use. Include list of radioisotopes and maximum activity of each used.

18. CERTIFICATE

(This item must be completed by applicant)

The applicant and any official executing this certificate on behalf of the applicant named in Item 2, certify that this application is prepared in conformity with Title 10, Code of Federal Regulations, Part 30, and that all information contained herein, including any supplements attached hereto, is true and correct to the best of our 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.

a. LICENSE FEE REQUIRED
(See Section 170.31, 10 CFR 170)
\$40.00

b. CERTIFYING OFFICIAL *(Signature)*

Vincent W. DiSpigno, Pharm. D.

c. NAME *(Type or print)*

Vincent W. DiSpigno, Pharm. D.

(1) LICENSE FEE CATEGORY:

32.72

d. TITLE

Health Physicist

~~By Product Material License Amendment~~

(2) LICENSE FEE ENCLOSED: \$ 40.00

e. DATE

23 June 1980

8. LICENSED MATERIAL

LINES 5 - 7

Item	A.	B.	C.	D.
(5)	Se75	Liquid	Various	5mCi
(6)	I131	Capsules	Various	5mCi
(7)	Indium 111 DTPA	Liquid	Various	10mCi

LINES 1 - 4

Item E. Use of Licensed Material

These sources will be used to provide contract calibration service. All survey instruments and dose calibrators will be calibrated in accordance with Appendix D of Nuclear Regulatory Commission Regulatory Guide 10.8.

LINES 5 - 7

Item E. Use of Licensed Material

For possession and use in the development, manufacture, quality testing, packaging, transportation, as standards for instrument calibration, and for distribution to persons authorized to receive the licensed material under terms of specific licenses issued by the Commission or an Agreement State.

15. RADIATION PROTECTION PROGRAM

The radiation protection program will consist of the same procedure described in the original license. All sources will be leak tested annually by smearing the external surface with absorbent paper and counting the paper using our multichannel analyzer (as described below).

Leak Test Procedure (Smear Test)

Wipe all external surfaces of the source, including the source seal area, with a piece of H₂O moistened filter paper of "swab" with an appropriately calibrated gamma scintillation counter. Care should be taken to assure proper counting time for reasonable statistical validity of values obtained. Record results in proper source log for future reference.

If the total activity smeared from the source is less than the previous smear test, and less than 5×10^{-4} microcuries, then the source shall be considered leak free. If the total activity measured is significantly more than the previous test value, then the source should be removed from service until the source leakage can be confirmed or other source of contamination found. (Even though the detected quantity may be less than that specified on the user's license for reportable source leakage.) A 'hot' smear should be checked every few days to determine if the activity is from a short-lived nuclide utilized nearby. If two smears at 7 (seven) day intervals reveal positive values, the source should be disposed of or returned to the manufacturer for evaluation.

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LINES 5 - 7

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Gamma Diagnostic Laboratories, Inc.

NRC License #20-15215-01

RADIATION SAFETY MANUAL

REVISION EFFECTIVE 6/80

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Section I

REQUIREMENTS AND RESPONSIBILITIES

REQUIREMENTS AND RESPONSIBILITIES

Introduction

This Radiation Safety Manual sets forth rules and recommended procedures relative to radiation safety and radionuclide control at Gamma Diagnostic Laboratories. The rules and procedures were promulgated so as to be consistent with the applicable requirements of the Nuclear Regulatory Commission's Title 10 Code of Federal Regulations, Title 49, By-Product Material License and applicable state agencies. Should any of the applicable regulations of CFR 10, 49 and state regulations change from current regulations when this Safety Manual was written, these new regulations will be adopted. Also any amendment to the By-Product Material License which is different from current practices set forth in this Manual will be adopted.

All personnel should become thoroughly familiar with and adhere to this manual's requirements.

Radiation Safety Committee

The primary responsibility of this Committee is to provide a continuing review of the adequacy of the radiation safety program and to provide recommendations for improvement where indicated.

In addition, the Committee shall also investigate any abnormal radiation incidents or exposures and prepare a report of the results of such investigations.

Health Physics

The Health Physics Section will provide technical assistance, training in radiation protection practices, specific recommendations regarding radiological protection, and to execute a radiological monitoring program.

The person functioning in the capacity of Health Physics Supervisor is authorized by the Radiation Safety Committee to order the modification or cessation of any activity involving the handling of radioactive materials which threatens to produce or is producing a significant radiological hazard. Specifically, the responsibilities of the Health Physicist are:

1. To collect, record and evaluate all data required by the Radiological Monitoring Program.
2. Investigate any incident involving radiation or contamination.
3. Determine cause and effects of overexposures and incidents such as spill, high contamination levels.
4. Issue and process all Special Work Permits.
5. Issue a personal monitoring device, protective clothing (when necessary), and evaluate and record exposures of Visitors to restricted areas.
6. Act as Fire Marshall to the facility.
7. Insure that adequate warning signs are displayed in the proper area.
8. Distribution and processing of personnel monitoring equipment, including maintenance and evaluation of personnel exposure records and notifying individuals and supervisors of exposures.

9. Supervision and coordination of the waste disposal program, including the keeping of waste storage records.
10. Storage, issue, procurement, shipping, and disposal of radioactive sources.
11. Scheduling bioassay sampling and the keeping of employee bioassay records.
12. Instructing employees in the use of safe techniques and in the application of the approved radiation safety practices set forth in this manual.
13. Maintaining a surveillance over isotope shipment traffic to insure that all applicable regulations are strictly adhered to and no undue hazard is presented by incoming or outgoing shipments.
14. Reviewing all proposed irradiations for proper calculations, determinations, and hazards.
15. Review all requests for license amendments and make application as required.
16. Establishing an employee medical program to include maintaining medical records and scheduling annual physical examinations.
17. Following state and federal regulations concerning radioisotopes.

Authorization to Use Radionuclides

Individuals hired by Gamma Diagnostic Laboratories to work with licensed radioactive materials shall have the necessary experience and training to work with isotopes under the conditions of our byproduct material license. Individuals hired who do not have this necessary training and experience will be trained by Health Physics. All radiation workers shall be under the supervision of the Radiation Safety Committee and/or Health Physicist.

Such experience and training will consist of, but not necessarily limited to, the following:

- 1) Practical and theoretical aspects of Radiation Safety from Health Physics.
- 2) G.D.L. Radiation Safety Manual
- 3) Various G.D.L. Procedure Manuals

- 4) Requirements of the G.D.L. Byproduct Material License
- 5) N.R.C. Regulations (10 CFR 19, 20, 30, 32)
- 6) Uses of G.D.L. byproduct material for diagnostic radio-pharmaceuticals.

All new radiation workers must pass an exam concerned with these matters before beginning actual work with radioactive materials.

Radiation Detection Equipment

G-4 Meter

This is the well known Geiger Counter that uses a Geiger-Muller (G-M) tube as the sensing device. The G-M tube is sensitive to both beta and gamma radiation. Beta particles or gamma that penetrate the thin wall of the G-M tube cause pulses of electric current to jump across the tube. These pulses are interpreted by reading the meter on the instrument or the pulse intensity can audibly be heard through headphones. This type of survey meter is used primarily as a detector of radiation rather than a quantitative dose measuring device. It is the most widely used instrument for survey work in this facility.

Dose Rate Meters

Rad guns, Cutie Pie meters and similar instruments are used primarily for measuring dose rates. The detectors are ionization chambers that measure beta and gamma radiation. A movable barrier on the chamber can be used to shield out beta radiation so that gamma radiation alone can be detected. The response is read from a meter on the face of the instrument.

Pocket Dosimeter

This is a pencil shaped ionization chamber and has a fairly

uniform response to gamma radiation above 300 KEV, however, this is not true for beta radiation since it is insensitive to betas below about 700 KEV. The advantage of this instrument is its size and that an accumulated exposure can be directly determined during operations instead of waiting for other personnel monitoring equipment to be developed weeks later.

Film Badges, TLD (Thermoluminescent Dosimeter)

Film badges and TLD units are used to give an integrated dose measurement for a specific time period. Since film is heat and moisture sensitive, the badge should be handled carefully and stored in a cool, dry place. TLD is a comparable system for measuring exposure. It has the advantage of not being affected by heat, moisture, and latent image fading with time as film. Individuals who engage in activities which might result in exposure to the hands should wear wrist badges and TLD rings in addition to a lapel badge.

9 Permanent Unrestricted Areas

1. Office
2. RCF Office
3. Hallway

Permanent Restricted Areas

1. Vivarium
2. Hot Lab
3. Counting Room
4. Reagent Room
5. QC Lab

Variably Restricted Areas

1. Packaging - Receiving Room
2. Serum Vial Room

The restricted area regulations must be followed at all times in designated restricted areas. Areas designated as variably restricted will be subject to the restricted area regulations when radioactive material is being manipulated. Specifically the serum vial room is a restricted area when the sterility testing is being conducted. The packaging and receiving area is a restricted area when radioactive materials are received or when radioactive materials are being packaged. At those times when no radioactive materials are being handled in these areas they shall be considered unrestricted with no specific use restrictions.

Unrestricted (Clean) Area

This area includes that portion of the facility in which no significant source of external radiation exposure is permitted. The area normally includes administrative offices, rest rooms and lunch room. Containers with radioactive material which have been properly packaged and authorized for off-site shipment may be transported through but not stored in this area.

Restricted (Radiation) Area

Permanent radiation zones shall be established in those portions of the facility where significant sources of radiation are transported, handled, or processed.

Portions of permanent radiation areas which contain an actual radiation field in which a level of 5mRem/hour or greater is accessible to personnel should be clearly posted with "CAUTION RADIATION AREA." "CAUTION RADIOACTIVE MATERIALS" sign shall be affixed to equipment or enclosed processing areas such as

the hot cells and gloveboxes where radioactive materials greater than ten times exempt quantities are kept or processed. "CAUTION RADIOACTIVE MATERIALS" signs or labels may be present within rooms that are radiation areas that are so posted.

Any area where an individual may receive a dose of 100 millirems in one hour shall be posted with a "Caution - High Radiation Area" sign. In addition, this area will be equipped with a visible alarm radiation monitor to make that individual aware of the high radiation area present.

Restricted Area Regulations

There is absolutely no eating, smoking or drinking permitted in the Hot Laboratory, Animal room and other restricted areas.

Books, periodicals, or reports should not be used in areas where there is a reasonable possibility of their being contaminated.

Refrigerators will not be used jointly for foods and radioactive materials.

No contaminated clothing shall be allowed to leave the restricted area without authorization from Health Physics.

All personnel entering the restricted must wear laboratory coats and a personnel monitoring device.

All personnel leaving the restricted area shall monitor their hands before leaving.

Laboratory Operating Procedures

Never discard any item without first checking its activity.

Never start an operation without receiving proper instructions. Do not operate valves, switches, or equipment unless instructed to do so.

Never pipette by mouth (this means any solution).

Never empty "hot" materials into "cold" sinks or receptacles.

. Identify all radioactive materials and reagents with the required labels.

Never leave radioactive materials on top of an unattended laboratory bench unless properly shielded and labeled.

Do not use bare hands to pick up contaminated articles.

Do not work with radioactive or contaminated materials if there are cuts or wounds on the skin.

All work with radioactive material should be done in enclosures when there is a possibility of airborne contamination.

Good general laboratory housekeeping shall be maintained.

Wear a laboratory coat or apron in the restricted area.

Do not wear laboratory coats outside of this area.

Wear protective gloves whenever you handle radioactive materials or any item on which surface contamination is suspected.

Personnel Responsibilities

Obey all work regulations set forth in this manual and those adopted by his supervisor and Health Physics.

Wear all prescribed personnel monitoring equipment.

Wear the necessary protective clothing.

Take precautions to minimize personal exposure.

Report all accidents and hazardous conditions, including suspected external or internal overexposure.

Thoroughly check your person for contamination before leaving a restricted area.

Report all spills and suspected contamination.

Clean up spills and contamination for which you are responsible (this will be supervised by Health Physics).

Learn the location of fire fighting and safety equipment and be familiar with their operation.

Monitor any area before and after termination of work with radioisotopes.

Section II

RADIOACTIVE MATERIALS CONTROL

RADIONUCLIDE RECEIVING INSTRUCTIONS

1. Upon receipt of a package containing a radionuclide not exempt from 10 CFR 20.205, transfer the package to the designated area of the facility.
2. Wearing protective clothing (i.e. gloves and lab coats), wipe test packages for removable contamination. Record results on a GDL Form #HP-02.
3. Note packing slip for contents of package.
4. Survey package for radiation emission. Take measurements at contact with the surface of the outer package and at one meter from the surface.
5. Record all information on GDL Form #HP-02. Attach packing slip to HP-02.
6. Transfer contents of package to designated laboratory area.
7. If contamination, leakage or shortages are observed, notify vendor immediately.

RADIOACTIVE MATERIAL CONTROL

Receipt-Transfer

The administrative procedure authorizing the receipt and/or transfer of any radioactive material or radiation emitting device into Gamma Diagnostic Laboratories is through a "Radionuclide Receiving-Transfer-Disposal Form #HP-02" which will be issued by the Health Physics Office. Upon receipt (s) of material, the Health Physics Office will follow procedures in 10 CFR 20.205. If the material is transferred to a new container, it will be properly labeled and where applicable assigned a lot number. Materials are not to be transferred from their designated storage areas without notifying Health Physics prior to any transfer.

Waste Disposal

Solid Waste

The administrative procedure authorizing the disposal of any

Solid radioactive material or radiation-emitting device is through a "Radionuclide Receiving-Transfer-Disposal Form #HP-02." This form is completed when the material is disposed of. No radioactive material or radiation-emitting device may be disposed of without the completion of the disposal section of this form.

All solid wastes contaminated with radioactive materials are to be placed in properly labeled containers and turned over to Health Physics for storage. Extreme care should be exercised to insure that contaminated waste is not placed in a clean waste container. Whenever possible, the nature of the material being disposed of should be fully described on a tag attached to the container when it is sent to the storage area. Disposition of all solid radioactive waste shall be supervised by the Radiation Safety Officer. Record this on Form #HP-02 when a commercial waste disposal service picks up the barrels. All radiation labels or stickers must be removed or defaced from boxes before placing in waste. All clean waste will be monitored by Health Physics before its disposal from the facility.

Liquid Waste

Liquid wastes containing activity in addition to naturally occurring amounts shall be disposed under the direction of the Radiation Safety Officer. Liquid wastes having a sufficiently low activity will be released to the sewer system in accordance with 10 CFR 20.303. However, the Radiation Safety Officer shall clear all such disposals so that the release of activity from Gamma Diagnostic Laboratories to the sewer system shall be controlled and adequate records of activity release maintained.

Liquid wastes which cannot be released to the sewer system shall be placed in appropriate storage and transfer containers. The Radiation Safety Officer shall be contacted for both these arrangements and for disposal of these wastes in accordance with 10 CFR 20.301.

Wastes containing dangerous quantities of explosives or poisonous substances should be segregated so that they can be specially labeled and handled. Because of possible effects on the stainless steel of the active liquid waste system, liquid wastes with a high content of halides should be segregated where possible, and in any event the presence of such substances in appreciable concentration should be noted when the waste is labeled.

Where possible without undue difficulty, wastes of short half-life should be segregated so that they may be stored for decay. Upon complete decay, the waste is monitored to assure there is no detectable activity. This is recorded on Form #HP-17. It is then removed to the trash as cold waste.

DISPOSAL OF LOW LEVEL RADIOACTIVE WASTE MATERIALS

All low level radioactive waste materials generated within Gamma Diagnostic Laboratories will be handled, transferred, packaged and transported in accordance with all applicable regulations of the State of Massachusetts, U. S. Department of Transportation, and U. S. Nuclear Regulatory Commission.

All departments will follow the waste disposal procedures described on pages 9A through 11 of the Radiation Safety Manual. Certain departments will be subject to additional procedures as follows.

Transportation

Product containers, returned to G.D.L. by client hospitals will be handled according to the posted Lead Recycle Procedure.

Production Laboratory

All waste material generated in the production glove boxes and the Tc99m processing side of the Hot Cell will be surveyed before disposal using a Geiger Counter or Ion Chamber. Any waste material reading more than twice the pre-testing background reading will be placed in the Hot Waste Storage box located between the MAA and Colloid production boxes. Materials can only be removed from the Hot Waste Storage box when it is less than the area background reading.

Solid Waste Material Contaminated with Mo99

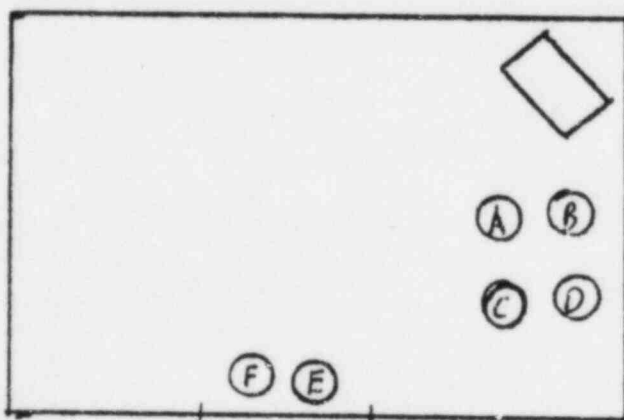
All solid waste material generated in the Mo99 processing portion of the Hot Cell will be surveyed prior to disposal. Solid Mo99 waste material will only be removed from the Hot Cell in the presence of the Radiation Safety Officer. Mo99 waste material can not be removed from the Hot Cell if the material reads more than 100 mR/hr. Solid Mo99 waste material removed from the Hot Cell will be stored in the lead wrapped waste barrel behind the Hot Cell. This solid waste material will be disposed of in waste barrels of solidified expended Mo99 stocks. (See Procedure)

Methyl Ethyl Ketone Waste (MEK)

MEK waste will be transferred to a five gallon MEK waste container designated to hold waste. When the MEK waste container is filled it will be surveyed for radioactive contamination. Uncontaminated MEK waste containers will be disposed of by shipment to a commercial chemical waste company. Any MEK waste container that reads above background will be stored behind the Hot Cell to decay.

Expended Mo99 Stock Solutions

Prio to the initiation of the M099 disolution procedure, the oldest production stock (see labeling on the front of the Hot Cell) will be transferred to an empty on liter container labeled Mo99 and the current date. Every effort should be made to limit the volume of each stock solution discarded, to less than 500 ml so that one weeks supply (ie. two stocks) can be stored in each one liter container. No more than six one liter waste bottles will be stored in the Hot Cell at any time.



As each new one liter container is filled the other containers are rotated one position from A through F. The container in position F is therefore six weeks old and sufficiently decayed so that it can be removed from the Hot Cell.

Note: Expended Mo99 stocks can only be removed from the hot cell in the presence of the Radiation Safety Officer.

Expended Mo99 stocks which are removed from the Hot Cell will be transferred to the liquid waste storage carboys located within the lead bricks behind the Hot Cell. Within the lead bricks are six one gallon carboys numbered one through six. Each carboy will be completely filled before the next carboy is used. As each expended Mo99 stock is transferred to a carboy, Form Pr-09 is completed. Each one liter bottle will be monitored by the Radiation Safety Officer. No expended Mo99 stock bottle will be transferred to the appropriate storage carboy if it reads higher than 1.5 R.

Packaging and Transportation of Liquid Low-Level Radioactive Waste

All liquid low level radioactive waste material which can not be released to the sanitary sewage system must be packaged and shipped in accordance with NRC Bulletin No. 79-21, NRC 10CFR Part 71, DOT 49 Part 170 - 179 and the latest instructions issued by the disposal facility. Current regulations require solidification of liquid low-level waste materials in absorbent material and cement.

Solidification of liquid low-level radioactive waste will be accomplished in the following manner.

Materials:

- 1 30 gallon D.O.T. 17 H Openhead Steel Drum
- 1 5 gallon Steel Paint Pail with Cover
- 1 bag Diatomaceous Earth
- 1 bag Portland Cement
- 1 33 gallon 4 mil Plastic Bag
- 1 1 Liter Tri Pour Beaker

Instructions:

1. Place the 30 gallon drum in the open area in front of the Hot Cell.
2. Place a 33 gallon 4 mil plastic liner into the 30 gallon drum.
3. Fill the 30 gallon drum about one third full with solid waste material (ie. syringes, needles and waste from the shielded 30 gallon drum).

4. Center the covered 5 gallon pail in the 30 gallon drum and place more solid waste material around the 5 gallon pail to prevent sideward motion.

5. Remove the pail cover and mix 8 liters of diatameceous earth with 4 liters of Portland cement.

6. Move the 30 gallon waste drum behind the hot cell in close proximity to the lead shielded liquid waste carboys.

Note: Before continuing all personnel involved in the liquid waste transfer procedure should don a complete set of protective clothing including a paper lab coat or jumpsuit and yellow boot covers.

7. Pour 4 liters of liquid low-level radioactive waste from the oldest storage container into the five gallon pail. Thoroughly mix the diatameceous earth, cement and liquid waste. (A small amount of water may be added to aid mixing.)

8. Monitor the surface of the 30 gallon drum to be sure that the dose rate does not exceed 50 mR/hr.

9. Allow the cement mixture to harden overnight. Then fasten the cover onto the steel pail and seal the plastic liner closed.

Note: All liquid waste must be solidified. Do not allow any vials or containers of any kind containing liquids to be placed into the waste barrels.

PREPARATION OF DRUMS FOR SHIPMENT

These operations should be performed by the Radiation Safety Officer.

Securing Drums

1. Check drum lid for proper gasket.
2. Secure lid to drum with bolted retainer ring.
3. Place a security seal on the drum and record identifying number.

Radioactive Labels

1. Determine the radiation dose at three feet and at the surface of the drum. If the reading is over 100 mR/hr or the three foot reading is over 10 mR/hr, the drum must be repacked to decrease the radiation reading to below these limits.
2. Based on the surface and three foot readings (known as Transport Index), select one of the following types of DOT labels:

	<u>White I</u>	<u>Yellow II</u>	<u>Yellow III</u>
Surface Reading	0.5mR/hr	50mR/hr	200 mR/hr
Transport Index	0	1mR/hr	10mR/hr

3. Prepare two labels of the proper category. Record the Transport Index in the proper space in the label. Record each radioisotope on the DOT label on the "contents" line and the total activity of each radioisotope on the "number of curies" line, decayed to the time of shipment.

Contamination Survey

Perform a wipe test to ensure that there is no significant, removable contamination on the exterior of the drum. Removable (non-fixed) contamination for a wipe of 300 cm² must not be over 10³ uCi/cm² or 2200 dis/min/cm².

Marking of Package

The outside of the drum must be marked in a permanent way using well made labels with the proper shipping name of the contents. The usual name will either be "Radioactive Material-N.O.S." or "Radioactive Material Low Specific Activity - N.O.S."

Complete Form HP-02 and the appropriate shipping bills. Notify Mr. Hart at Union Carbide on the day previous to shipping the barrels.

Notify the Transportation Director of the shipment.

Section III

RADIOLOGICAL MONITORING PROGRAM

04339

RADIOLOGICAL MONITORING PROGRAM

Personnel Exposure Monitoring

1. Permanently Assigned Personnel

Film Badges, TLD - All personnel who are permanently assigned to work at our facility shall be provided film badges and/or other personnel monitoring equipment which should normally be worn at all times. These are located on the badge board and should be picked up upon entering the building and replaced when leaving.

Pocket Dosimeters - All permanently assigned personnel who enter a restricted area should wear a self-reading pocket dosimeter. The dosimeters are located on the badge board and at the end of the work day, a record of the exposure will be entered on the dosimeter record form.

2. Visitors

All visitors who enter the restricted area will be given a self-reading pocket dosimeter unless they have their own to be worn while in this area. A record of the visitor's name and social security number will be maintained with his exposure for the visit. Visitors who may require entrance to the restricted area for an extended time period will be required to have a Special Work Permit (See Form #HP-03) approved by Health Physics prior to entering the area.

1. **Bioassay Requirements**

All personnel engaged in work with radioactive material will be asked to submit yearly urine samples for radio-nuclidic analysis. In addition, routine and/or special urine samples must be submitted whenever requested by Health Physics.

Thyroid uptakes will be performed upon request of Health Physics.

Nasal swabs and/or sputum samples may be requested periodically by Health Physics.

4. **Maximum Permissible Exposure (Occupational) 10 CFR 20.10(2)**

Whole Body - Whole body exposure to penetrating radiation shall be limited to 3 Rem/quarter not to exceed a life time cumulative dose of 5 Rem (N-18) where "N" = age in years. 1.250 Rem/quarter without NRC 4.

Skin Exposure = Non-penetrating radiation < 1 Cm of skin. Limit 7 1/2 Rem/ quarter.

Extremities - Exposure to the extremities by penetrating radiation shall be limited to 18.750 Rem/quarter not to exceed 75 Rem/year.

The following action levels have been established with respect to external radiation exposure:

Action Level - 1

Health Physics shall interview employee to establish what procedures and/or radionuclides the employee has been working with during the period. Based on the inter-

view, Health Physics shall perform those surveys necessary to determine the source of exposure and take the immediate corrective actions necessary to remedy the situation.

Action Level - 2

Employee may work with radioactive materials only when accompanied by his supervisor until cause of the problem has been determined and appropriate corrective action taken. In addition, Action Level - 1 is herein inclusive.

Action Level - 3

Employee shall be restricted from the Hot Laboratory and directed to non-nuclear activities. Health Physics shall initiate those procedures necessary to determine the source of exposure as well as the measures needed to correct for the situation. Employee will be restricted from the Hot Laboratory for the remainder of a quarter when 85 percent of the maximum permissible dose is accumulated.

These Action Levels will be instituted when Health Physics and/or the Radiation Safety Committee determine that an exposure or trend warrants action.

Radiation Exposure Monitoring

1. Restricted Area

The restricted areas will be surveyed, using a G-M type survey meter weekly in order to establish the exposure rates that personnel are subject to at specific locations in the area. The frequency of radiation surveys during the week will be as required by Health Physics. Based on 100mRem per 40 hour week, dose rates of 2.5 mR/hr are generally acceptable. However, for areas where dose rates are higher, occupancy time and past individual radiation histories will be considered to determine personnel access restrictions.

These surveys will be recorded on HP-06.

2. Unrestricted Area

The radiation levels in unrestricted areas shall be such that individuals are not likely to receive a dose:

- In excess of 0.5 Rem to the whole body in any period of one (1) calendar year.
- In excess of 0.125 Rem per quarter.

In excess of 2.0 mRem in any one (1) hour.

All unrestricted areas related to the facility will be surveyed weekly. The frequency of monitoring during the week will be greater if indicated by Health Physics.

These surveys will be recorded on HP-05.

Surface Contamination Monitoring

1. Restricted Area

Smear or wipe surveys will be taken weekly in the restricted area, to determine levels of removable contamination. Special smear surveys will be performed when incidents occur in order to ascertain cause and facilitate corrective actions.

All smears are taken over a 100 cm^2 area. The following limits have been established for all restricted areas (dpm refers to dpm/ 100 cm^2).

Up to 3300 dpm - acceptable for short-lived radionuclides

Up to 2200 dpm - acceptable long-lived radionuclides (3 days)

Above either limit - contaminated area established:

Immediate action required to decontaminate to acceptable levels. Depending on the extent of the contamination, protective footwear will be instituted.

2. Unrestricted Area

Smear or wipe surveys will be taken weekly in unrestricted areas. Smears are taken over a 100 cm^2 area.

The maximum amount of removable contamination allowed in unrestricted areas are:

220 dpm/ 100 cm^2 for all nuclides

Any amount of contamination in excess of this limit must be removed immediately and the area resurveyed to ensure that effective decontamination has occurred.

Record results on HP-10 for restricted and unrestricted areas.

Airborne Contamination Monitoring

If airborne contamination is suspected, consult Health Physics immediately to insure that Maximum Permissible Concentrations have not been exceeded.

1. Restricted Area

Sampling for airborne contamination in this area will be performed routinely, at least once per week. This sampling frequency is adopted only after the accumulation of significant data indicates that airborne concentrations in specific areas are within acceptable limits. The introduction of any non-routine procedures in materials handling or equipment location or operation or major spill that may cause deviation in the validity of the accumulated data shall be cause to re-validate the data for that specific area by sampling as required to insure valid statistical analyses. If sampling indicates a return to previous levels of airborne contamination, the original sampling frequency will be adopted. If sampling indicates a significantly greater airborne contamination, then a more frequent sampling period will be adopted.

Air samples will be collected by passing the air stream through activated charcoal filter paper or its equal and/or through a Greenburg-Smith Impinger. A minimum of 200 cubic feet of air will be sampled. The location of the sampling head will be in areas most frequently occupied by operating personnel and as close to the breathing zone as possible. No person shall knowingly be exposed to an atmosphere containing airborne radioactive material wherein the concentration of such

material above natural background exceeds the maximum permissible concentrations as specified in 10 CFR 20. Exposure to airborne contamination may be averaged over one calendar quarter provided it is not greater than the quantity inhaled for forty (40) hours per week for 13 weeks at a uniform concentration. Action to be taken with respect to airborne concentrations are shown below:

Restricted Area Airborne Concentration ($\mu\text{Ci/cc}$)

<u>Concentration</u>	<u>Action</u>
Up to 0.1 of MPC	1
0.1 to 0.5 of MPC	2
0.5 to 0.8 of MPC	3
0.8 to 1.0 of MPC	4

Actions Taken:

- 1 - No remedial action required
- 2 - No remedial action required; note trend, advise personnel
- 3 - No remedial action required; Health Physics required to investigate cause and correct.
- 4 - Termination of process until further notification from Health Physics. Health Physics may require system shut down until cause is determined and corrective action taken. .

Record data on HP-08.

2. Unrestricted Area

Exhaust effluent airstreams are monitored for the detection of radioactive nuclides which are handled in the hot cell, gloveboxes and laboratory area. The exhaust stream samples will be evaluated weekly. The pre-filtered airstream will be evaluated whenever there is an installation of new filters or when air flow measurements in the laboratory area and/or through openings in the hot cell indicate decreased exhaust efficiency and in the event of blower malfunction.

Air samples will be collected isokinetically by passing the air stream through activated charcoal filter paper and/or through a Greenburg-Smith Impinger.

Airborne concentrations of radioactive material shall not exceed the limits specified in 10 CFR 20.106. Effluent concentrations may be averaged a maximum period of one year. Action to be taken with respect to effluent concentrations are shown below.

Effluent Concentrations ($\mu\text{Ci/cc}$ - Action Table)

<u>Concentration</u>	<u>Action</u>
Up to 0.1 of MPC	1
0.1 to 0.5 of MPC	2
0.5 to 0.8 of MPC	3
0.8 to 1.0 of MPC	4

Action Taken:

1 - No remedial action required.

2 - No remedial action required; note trend, advise personnel.

Action Taken (cont):

- 3 - Health Physics required to investigate and be present at specific operation to monitor and institute corrective action.

- 4 - Terminate processing; isolate and contain source of contamination. Health Physics approval required before initiating processing.

Air Flow Monitoring:

- 1) Smoke bomb tests will be conducted once a year thru out the facility to determine air flow movements or more frequently if any condition or incident indicates the need for this monitoring.
- 2) In conjunction with these tests, air sampling of office areas and other non hot lab areas will be performed to insure that MPC's for unrestricted or restricted areas are not within .1%. No action is required if these criteria are met. If sampling data indicates greater than .1 MPC, follow action levels as described on pages 18 and 19 of this manual.
- 3) Once every six months, ducts and areas under negative pressure to be exhausted through the absolute filtering system, will be monitored by means of a velometer. Ducts must provide a minimum of a 100 linear feet per minute face velocity. If not this indicates filter(s) clogging, blower malfunction, or duct leakage. The cause must be ascertained and the condition(s) corrected to achieve a minimum 100 ft/minute. The duct face velocity may be less than 100 linear feet per minute if conditions are uncorrectable providing that the air concentrations in restricted and unrestricted areas do not approach 0.1 MPC.
- 4) Once a year, a prefilter air sample before the filter banks will be performed to assess the filtering efficiency of the exhaust ducts.

Section IV

DECONTAMINATION PROCEDURES

DECONTAMINATION PROCEDURES

Personnel

Thorough washing with soap and water is the best general method for decontamination of the hands and other parts of the body, regardless of the contaminant. If the contamination is localized, it is often more practical to mask off the affected area and cleanse with swabs, before risking the danger of spreading the contaminant by general washing.

If the exact nature of the contaminant is known, it may sometimes be more effective to immerse the hands in a suitable reagent immediately after contamination. This should be followed by thorough washing, in lukewarm water with a mild soap, and thorough rinsing in clean water. Detergents and wetting agents may also prove useful, although sometimes a specific one may be required for a particular contamination problem, in order to secure maximum cleaning efficiency. (A list of detergents and wetting agents that have been used successfully to remove some contaminations is presented in NBS Handbook 48, p.23.) The skin may become sensitive following repeated application of detergents to the same area; therefore, care should be taken to avoid this practice. In any case, one must avoid the use of organic solvents that may increase the probability of the radioactive materials penetrating through the skin barrier.

The recommended procedures for general hand-washing are as follows:

1. Wash for not less than 2 minutes, nor more than 3 minutes by the clock with a mild, pure soap in lukewarm water with a good lather, covering the entire affected area thoroughly. Give special attention to the areas between the fingers and around the fingernails. The outer edges of the hands are readily contaminated and often neglected in the washing. Do not use highly alkaline soaps or abrasives. Rinse thoroughly and repeat, as monitoring indicates, until the desired degree of decontamination is achieved, but not to exceed three or four times.
2. If the above procedure is not sufficient to remove the contamination, scrub the hands with a soft brush using a heavy lather and lukewarm water. This scrubbing is primarily to agitate the cleansing agent, and hence, prolonged scrubbing without change of reagent is of questionable value. For this reason, at least three washes, including rinses, should be made within 8 minutes, of which at least 6 minutes should be devoted to scrubbing. Only light pressure should be applied to the brush - not sufficient to bend the bristles out of shape or to scratch or erode the skin. Rinse thoroughly and monitor.

3. Apply lanolin or hand cream to prevent chapping.

Tools and Glassware

Decontamination methods fall into two broad classifications: corrosive and non-corrosive. It is always desirable to use a non-corrosive method, yet is seldom practical, since removal of the surface layers of material is more effective in putting ions back into solution than the very slow processes of ion exchange or desorption by non-corrosive methods. Some of the more common decontamination procedures, involving both corrosive and non-corrosive methods are given as follows:

All glassware should be washed with a suitable cleansing agent and rinsed, as a routine procedure following use (all groups and levels of activity). All metal tools employed should be washed with a suitable cleansing agent and rinsed as a routine procedure following use. Examination of the tools for residual activity should be made to ensure that radioactive material has not undergone chemical amalgamation (plating, etc.) phenomena with the tool material. If any of these processes have occurred, then determination by the Radiation Safety Officer will be made as to whether the tool should be removed from service for decay or disposal.

Floor and Benches

If a wet or oil mop will not remove the contamination, proceed with a method suitable for the particular surface material.

Linoleum may be decontaminated by carbon tetrachloride, kerosene, ammonium citrate solution, or dilute mineral acids; care should be taken not to dissolve sealing compounds at the edges and between cracks of the linoleum. Ceramic tile may be decontaminated by the use of mineral acids, ammonium citrate, or trisodium phosphate. Paint is sometimes successfully decontaminated by carbon tetrachloride or 10-percent hydrochloric acid; however, danger of solution of the paint exists, and it is preferable to remove the paint and apply new coatings. With contaminated concrete, no recourse is left except to remove the surface concrete with a chisel. Similarly, contaminated wood surfaces must be planed or removed. Detergents or wetting agents may frequently be used as successfully as harsher reagents for the decontamination of strippable plastics on polished stainless steel, glass or other smooth impervious laboratory surfaces. However, the combination of the contaminating conditions, the surface materials, and the cleansing agent are interdependent variables that often influence the decontamination process. A list of some detergents that have been found useful for some decontamination problems is given in the appendix to NBS Handbook 48.

Traps and Drains

Traps and drains may sometimes be decontaminated by the following procedure:

1. Flushing thoroughly with a large volume of water.
2. Scouring with a rust remover.
3. Soaking in a solution of citric acid prepared by adding 1 pound of acid to 1 gallon of water.
4. Flushing thoroughly with a large volume of water.

Non-Routine or Special Procedures

In any case of non-routine decontamination, the method to be used must be approved by the Radiation Safety Officer and Supervisor prior to initiation.

Section V

EMERGENCY PROCEDURES

EMERGENCY PROCEDURES

Minor Spills (involving no radiation hazard to personnel)

1. Notify all other persons in the room at once.
2. Permit only the minimum number of persons necessary to deal with the spill into the area.
3. Confine the spill immediately.

Liquid Spills:

Wear protective gloves

Drop absorbent paper on spill

Dry Spills:

Wear protective gloves

Dampen thoroughly, taking care not to spread the contamination.

Drop absorbent paper on the contaminant .

4. Notify the Radiation Safety Officer as soon as possible .
5. Decontaminate.
6. Monitor all persons involved in the spill and cleaning.
7. Permit no person to resume work in the area until a survey is made and approval of the Radiation Safety Officer is secured.

Major Spills (involving radiation hazard to personnel)

1. Notify all persons not involved in the spill to vacate the room at once. Notify the Radiation Safety Officer, give information as to nuclide, extent of spill, injuries, etc. Do not allow persons in immediate spill area to

- leave unless significant exposure will be caused by remaining.
2. If the spill is liquid and the hands are protected, right the container.
 3. If the spill is on the skin, flush thoroughly using a sink intended for contaminated wastes.
 4. If the spill is on clothing, discard outer or protective clothing at once and place into a plastic bag.
 5. Switch off all fans.
 6. Vacate the room.
 7. Take immediate steps to decontaminate personnel involved, as necessary.
 8. Decontaminate the area under supervision of authorized personnel. (Personnel involved in decontamination must be adequately protected.)
 9. Monitor all persons involved in the spill and cleaning to determine adequacy of decontamination.
 10. Permit no person to resume work in the area until a survey is made and approval of the Radiation Safety Officer is secured.
 11. Prepare a complete history of the accident and subsequent activity related thereto for the laboratory records.

Accidents involving radiation dust, mists, fumes, organic vapors, and gases

1. Notify all other persons to vacate the room immediately.

2. Hold breath and close escape valves, switch off air circulating devices, etc., if time permits.
3. Vacate the room; all persons involved remain nearby to minimize spread of contamination.
4. Ascertain that all doors giving access to the room are closed and post conspicuous warnings or guards to prevent accidental opening of doors.
5. Report at once all known or suspected inhalations of radioactive materials.
6. Evaluate the hazard and the necessary safety devices for safe re-entry.
7. Determine the cause of contamination and rectify the condition.
8. Decontaminate the area under the supervision of an authorized person.
9. The Radiation Safety Officer will perform an air survey of the area before permitting work to be resumed.
10. Monitor all persons suspected of contamination.
11. Prepare a complete history of the accident and subsequent activity related thereto for the laboratory records.

Injuries to personnel involving radiation hazard

1. Wash minor wounds immediately, under running water, while spreading the edges of the wash.

2. Report all radiation accidents to personnel (wounds, overexposure, ingestion, inhalation) to the Radiation Safety Officer as soon as possible.
3. Permit no person involved in a radiation injury to return to work without the approval of the Radiation Safety Officer and the attendant physician.
4. Prepare a complete history of the accident and subsequent activity related thereto for the laboratory records.

PROCEDURES FOR DRIVERS

- 1) All packages leaving the facility must be smeared to be assured that there is no removable surface contamination (less than 200dpm/cm²). Current CFR 49 (DOT)
- 2) All packages leaving the facility must be surveyed with radiation detection equipment to make sure that the exposure readings at the surface of the package do not exceed the maximum allowable readings of the applicable bar I, II, III requirements. Current CFR 49 (DOT).
- 3) All packages must be braced in the vehicle to prevent dislodgement while driving. All packages must be placed proper side up.
- 4) A radiation survey shall be taken to assure that the dose to the driver from packaged radioactive materials does not exceed 2mR/hr. In addition, a radiation survey shall be taken to determine the dose rate from the external surface of the car or truck. Since the dose rate from the external surface of car or truck must not exceed 2mR in any hour in an unrestricted area, then a vehicle must not be stopped or parked longer than the time necessary to get a dose rate of 2 mR. For example, if the surface of the truck read 10mR/hr, then a vehicle could not be parked longer than 12 minutes unattended.
- 5) In the case of transporting bar III material, the vehicle will be placarded with the appropriate radioactive signs on all four sides of the vehicle and signs indicating the company name and address (current CFR 49).
- 6) All drivers must deliver all radioactive packages as expeditiously as possible to the final destinations. In addition, drivers must follow any state of local regulations relating to transportation of radioactive materials on the highway.
- 7) In the case of unexpected delay in the delivery of radioactive material, the transportation director at the facility will be notified to take appropriate action to assist the driver with delivery, if possible, and/or notification of the hospital of unavoidable delay.
- 8) Drivers must deliver packages to the appropriate authorized personnel at each hospital or to the locked security boxes provided the hospitals in authorized areas of the building per agreed instructions between each hospital and G.D.L. Signature of that responsible individual so designated at the hospital must be obtained.

9) In case of accident where:

- a) There is no apparent damage to radioactive packages, the transportation director will be notified.
- b) There is apparent damage to radioactive packages, such as wet packages, crushed boxes, etc., driver will follow written instruction in the glovebox as to precautions and procedures to be followed before notifying Health Physics personnel at the facility.

*(Provided in all solely owned vehicles)

IN CASE OF EMERGENCY WHERE RADIOACTIVE CONTAMINATION IS SUSPECTED

- 1) Confine the suspected contaminated package(s), whether inside or outside of the vehicle, using the appropriate protective clothing and signs provided in the emergency kit. Clear all personnel from this area.

- 2) Care should be taken to maximize your distance away from this confined area. Minimum 10 - 20 feet.

- 3) Notify Health Physicist at Gamma Diagnostic Laboratories:
Vincent DiSpigno - Plant: 226-1402 Home: 401-934-1932
If unable to reach:
Robert C. Ferris - 222-3751

- 4) Do not attempt to decontaminate any area. Await instructions from Health Physics Personnel.

- 5) Don't Panic. You are the only one on the scene that has the knowledge to prevent a very serious incident. If any police or officials are on the scene, tell them you have the situation in hand and have taken the appropriate action.

PRELIMINARY NOTIFICATION

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Date: September 29, 1980

PRELIMINARY NOTIFICATION OF EVENT OR UNUSUAL OCCURRENCE--PNO-I-80-138

This preliminary notification constitutes EARLY notice of events of POSSIBLE safety or public interest significance. The information presented is as initially received without verification or evaluation and is basically all that is known by IE staff on this date.

Facility: Gamma Diagnostic Laboratories
Attleboro Falls, Massachusetts 02763
LN 20-15215-01

Subject: THEFT OF RADIOACTIVE MATERIALS

At 2:00 a.m. on September 25, 1980, a vehicle owned by the licensee carrying packaged technetium-99m radiopharmaceuticals was stolen from the delivery entrance of the Norwood Hospital in Norwood, Massachusetts. The truck was recovered within two hours of the theft. The President of Gamma Diagnostic Laboratories inspected the contents of the vehicle and made radiation measurements. He reported that the packages were all accounted for and found intact.

Region I received an inquiry from a reporter at 2:45 p.m. on September 29, 1980. The licensee's President was contacted and confirmed the theft and recovery of licensed material.

Neither Region I nor the licensee plans to issue a press release. Region I will respond to inquiries.

Region I plans to conduct a special inspection into the circumstances of this event.

Contact: J. Glenn J. Kinneman
488-1343 488-1206

DISTRIBUTION: (Facsimile Transmission Times Noted)

H ST BLDG 4:07
Chairman Ahearne
Commissioner Gilinsky
Commissioner Bradford
Commissioner Hendrie
ACRS
S. J. Chilk, SECY
C. C. Kammerer, CA
(For Distribution)
PHILLIPS BLDG 4:14
H. R. Denton, NRR
R. H. Vollmer, NRR
R. J. Mattson, NRR
D. F. Ross, NRR
D. Eisenhut, NRR
S. H. Hanauer, NRR

MARYLAND NATIONAL
BANK BUILDING 4:10
W. J. Dircks, EDO
C. Michelson, AEOD
J. J. Fouchard, PA
N. M. Haller, MPA
R. G. Ryan, OSP
H. K. Shapar, ELD
WILLSTE BLDG 4:12
J. G. Davis, NMSS
R. Budnitz, RES
LANDOW BLDG (Fax by HQ)
(6 MIN/PAGE)
J. J. Cummings, OIA

IE:XOOS 4:06
NRC/TMI Program
Office 4:31
Region II 4:25
Region III 4:17
Region IV 4:25
Region V 4:30
RI Resident Sites

(MATL)
R. Minogue, SD
IE:XOOS
Document Mgt. Br.

8010160739/PDR

PRELIMINARY NOTIFICATION