

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



Radiation Guide 1.11

***Guide for the Preparation of Application to
Possess Sealed Radioactive Sources for the
Purpose of Distribution to Specific Licensees***

INTRODUCTION

A. 1. Purpose of Guide

This guide describes the type of information that should be submitted in applications for specific licenses to possess radioactive sources for the purpose of distribution to specific licensees. It includes the general principles that will be considered in evaluating an applicant's proposed radiation safety program.

The applicant should carefully study Code Rule 38 and this guide, and should submit all required information in sufficient detail to allow a complete review. The Department will request additional information, when necessary to provide reasonable assurance that the applicant's proposed use, equipment, facilities, procedures and staffing are adequate to protect health and safety and minimize danger to life and property, from radiation hazards. Such requests will delay final action on the application.

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

- 1) The management's responsibility for the safety of employees and the public; and
- 2) Its responsibility for maintaining all radiation exposures and releases as low as is reasonably achievable (ALARA).

2. Purpose of Appendices to Guide

The regulations require that the licensee develop and implement procedures that will ensure compliance with the regulations. Appendices A through K 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 submit copies of these procedures with the application, and keep them with the license document when it is issued, since they will be made a part of the license at that time.

B. 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.

C. 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.

FILING AN APPLICATION

A license application for a specific license for the use of unsealed radioactive material should be submitted in Form DOSH 236, "Application for Radioactive Materials License" and appropriate attachments. The applicant should complete all items on the application form in sufficient detail for the review staff to determine that the applicant's equipment, facilities, personnel training and qualifications, and radiation safety program are adequate to protect health and minimize danger to life and property.

For items 6 through 17, submit the required information on supplementary pages. You should identify and key each separate sheet or document submitted with the application to the item number on the application to which it refers. All typed pages, sketches, and, if possible, drawings should be on 8^{1/2} x 11 inch paper to facilitate handling and review. If larger drawings are necessary, fold them to 8^{1/2} x 11 inches.

One copy of the application, with all attachments, should be retained by the applicant, since the license will require as a condition that the licensee follow the statements and representations set forth in the application and any supplement to it. The original and one copy should be mailed to the Bureau of Environmental Radiation Protection, Industrial Unit at the following address:

New York State Department of Health
Bureau of Environmental Radiation Protection
Industrial Unit
547 River Street, Room 530
Troy, New York 12180
Telephone: (518) 402-7550
Fax: (518) 402-7554

CONTENTS OF AN APPLICATION

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

Item 1. - APPLICANTS' NAME AND MAILING ADDRESS

Enter the name and corporate address of the company and the telephone number of a contact person for licensing issues. The name of the company should be entered exactly as it appears on other legal documents.

The address specified here should be your mailing address to which correspondence should be sent. This may or may not be the same as the address at which the material will be used, as specified in Item 2.A.

Also enter your company's Federal Employers Identification Number (FEIN).

Item 2 - LOCATIONS OF USE AND STORAGE

List all addresses and locations where radioactive material will be used or stored if other than that in Item 1, e.g., a 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 – NATURE OF BUSINESS AND PERSON TO BE CONTACTED ABOUT APPLICATION

State the type of business in which you are engaged.

Item 4 - LICENSE INFORMATION

Enter the license number of any previous or current licenses authorizing use of radioactive materials (including General Licenses) and the name of the issuing agency. If a license has ever been suspended or revoked, describe the circumstances on additional sheets.

Indicate whether this is an application for a new license or a renewal of an existing license.

Item 5 - DEPARTMENT OF USE

If applicable, identify the department(s) of your company which will be using radioactive materials.

Item 6 - INDIVIDUAL USERS

List all individuals who will use or directly supervise the use of radioactive material. Give the title or position of each person.

Item 7. RADIATION SAFETY OFFICER

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. 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 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 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 in radiation protection for the types and quantities of sources to be handled. Experience in the specific functions the Radiation Safety Officer will perform (e.g., leak-testing) 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 of incoming and outgoing packages and of storage areas for radiation sources.
- (2) Determining compliance with rules and regulations, license conditions, and the conditions of project approval specified by the radiation safety committee.
- (3) Receiving, delivering and opening all shipments of radioactive material arriving at the company and receiving, packaging and shipping all radioactive material being shipped out.
- (4) Distributing and processing personnel monitoring equipment, keeping personnel exposure and bioassay records, and notifying individuals of exposures approaching ALARA levels and recommending appropriate remedial action.
- (5) Conducting training programs and otherwise instructing personnel in the proper procedures for the use of radioactive material prior to use, annually (refresher training), and as required by changes in procedures, equipment, regulations, etc.
- (6) Supervising and coordinating the radioactive waste disposal program, including

keeping waste storage and disposal records.

- (7) Storing all radioactive materials not in current use, including wastes.
- (8) Performing leak tests on all sealed sources.
- (9) Maintaining an inventory of all radioisotopes and limiting the quantity of radionuclides to the amounts authorized by the license
- (10) Maintaining other records not specifically designated above (e.g., receipt, transfer and survey records).

Item 8 –RADIOACTIVE MATERIAL TO BE POSSESSED

8.A. List each radionuclide to be used.

8.B&C List the name of the manufacturer and model number of sealed sources, and the maximum activity for each.

Item 9. PURPOSE FOR WHICH RADIOACTIVE MATERIALS WILL BE USED

9.A. List the name of the manufacturer and model number of each device, and the purpose of use.

9.B Describe the intended use for each source listed in items 8a and 8b (e.g. calibration of your own instruments, distribution to specific licensees, etc.).

Item 10 & 11 - TRAINING AND EXPERIENCE OF INDIVIDUAL USERS

Provide the training and experience individual users in relationship to the radioactive material requesting.

Personnel Training Program - 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.

Items 12 &13. INSTRUMENTATION AND CALIBRATION

Submit a list of all radiation detection instrumentation available. Appendix C to this guide contains a form that may be used to describe the instruments. Complete this form and return with application.

(a) Calibration of Instruments - If survey meter calibrations are performed at your facility, you must submit your procedures. Appendix D 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 for our inspection.

(b) Quantitative Measuring Instruments - Instruments that will be used for quantitative measurements to determine compliance with Department regulations (e.g., leak-test measurements, effluent monitoring) should be calibrated at annual 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 protection procedures; and
- (5) the name(s) and pertinent experience of person(s) who will perform the calibrations.

Item 14 - PERSONNEL MONITORING

Personnel Monitoring Program - Describe your personnel monitoring program.

Item 15- FACILITIES AND EQUIPMENT

Facilities and Equipment - Describe the facilities and equipment available at each location where radioactive material will be used. Include a description of the area(s) assigned for the receipt and storage (including waste storage of radioactive sources. A diagram should be submitted showing the locations of shielding, the proximity of radiation sources to unrestricted areas, and other items related to radiation safety. Diagrams should be drawn to a specified scale, or dimensions should be indicated. The locations of the facilities and equipment should be specified with respect to the addresses and locations given in item 2.

Item 16 - RADIATION PROTECTION PROGRAM

Radiation Protection Program - Each licensee must develop, document and implement a radiation protection program commensurate with the size and complexity of their radioactive materials use.

This must include a management commitment to maintain radiation exposures and releases as low as reasonably achievable (ALARA). Please submit such a commitment

over the signature of your chief executive officer, or a management representative authorized to sign such documents for him or her. Company management must also ensure that an annual review of the radiation protection program content and implementation, and of the performance of the RSO, is conducted.

- (a) Procedures for Ordering and Receiving Radioactive Material - **Appendix E** 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.
- (b) Procedures for Package Opening - **Appendix F** 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.
- (c) Area Survey Procedures - **Appendix I** 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.
- (d) Leak-Testing of Sealed Sources - State whether leak tests of sealed sources will be performed prior to distribution. If so, **Appendix K** 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 an outside service analyzes leak-test samples submit a statement that the service will be performed by persons licensed to do so 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 leak-test reports for our review.
- (e) Submit procedures for tracking the distribution of radioactive sources. No radioactive sources are to be distributed except to persons licensed to possess them. Your procedures must include provisions for obtaining a copy of each customer's license prior to shipment, and verifying that the license authorizes the radioactive sources requested. In addition you must ensure that shipments of radioactive sources are made only to the address of use indicated on a license.
- (f) Confirm that sealed sources will be distributed in the original packaging and with the original documentation provided by the manufacturer.
- (g) Emergency Procedures - Submit emergency procedures that you will provide to workers describing actions to be taken in case of an accident or emergency involving radioactive sources and listing the names and telephone numbers of persons to be contacted. You should also explain how these instructions will be communicated to non-employees who may respond to an accident or emergency.
- (h) Security - Describe how security over radioactive sources will be maintained, ensuring that they are protected from damage, theft or loss.

Item 17 - WASTE MANAGEMENT

Waste Disposal - Confirm that all sealed sources possessed under this license will be obtained from manufacturers who have agreed in writing to accept them back for eventual disposal.

You may wish to request authorization to accept back from your customers sealed sources which were distributed by your company, for purposes of disposal. If so, you must submit procedures for doing so, ensuring that the source manufacturer has agreed to accept them from you.

Item 18 - CERTIFICATION

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.

AMENDMENTS TO LICENSES

Licensees are required to conduct their programs in accordance with statements, representations and procedures contained in the license application and supporting documents. The license must therefore be amended if the licensee plans to make any changes in the facilities, equipment (including type of monitoring and survey instruments), procedures, authorized users or radiation safety officer, or radioactive material to be used.

A request for amendment can be submitted in the form of a letter explaining the desired changes, and including any needed drawings, certificates, manufacturers specifications, etc. It is advisable to call this office first, so that the information to be submitted can be discussed in advance.

LIST OF APPENDICES

<u>Appendix</u>	<u>Subject</u>
B	Model Personnel Training Program
C	Instrumentation
D	Model Procedure for Calibrating Survey Instruments
E	Model Procedure for Ordering and Receiving Radioactive Material
F	Model Procedure for Opening Packages Containing Radioactive Material
I	Model Procedures for Area Surveys
J	Waste Disposal (See attached Minimization and Management Guide)
K	Model Procedure for Leak-Testing Sealed Sources
L	Model Personnel External Exposure Monitoring Program

APPENDIX B

MODEL PERSONNEL TRAINING PROGRAM

It may not be assumed that safety instruction has been adequately covered by prior training at other companies or institutions, even experienced professionals will need instruction in your procedures and the conditions of your license. Ancillary personnel (e.g., clerical, maintenance, 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).

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 C

INSTRUMENTATION

1. Survey meters

a. Manufacturer's name _____
Manufacturer's model number _____
Number of instruments available _____
Minimum range _____ mR/hr to _____ mR/hr

b. Manufacturer's name _____
Manufacturer's model number _____
Number of instruments available _____
Minimum range _____ mR/hr to _____ mR/hr
Minimum range _____ mR/hr to _____ mR/hr

2. Other instruments used for quantitative measurement procedures (e.g., liquid scintillation counter, well counter, velometer)

<u>Type of Instrument</u>	<u>Manufacturer s Name</u>	<u>Model No.</u>

APPENDIX D

MODEL PROCEDURE FOR CALIBRATING SURVEY INSTRUMENTS

Radiation survey meters must be calibrated with a radioactive source. Electronic calibrations alone 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. Deviations of up to 20% may be acceptable if the correction factors for all scales are attached to the meter.
8. The following three kinds of scales are frequently used on survey meters:
 - a. Meters 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.

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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 should 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 should 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).

- 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.

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Survey Meter Calibration Report

Owner: _____ Department: _____

Manufacturer: _____

Type: _____ Ion Chamber G/M NaI Other

Meter Model: _____ S/N: _____ Probe Model: _____ S/N: _____

Calib. Source: _____ mCi of _____ . _____ mR/h @ _____ cm on _____, 20__

Instrument checks: Batt. check: _____ mR/h or _____

Constancy check: integral check source indicates _____ mR/h.
 _____ mCi of _____ indicates _____ mR/h.

Calibration Geometry:    

Window: open closed fixed

Dist (cm)	mR/h today	Scale		Scale			Scale		
		rdg	CF	rdg	CF	rdg	CF	rdg	CF

Correction Factors: _____

Name: _____ Date: _____

APPENDIX E

MODEL PROCEDURE FOR ORDERING AND ACCEPTING DELIVERY OF RADIOACTIVE MATERIAL

Model Procedure

1. The Radiation Safety Officer will place all orders for radioactive materials and will ensure that the requested materials and quantities are authorized by the license and that possession limits are not exceeded.
2. A system for ordering and receiving radioactive materials will be established and maintained. The system will consist minimally of the following:
 - a. Written records will be used that identify the isotope, make and model of all sources.
 - b. The written records will be referenced when opening or storing radioactive shipments.
 - c. Written records will be maintained for all ordering and receipt procedures.
3. During normal working hours, carriers will be instructed to deliver radioactive materials directly to _____*
4. During off-duty hours security personnel or other designated individuals will accept delivery of radioactive packages in accordance with the procedures outlined in the attached sample memorandum.

*The appropriate information for your facility should be supplied in this space.

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Sample Memorandum*

MEMORANDUM TO: Security Personnel
FROM: John Smith, Administrator
SUBJECT: Receipt of Packages Containing Radioactive Material

Any packages containing radioactive material that arrive between 4:30 PM and 7:00 AM, or on Sundays, shall be signed for by the Security Guard on duty and taken immediately to the Radiation Safety Office. Unlock the door, place the package on top of the counter immediately to the right of the door, and re-lock the door.

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

RADIATION SAFETY OFFICER _____

OFFICE TELEPHONE _____ HOME TELEPHONE _____

* Submit a copy of your own institution's memorandum.

APPENDIX F

MODEL PROCEDURES FOR SAFELY OPENING PACKAGES CONTAINING RADIOACTIVE MATERIAL

Model Procedure

1. Packages will be surveyed for external and removable radioactive contamination in accordance with the provisions of Section 38.32, of CR 38.
2. For all packages, the following procedures for opening outer packages will be carried out:
 - a. Put on gloves to prevent hand contamination.
 - b. Visually inspect package for any sign of damage (i.e., wetness, crushed). If damage is noted, stop procedure and notify Radiation Safety Officer.
 - c. Measure exposure rate at 3 feet (or 1 m) from package surface and record. If it is higher than usual, stop and notify the Radiation Safety Officer.
 - d. Open the outer package with the following precautionary steps:
 - i. Open the outer package (following manufacturer's directions, if supplied) and remove packing slip.
 - ii. Verify that contents agree with those on packing slip. Compare requisition, packing slip and label on inner package.
 - iii. Check integrity of final source container (i.e., inspect for breakage of seals or vials, loss of liquid, or discoloration of packaging material).
 - e. If there is any reason to suspect contamination, wipe external surface of final package and remove wipe to low background area. Assay the wipe and record amount of removable radioactivity (i.e., dpm/100 square centimeters, etc.). Check wipes with a thin-end window GM survey meter, and take precautions against the spread of contamination as necessary.
 - f. Monitor the packing material and packages for contamination before discarding.
 - i. If contaminated, treat as radioactive waste.
 - ii. If not contaminated, obliterate radiation labels before discarding in regular trash.
3. Maintain records of the results of checking each package, using "Radioactive Shipment Receipt Record" (see next page), or a form containing the same information.

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Radioactive Shipment Receipt Record

1. P.O. No. _____ Survey Date _____ Time _____ Surveyor _____

2. Condition of the Package:
___OK

___ Other (explain) _____

3. Radiation Units of Label: _____ units (mR/hr)

4. Measured Radiation Levels:
 - a. Package Surface _____ mR/hr

 - b. 3 feet or 1 meter from Surface _____ mR/hr

5. Do Packing Slip and Contents Agree?
 - a. Radionuclide ___ Yes ___ No Difference _____
 - b. Amount ___ Yes ___ No Difference _____
 - c. Chemical Form ___ Yes ___ No Difference _____

6. Wipe Results From:
 - a. Outer _____ (CPM - Bkg) ÷ (efficiency) = _____ DPM

 - b. Final Package _____ (CPM - Bkg) ÷ (efficiency) = _____ DPM

7. Survey Results of Packing Material and Cartons _____ mR/hr, CPM

8. Disposition of Package After Inspection _____

9. If Department/Carrier Notification Required, Give Time, Date, and Persons Notified _____

Signature

Date

APPENDIX I

MODEL PROCEDURE FOR AREA SURVEYS

Model Procedure

1. Areas where radioactive sources are used or stored will be surveyed monthly.
2. The monthly surveys will consist of:
 - a. A measurement of radiation levels with a survey meter sensitive enough to detect 0.1 mR/hr and having an audio function.
3. 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 calibration date.
 - 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).

APPENDIX K

MODEL PROCEDURE FOR LEAK-TESTING SEALED SOURCES

Model Procedure

1. Make a list of all sources to be tested. This should include at least the isotope, the activity on a specified date, and the physical form.
2. If you will be testing high-activity sources, set out a survey meter, preferably with a speaker, so you can monitor your exposure rate.
3. Prepare a separate wipe sample for each source. A cotton swab, filter paper, or tissue paper is suitable. Number each wipe so you will know which source it is to be used for. Samples should be taken in accordance with the manufacturer's leak test instructions. The following general guidance may be used when specific instructions are lacking:
 - a. For small sealed sources, it is easiest to wipe the entire accessible surface area. Pay particular attention to seams and joints. However, do not wipe the port of beta applicators or gauges.
 - b. For larger sealed sources and devices (survey meter calibrator, irradiators), take the wipe near the radiation port and on the activating mechanism.
 - c. If you are testing radium sources, they should also be checked for radon leakage. This can be done by submerging the source in a vial of fine-grained charcoal or vermiculite for a day. Then remove the source and analyze the adsorbent sample as described below. A survey should be done to be sure the sources are adequately shielded during the leak-test period.
4. The samples will be analyzed as follows:
 - a. Select a suitable detector that is sufficiently sensitive to detect 0.005 microcuries. For beta sources, a proportional flow counter or liquid scintillation counter may be appropriate. For gamma sources, a crystal with a ratemeter or scaler is usually necessary (a well counter).
 - b. Assay a check source that has the same isotope as the sealed source and whose activity is certified by the supplier. If one is not available, it will be necessary to use a certified check source with a different isotope that has a similar spectrum in order to estimate the detection efficiency of the analyzer used to assay the wipe samples.
 - c. Assay the wipe sample. It must be in the same geometry relative to the detector as was the certified check source.

- d. Calculate the estimated activity in microcuries on the wipe sample.
- e. Continue same analysis procedure for all wipe samples.
- f. If the wipe sample activity is 0.005 microcuries or greater, notify the RSO. The source must be withdrawn from use to be repaired or disposed of and the Department must be notified pursuant to 12 NYCRR 38.22.
- g. Record the wipe sample results on the list of sources, and sign and date the list.