

**NEW YORK STATE
DEPARTMENT OF HEALTH
BUREAU OF ENVIRONMENTAL RADIATION PROTECTION
INDUSTRIAL UNIT**



Radiation Guide 1.7

***GUIDE FOR THE PREPARATION OF APPLICATIONS FOR
ANALYSIS OF LEAK TEST SAMPLES***

Attachment(s): **LLRW Guide**
07/07

1. INTRODUCTION

APPLICATIONS WHICH DO NOT FOLLOW THE FORMAT AND CONTENT OF THIS GUIDE CANNOT BE REVIEWED AND WILL BE RETURNED FOR REVISION.

1.1 PURPOSE OF GUIDE

This guide describes the type of information that should be submitted in applications for specific licenses for the possession and use of radioactive material for the purpose of analyzing samples for radioactivity. It includes the general principles that will be considered in evaluating an applicant's proposed radiation safety measures.

The New York State Department of Health will normally issue a single license to cover the laboratory's entire radioisotope program. Separate licenses are not normally issued to different departments of a laboratory, nor are they issued to individuals associated with the laboratory.

The applicant should carefully study the regulations and this guide, and should submit all information requested. The Department will request additional information when necessary to provide reasonable assurance that the applicant has established an adequate radiation safety program. Such requests will delay final action on the application.

Three general principles that will be considered in evaluating proposed radiation safety measures are recognition by the laboratory of:

- 1) The management's¹ responsibility for the safety of employees and the public;
- 2) Its responsibility for maintaining off-site releases as low as is reasonably achievable (ALARA) and avoiding significant increases in environmental radioactivity; and
- 3) Its responsibility for minimizing exposures to employees.

¹Management is defined as those persons authorized by the charter of the institution to make its policies and direct its activities.

1.2 PURPOSE OF APPENDICES TO GUIDE

The regulations require that the licensee develop and implement procedures that will ensure compliance with the regulations. Appendices to this guide describe model radiation safety procedures. Each applicant should carefully read the applicable regulations and model procedures and adopt them as written whenever possible. If you are unable to adopt a particular procedure as written, submit a copy of the procedure in the guide with your changes indicated in red ink. You must keep copies of these procedures with the license document when it is issued since they will be made a part of the license at that time.

1.3 APPLICABLE REGULATIONS

All regulations pertaining to this type of license are found in 12 NYCRR 38 of the New York Code of Rules and Regulations.

1.4 AS LOW AS IS REASONABLY ACHIEVABLE (ALARA)

Part 38 requires that persons who operate or permit the operation of radiation installations shall make every effort to maintain radiation exposures and releases of radioactive material as far below the limits of Part 38 as is reasonably achievable. License applicants should give consideration to the ALARA philosophy in the development of plans for work with radioactive materials.

2. FILING AN APPLICATION

You, as the applicant for a materials license, must complete DOSH Form 236 (7/06). You should complete Items 1 through 4 and 18 on the form itself. For Items 5 through 17, submit the information on supplementary pages. Each separate sheet or document submitted with the application should be identified and keyed to the item number on the application to which it refers.

All typed pages, sketches, and, if possible, drawings should be on 8 ½ x 11 inch paper to facilitate handling and review. If larger drawings are necessary, they should be folded to 8 ½ x 11 inches. You should complete all items in the application in sufficient detail for the Department to determine that your equipment, facilities, training and experience, and radiation safety program are adequate to protect health and to minimize danger to life and property.

You must submit two copies of your application with attachments. Retain one copy for yourself, because the license will require that you possess and use licensed material in accordance with the statements and representations in your application and in any supplements to it.

Mail your completed application and the required fee to:

New York State Department of Health
Bureau of Environmental Radiation Protection
Industrial Unit
Flanigan Square, 547 River Street
Troy, New York 12180

Applications received without fees will not be processed and the fee is non-refundable.

3. CONTENTS OF AN APPLICATION

The following paragraphs explain the information requested in Form DOSH 236.

- Item 1 Enter the name and corporate address of the laboratory and the telephone number of administration.
- Item 2 List all addresses and locations where radioactive material will be used or stored if other than that in Item 1, e.g., laboratory-owned farm or research station. A post office box number should not be stated as the address for a place of use. These addresses and locations will become part of the license conditions, if the license application is approved, and the addresses or locations at which radioactive materials or radioactive wastes are located or stored may not be changed without obtaining a license amendment.
- Item 3 State the nature of the business in which your organization is engaged.
- Item 4 Indicate whether the application is for a new license, an amendment to an existing license, or a renewal of an existing license.
- Item 5 If applicable, identify the department(s) of your organization which will be using radioactive materials.
- Item 6 List the names of all persons who will take leak tests, or analyze leak test or other survey samples.
- Item 7 Radiation Safety Officer - Part 38 requires that a Radiation Safety Officer be appointed. The Radiation Safety Officer is responsible for the day-to-day operation of the radiation safety program within the facility. A description of his/her training and experience in radiation protection and the use of radioactive material should be provided, along with a curriculum vitae.

State the name and title of the person designated by, and responsible to, the company's management for the coordination of the company's radiation safety program. If the radiation safety officer is assisted by a consultant or part-time employee, state the consultant's name and describe his/her duties, responsibilities, and the amount of time to be devoted to the radiation safety program.

The Radiation Safety Officer should have, as minimum qualifications, a bachelors degree in science, formal training in radiological health (e.g., college level or its equivalent) and should have specific experience in radiation protection with the types, quantities and uses of the radioactive material requested in the application.

Submit an outline of the candidate's training and experience in radiological health and the use of radioactive materials. Include on-the-job and formal training, where it was obtained, dates and durations and the topics covered. Also include experience with the use of materials; radionuclides used, the quantities handled and the type of process. Experience in the specific functions the Radiation Safety Officer will perform (e.g., calibration of counting equipment, leak testing and inventory of calibration sources, training of staff) should be individually listed.

A statement must be included delineating the Radiation Safety Officer's duties, responsibilities and authority for carrying out the radiation safety program. The extent of the Radiation Safety Officer's responsibility and authority will depend on the scope of the proposed program; however, the following should be considered for inclusion in your statement:

- (1) General surveillance over all activities involving radioactive material, including routine monitoring and special surveys of all areas in which radioactive material is used.
- (2) Determining compliance with rules and regulations, and license conditions.
- (3) Monitoring and maintaining absolute and other special filter systems associated with the use, storage or disposal of radioactive material.
- (4) Furnishing consulting services on all aspects of radiation safety to personnel at all levels of responsibility.
- (5) Receiving, delivering and opening all shipments of radioactive material and receiving, packaging and shipping all radioactive material leaving the institution.
- (6) Distributing and processing personnel monitoring equipment, determining the need for bioassays, keeping personnel exposure and bioassay records, and notifying individuals and their supervisors of exposures approaching maximum permissible amounts and recommending appropriate remedial action.
- (7) Conducting training programs and otherwise instructing personnel in the proper procedures for the use of radioactive material prior to use, at periodic intervals (refresher training), and as required by changes in procedures, equipment, regulations, etc.

- (8) Supervising and coordinating the radioactive waste disposal program, including keeping waste storage and disposal records, and monitoring effluents.
- (9) Storing all radioactive materials not in current use, including wastes.
- (10) Performing leak tests on all sealed sources.
- (11) Maintaining an inventory of all radioisotopes and limiting the quantity of radionuclides to the amounts authorized by the license.
- (12) The authority to terminate immediately a project that is found to be a threat to health or property.
- (13) Maintaining other records not specifically designated above (e.g., receipt, transfer and survey records).

Item 8a List the radionuclides expected to be found on samples, and in any sealed sources needed for calibration (except for exempt sources).

Item 8b List the chemical and physical form and maximum quantity (in millicuries) of each radionuclide to be possessed at any one time. List the manufacturer, model number, and quantity for all sealed sources. The possession limit for each radionuclide should include material held as radioactive wastes.

Item 9 Describe the intended use for each radionuclide and form listed in items 8a and 8b.

Items 10 & 11 Training and Experience - Submit a resume of training and experience for the individual users listed above. This resume should cover formal academic training and on-the-job training in performing leak-tests on the specified equipment. It should also describe each individual's experience in counting and interpreting leak-test sample results. Guidelines on training and experience are:

- 1) Formal training should encompass the following topics:
 - a) The principles and practices of radiation protection.
 - b) Radioactivity measurements, monitoring techniques, and the use of instruments.
 - c) Mathematics and calculations basic to the use and measurement of radioactivity.

- 2) A minimum of 40 hours of formal course work should be completed by each "individual user" listed.
- 3) On-the-job training should encompass hands-on training in leak-testing the typical sources and devices specified, including performing independent analysis of leak-test samples. For individuals who have completed specific training presented by the manufacturers of the listed sources and devices, include copies of certificates or statements of training.
- 4) Outline any additional training that will be provided periodically for your "individual users" to keep them up-to-date on new leak-testing techniques, new equipment to be leak-tested, and any factory modifications of existing equipment. You should indicate that such training will be augmented by using up-to-date manuals and instruction sheets provided by source and device manufacturers who provide new information on their recommended leak-test procedures and methods.
- 5) Describe the training to be provided to ancillary personnel who may work in or frequency controlled areas. Consider secretarial and janitorial personnel and technicians.

Appendix A to this guide contains a model procedure for training and instruction to employees. Please confirm that you will follow this procedure.

Item 12

Instruments - List the equipment available for radiation surveys and for analyzing wipes. Equipment must also be provided that is appropriate for surveying wipes before transfer from off-site locations to ensure that gross contamination is not present.

Your list should specify for each instrument (1) the type of instrument, (2) the number of instruments available, (3) the type of radiation detected, (4) the sensitivity range, and (5) the specific use. The instruments listed should have sufficient sensitivity to accurately measure any radioactive contamination on leak-test samples obtained from your customer's sources and devices. Table 1 is an example of such a listing.

Table 1

RADIATION DETECTION INSTRUMENTS

Type	Number Available	Radiation Detected	Sensitivity Range	Use
1. Portable thin-window Gm survey meter	2	Beta, gamma	0-500 mr/hr	Survey and monitoring (gross testing of samples)
2. Liquid scintillation counting system	1	low-energy beta	10 ⁻⁵ microcurie	Analytical measurement
3. Well counter system with single channel analyzer	1	Gamma	10 ⁻⁶ microcurie	Analytical measurement
4. Gas-Flow proportional counting system	1	Alpha, beta	10 ⁻⁶ - 10 ⁻⁸ microcurie	Analytical measurement
5. Portable thin-window GM meter with constant geometry sample holder	1	Beta, gamma	10 ⁻³ microcurie	Analytical measurement

Describe the lower limit of detection of equipment to be used for analyzing wupes, and provide an example calculation for converting counting results to activity.

- Item 13 (a) Calibration of Instruments - If survey meter calibrations are performed at your facility. You must submit your procedures. Appendix B to this Guide contains a model procedure. State that you will follow the model procedure or submit a copy of the Appendix with your changes indicated in red ink.

If your survey meters are sent out for calibration, submit a statement that calibrations will be performed by persons licensed to perform this service by the U.S. Nuclear Regulatory Commission or an Agreement State and that a copy of this license will be kept on file with the calibration certificates.

- (b) Quantitative Measuring Instruments - Instruments that will be used for

quantitative analysis should be calibrated at six-month intervals. A description of the procedure for calibration of such instruments should be submitted and should include:

- (1) the manufacturer and model number of the source(s);
- (2) the nuclide and quantity of radioactive material in the source(s);
- (3) the accuracy of the source(s);
- (4) the step-by-step procedures for calibration, including associated radiation procedures; and
- (5) the name(s) and pertinent experience of person(s) who will perform the calibrations.

Item 14 Personnel Monitoring Program - Describe your personnel monitoring policies and procedures for staff who will collect leak test samples. This should include extremity and whole body monitoring, if a variety of sources are to be tested, and a monthly exchange interval should be used.

Item 15 Facilities and Equipment

Describe the facilities to be used for receiving, storing and counting wipes, including a diagram.

Describe the kinds of sealed sources or sources in devices to be leak-tested. For example, specify the isotope and amount of curies.

For sources in devices, specify the kinds of devices to be leak-tested, for example, gas chromatographs, portable moisture-density gauges, explosive detectors, fixed gauges (such as density gauges, level gauges, or gauges for measuring weight, bulk, moisture, thickness), and others appropriate to your proposed leak-testing program.

List the purpose of calibration sources separately.

NOTE: In describing the sealed sources and devices, you should provide enough additional information to show you are knowledgeable about the sealed sources and the devices containing sealed sources to perform the testing properly. Applications may contain statements such as "for leak-testing 10 mCi nickel-63 sources in chromatography detectors" or "for leak-testing 10 mCi cesium-137 sources and 40 mCi americium-241 sources in portable moisture-density gauges."

Item 16

1) You should state that personnel will be provided with operating and emergency procedures. Submit an outline of the basic elements of these procedures to be provided to personnel. The following elements should be included in your operating and emergency procedures, if applicable:

Instructions for performing the wipe tests, including material to use and methods of handling samples to prevent or minimize exposure to personnel.

Surveys to be performed, such as those around the housing to be sure the device is in the "safe," "store" or "off" position before wipe samples are taken from designated areas of the device.

Surveys to be performed on wipe- or leak-test samples to check for gross contamination before removal from the site.

Any specific instructions provided by source and device manufacturers on recommended methods and areas to be wiped.

Instructions on what to do in case of emergencies, for example, if sources or devices are found to be leaking or excessive radiation levels are found around devices. These instructions should include procedures for proper notification to customer personnel, means of preventing and controlling the spread of contamination, and means of obtaining professional assistance, if needed.

Appendix C and Appendix D contain a set of model rules for laboratory work and procedures for area surveys. Please confirm that you will follow these protocols.

2. If you plan to use a commercial leak test kit, you must specify the kit to be used, including the make and model and license number of the supplier.

If you will use your own "kit," you must specify and describe the components.

3. You should include copies or descriptions of the types of records you will maintain on leak-test samples as part of the documentation of your radiation protection program. These records should include:

Identification of each source or device (manufacturer, model number, serial number, isotope, quantity);

Identification of each site (name, address, person to contact);

Radiation survey measurements, as appropriate;

Date of test and date of next scheduled test;

Information on test methods used (i.e., type of wipe such as dry filter paper or wet cloth swipe and areas wiped);

Leak-test results expressed in microcuries of alpha, beta, or gamma radiation for each area wiped; and

Identification of the individual who performed the test.

You should include a copy of the leak-test certificate you will supply to customers. A sample certificate is attached and may be adapted to your needs. (See Appendix E)

Item 17 Waste Disposal - See LLRW Guidance (Attached).

Item 18 Certificate - The application should be signed by the President, or any Chief Executive Officer. Identify the title of the office held by the individual who signs the application.

Enter the name and telephone number (including area code) of the individual who knows your proposed radioactive materials program and can answer questions about the application. This should be a staff member and not a consultant.

4. AMENDMENTS TO LICENSES

After you are issued a license, you must conduct your program in accordance with (1) the statements, representations, and procedures contained in your application; (2) the terms and conditions of the license; and (3) the Department's regulations.

It is your obligation to keep your license current. You should anticipate the need for a license amendment insofar as possible. If any of the information provided in your application is to be modified or changed, submit an application for a license amendment. In the meantime, you must comply with the terms and conditions of your license until it is actually amended; Department regulations do not allow you to implement changes on the basis of a submission requesting an amendment to your license.

An application for a license amendment may be prepared either on the application form or in letter form and should be submitted in duplicate to the address specified in Section 2 of this guide. Your application should identify your license by number and should clearly describe the exact nature of the changes, additions or deletions. References to previously submitted information and documents should be clear and specific and should identify the pertinent information by date, page and paragraph. For example, if you wish to change the RSO, your application for a license amendment should specify the new individual's name, training and experience. The qualifications of the new RSO should be equivalent to those specified in Item 6 of this guide.

LIST OF APPENDICES

<u>Appendix</u>	<u>Subject</u>
A	Model Personnel Training Program
B	Model Procedure for Calibrating Survey Instruments
C	Model Rules for Safe Use of Radioactive Material
D	Model Procedure for Area Surveys
E	Sealed Source Leak Test Certificate

APPENDIX A

MODEL PERSONNEL TRAINING PROGRAM

It may not be assumed that safety instruction has been adequately covered by prior training at other institutions, even experienced professionals will need instruction in your institution's procedures and the conditions of your license. Ancillary personnel (e.g., clerical, housekeeping, security) whose duties may require them to work in the vicinity of radioactive material (whether escorted or not) need to be informed about radiation hazards and appropriate precautions. A training program that provides necessary instruction should be written and implemented.

Model 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.

Instruction for individuals in attendance will include the following subjects:

1. Applicable regulations and license conditions.
2. Areas where radioactive material is used or stored.
3. Potential hazards associated with radioactive material in each area where the employees will work.
4. Appropriate radiation safety procedures.
5. Licensee's in-house work rules.
6. Each individual's obligation to report unsafe conditions to the Radiation Safety Officer.
7. Appropriate response to emergencies or unsafe conditions.
8. Worker's right to be informed of occupational radiation exposure and bioassay results.
9. Locations where the licensee has posted or made available notices, copies of pertinent regulations, and copies of pertinent licenses and license conditions (including applications and applicable correspondence), as required by section 38.27 New York State Code of Rules and Regulations (12 NYCRR 38).

APPENDIX A - Page 2

Records that Document Training

Records of initial and refresher training will be maintained for three years and will include:

1. the name of the individual who conducted the training;
2. the names of the individuals who received the training;
3. the dates and duration of the training session; and
4. a list of the topics covered.

APPENDIX B

MODEL PROCEDURE FOR CALIBRATING SURVEY INSTRUMENTS

Radiation survey meters should be calibrated with a radioactive source. Electronic calibrations are not acceptable. Survey meters must be calibrated at least annually and after servicing. (Battery changes are not considered "servicing.")

Model Procedure

1. The source must be approximately a point source.
2. Either the apparent source activity or the exposure rate at a given distance must be traceable by documented measurements to a standard certified within 5 percent accuracy by the National Bureau of Standards.
3. A source that has approximately the same photon energy as the environment in which the calibrated device will be employed should be used for the calibration.
4. The source should be of sufficient strength to give an exposure rate of about 30 mR/hr at 100 cm. Minimum activities of typical sources are 85 millicuries of cesium-137, 21 millicuries of cobalt-60, and 34 millicuries of radium-226.
5. The inverse square law and the radioactive decay law must be used to correct for change in exposure rate due to changes in distance or source decay.
6. A record must be made of each survey meter calibration.
7. A single point on a survey meter scale may be considered satisfactorily calibrated if the indicated exposure rate differs from the calculated exposure rate by less than 10 percent.
8. The following three kinds of scales are frequently used on survey meters:
 - a. Meter on which the user selects a linear scale must be calibrated at no less than two points on each scale. The points should be at approximately $1/3$ and $2/3$ of full scale.
 - b. Meters that have a multi-decade logarithmic scale must be calibrated at no less than one point on each decade and no less than two points on one of the decades. Those points should be at approximately $1/3$ and $2/3$ of scale.
 - c. Meters that have an automatically ranging digital display device for indicating rates must be calibrated at no less than one point on each decade and at no less than two points on one of the decades. Those points should be approximately $1/3$ and $2/3$ of the decade.

APPENDIX B - Page 2

9. Readings above 1,000 mR/hr need not be calibrated. However, such scales should be checked for operation and approximately correct response.
10. At the time of calibration, the apparent exposure rate from a built-in or owner-supplied check source must be determined and recorded.
11. The report of a survey meter calibration should indicate the procedure used and the data obtained. The description of the calibration will include:
 - a. The owner or user of the equipment.
 - b. A description of the instrument that includes manufacturer, model number, serial number, and type of detector.
 - c. A description of the calibration source, including exposure rate at a specified distance on a specified date.
 - d. For each calibration point, the calculated exposure rate, the indicated exposure rate, the deduced correction factor (the calculated exposure rate divided by the indicated exposure rate), and the scale selected on the instrument.
 - e. The reading indicated with the instrument in the "battery check" mode (if available on the instrument).
 - f. The angle between the radiation flux field and detector (for external cylindrical GM or ionization-type detectors, this will usually be "parallel" or "perpendicular" indicating photons traveling either parallel with or perpendicular to the central axis of the detector. For instruments with internal detectors, this should be the angle between the flux field and a specified surface of the instrument.
 - g. For detectors with removable shielding, an indication of whether the shielding was in place or removed during the calibration procedure.
 - h. The apparent exposure rate from the check source.
 - i. The name of the person who performed the calibration and the date on which the calibration was performed.
12. The following information will be attached to the instrument as a calibration sticker or tag:
 - a. The source that was used to calibrate the instrument.
 - b. The proper deflection in the battery check mode (unless this is clearly indicated on the instrument).

APPENDIX B - Page 3

- c. For each scale or decade, one of the following is appropriate:
 - 1) the average correction factor:
 - 2) a graph or graphs from which the correction factor for each scale or decade may be deduced; or
 - 3) an indication that the scale was checked for function but not calibrated, or an indication that the scale was inoperative.
- d. The angle between the radiation flux and the detector during the calibration.
- e. The apparent exposure rate from the check source.

NOTE: One-word reminders or symbols that are explained on the Survey Meter Calibration report may be used on the calibration sticker.

On the following page is a form you may want to use.

APPENDIX C

MODEL RULES FOR SAFE USE OF RADIOACTIVE MATERIAL

These rules must be posted as required by Section 38.27 (b), New York State Code of Rules and Regulations (12 NYCRR 38).

Model Rules

1. Prior to performing operations with quantities of radioactive material which may produce significant external or internal exposure, attention shall be given by the user to precautionary measures including the use of remote handling devices, hoods, shielding, etc. The Radiation Safety Officer must be consulted before beginning any new use of radioactive material.
2. There shall be no eating, drinking, applying cosmetics or preparation of food in any location where unsealed sources of radioactive materials are used or stored.
3. Smoking is prohibited in locations where unsealed sources of radioactive materials are used or stored.
4. Do not store food, drink, or personal effects with radioactive material.
5. Pipetting of radioactive solutions by mouth is prohibited.
6. Segregate pipetting devices used with radioactive materials from those used with non-radioactive solutions.
7. Lab coats and disposable gloves shall be worn during operations involving the handling of unsealed sources of radioactive material. The lab coat and gloves should be removed before leaving the laboratory. Care must be taken such that other items (e.g., pens, pencils, notebooks, door knobs, telephones, etc.) are not handled with gloves used during work with radioactive materials.
8. Work which may result in contamination of work surfaces shall be done over plastic-backed absorbent paper. Trays made of impervious materials (i.e., stainless steel, porcelain-coated, etc.) and lined with absorbent paper provide excellent work arrangements to help prevent the spread of contamination.
9. Work surfaces and personnel should be monitored after working with radioactive materials.
10. Where there has been a spill of radioactive material (see posted Spill Procedures) which may have produced contamination of the person or clothing, both the person and the clothing shall be monitored. Personnel contamination shall be removed as soon as possible.

APPENDIX C - Page 2

Where contamination above action levels is noted during a laboratory survey decontamination must be immediately initiated by the user.

11. After working with unsealed sources of radioactive material, hands should be monitored and washed before leaving the laboratory.
12. Objects and equipment that may have been contaminated with radioactive material shall be surveyed and demonstrated to be free of contamination prior to their removal from a laboratory, or transferred to other laboratories, repair shops, surplus, etc. If found to be contaminated, such items must be decontaminated as soon as practical.
13. If personnel monitoring devices (whole-body or ring badge) have been issued to you for your work with radioactive material, they must be worn at all times when in areas where these materials are used or stored. These devices should be worn as prescribed by the Radiation Safety Officer. Personnel monitoring devices should be stored in a designated low background area when they are not being worn to monitor occupational exposures. They should not be left on your lab coat or shared by another individual.
14. Dispose of radioactive waste only in the manner designated by the Radiation Safety Officer and maintain records as instructed.
15. Store radioactive materials in covered containers, plainly identified and labeled with name of compound, radionuclide, date, activity, and radiation level, if applicable.
16. Always transport radioactive material in shielded containers.

APPENDIX D

MODEL PROCEDURE FOR AREA SURVEYS

1. Laboratory areas where only small quantities of radioactive material are used (less than 200 uCi at a time) will be surveyed monthly.
2. Waste storage areas and all other laboratory areas will be surveyed weekly.
3. The weekly and monthly surveys will consist of:
 - a. A measurement of radiation levels with a thin-window survey meter sensitive enough to detect 0.1 mR/hr and having an audio function.
 - b. A series of wipe tests to measure removable contamination levels. The method for performing wipe tests will be sensitive enough to detect 1000dpm per 100 square centimeters for the contaminant involved (200 dpm per 100 square centimeters for radioiodine). Wipes made in high background areas will be removed to a low background area for measurement.
4. A permanent record will be kept of all weekly and monthly survey results, including negative results. The record will include:
 - a. Location, date and identification of equipment used, including the serial number and pertinent counting efficiencies.
 - b. Name of person conducting the survey.
 - c. Drawing of area surveyed, identifying relevant features such as active storage areas, active waste areas, etc.
 - d. Measured exposure rates, keyed to a location on the drawing (point out rates that require corrective action).
 - e. Detected contamination levels, keyed to locations on drawing.

Areas will be cleaned if the removable contamination level exceeds 1000 dpm/100 square centimeters for wipe surveys (except that for radioiodine an action level of 200 dpm/100cm² will be used), and corrective action will be evaluated for non-removable contamination if radiation levels measured at 1cm from a surface exceeding 1 millirem per hour from fixed contamination.

5. Daily meter surveys will be performed on days when radioactive materials are used, at the conclusion of the operation in which they were used or at the end of the day. A record indicating that such a survey was made shall be kept and shall include the initials of the person making the survey and whether any radiation level was measured that exceeded 1 millirem per hour and if so, whether any corrective action was taken or the reason why not.

APPENDIX E

SEALED SOURCE LEAK TEST CERTIFICATE

Leak Test Report Date: _____
Facility: _____ City: _____ State: _____
Facility Radioactive Materials Lic. No.: _____
NRC _____ Agreement State _____

Source Identification

Radionuclide: _____ Activity: _____ mCi
Calibration Date: _____ Manufacturer: _____
Model Number: _____ Serial Number: _____

Assay Results

	GROSS CPM	NET CPM	μ ci
WET WIPE			
DRY WIPE			
STANDARD			

Standard Isotope _____ Activity _____

Analysis of Results _____

Next Leak Test Due: _____

Leak Test Performed by: _____ Date: _____
Analysis Performed by: _____ Date: _____

IDENTIFICATION OF CERTIFICATE SUPPLIER

Name: _____ Lic. NO. _____

Address: _____

Telephone No.: _____

