

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

RADIATION GUIDE 10.7

**GUIDE FOR THE PREPARATION OF APPLICATIONS FOR LICENSES
FOR THE USE OF RADIOACTIVE MATERIALS IN LEAK-TESTING SERVICES**

Complete all items in the Application (GEN 307B) in sufficient detail for us to determine that your equipment, facilities, training and experience, and radiation safety program are adequate to protect health and minimize danger to life or property.

File your application in duplicate and keep a 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 any supplements to it.

Item

1. a. APPLICANT'S NAME AND MAILING ADDRESS

If you are an individual, you should be designated as the applicant only if you are acting in a private capacity and the use of radioactive material is not connected with a corporation or other legal entity. Otherwise, the applicant should be the institution, corporation or other legal entity applying for the license.

b. LOCATIONS OF USE

You should specify each location of use by the street address, city, and state, or other descriptive address (such as 5 miles east on Highway 10, Anytown, State) to allow us to easily locate each facility. A Post Office box address is not acceptable. If you wish to maintain and operate more than one location where radioactive material will be used, you must give the specific address of each location. In Items 6. through 11. of your application, describe the intended use, and facilities and equipment, at each location. Leak-testing services performed exclusively at customer facilities should be identified as "only at temporary job sites of licensees." If you will perform the services only at customer facilities, the address specified in Item 9.a. may not be a Post Office box in order that the records maintained under the license may be easily located for inspection purposes.

2. INDIVIDUAL TO BE CONTACTED ABOUT THIS APPLICATION

You should name the individual who knows your proposed radioactive materials program and can answer questions about your application.

3. CHECK THE APPROPRIATE LINE AND ENTER LICENSE NUMBERS.

4. RADIATION SAFETY OFFICER

Enter the name of the individual responsible for your day-to-day radiation protection program and for ensuring compliance with New York State regulations and the terms and conditions of your license.

5. INDIVIDUAL USERS

List the names of any other personnel who will actually perform or directly supervise the leak-test procedures and perform the analyses on the leak-test samples.

6. RADIOACTIVE MATERIAL

A variety of radionuclides may be involved in performing the specified leak-testing services. The following are acceptable methods for completing item 6:

Subitem a. Element and Mass Number

If services involve no tritium or alpha sample analysis, you may state: "Any radioactive material between atomic numbers 3 and 83."

If services involve tritium sample analysis, but no alpha sample analysis, you may state: "Any radioactive material between atomic numbers 1 and 83."

If services involve both tritium and alpha sample analysis, you may state: "Any radioactive material."

Calibration sources should be listed separately.

NOTE: The wording for subitem a. must be compatible with your sample analysis equipment specified in item 10.

Subitem b. Chemical and Physical Form and Maximum Amount

In all cases, except calibration sources, you may state: "Analytical samples."

You need not specify the maximum amount of licensed material you wish to possess, except for calibration sources.

7. PURPOSE FOR WHICH LICENSED MATERIAL WILL BE USED

You should specify that your possession and use of licensed material will be incident to performing leak tests on customers' sealed sources or sealed sources in devices. Provide the following additional information on the kinds of sources or devices you wish to service.

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 in-plant 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.”

8. Not applicable.

9. TRAINING AND EXPERIENCE

a. Submit a resume of training and experience for the Radiation Safety Officer and individual users listed above. This resume should cover formal academic training and on-the-job 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.

d) The biological effects of radiation.

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 in item 7 of your application, 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.
- b. Describe the training to be provided to ancillary personnel who may work in or frequent restricted areas. Consider secretarial and janitorial personnel and technicians.
10. a. INSTRUMENTATION

According to 10 NYCRR 16.10 (a), each licensee must make surveys as necessary to evaluate the extent of radiation hazards that may be present during the possession and use of licensed material. Therefore, you should list the radiation detection instruments you will have available for use in performing the leak-test services. 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-	1	Beta,	10 ⁻³ microcurie	Analytical

window GM meter
with constant
geometry sample
holder

gamma

measurement

10. b. CALIBRATION

Quantitative measuring instruments (as in examples 2 through 5 in Table 1) used to perform analytic measurements on leak-test samples should be calibrated before use with standard sources having an accuracy of at least $\pm 5\%$ of the stated value. Standard sources should be traceable to a primary radiation standard such as those maintained by the National Institutes of Standards and Technology (NIST). You should supply the following information on the calibration of the listed instruments you will use to perform measurements on leak-test samples:

List the standard source to be used with each listed wipe-sample counting instrument by nuclide and quantity of radioactive material contained in each of the sources.

Provide a statement of the accuracy of each standard source (information usually available from the source manufacturer). At a minimum, you should state that the accuracy of the standard will be $\pm 5\%$ of the stated value and traceable to a primary radiation standard such as those maintained by the NIST.

Provide an example of a calculation for converting leak-test sample counting results to microcuries.

11. FACILITIES AND EQUIPMENT

10 NYCRR 16.103 (a) states that an application will be approved if, among other things, the applicant's proposed facilities and equipment are adequate to protect health and minimize danger to life or property. Therefore, you should describe the facility and equipment you maintain at each of the locations specified in Item 1.b. of your application. The descriptions may be brief written paragraphs with annotated sketches that illustrate particular design features. Describe such items as:

Laboratory counting rooms and calibration source storage facilities;

Receiving and handling areas where leak-test samples are received from customers;

Shielded areas, including auxiliary shielding ("L" blocks, etc.), where bare sources may be actually leak-tested;

Storage facilities for sealed sources or devices that may be received by you for leak-testing in your facilities;

Special tools for handling bare sources or devices and for wiping sealed sources or devices.

NOTE: Sketches and descriptions should show the relationship of material use areas to any adjoining noncontrolled areas (i.e., offices, rest rooms, cafeterias, and other areas not under your control).

12. Not applicable.

13. Not applicable.

14. GENERAL RULES FOR THE SAFE USE OF RADIOACTIVE MATERIALS

Each individual who will perform leak-test services on a customer's sealed sources or sources in a customer's devices should have a set of operating and emergency procedures. You should state in your application 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 materials 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.

15. Not applicable.

16. Not applicable.

17. WASTE DISPOSAL

You should describe the means you will use to dispose of licensed materials that are no longer needed, such as contaminated swipes or sealed sources. State which of the following three options you will exercise.

- a. Use a waste disposal service or broker licensed by the U.S. Nuclear Regulatory Commission or an Agreement State for the disposal of the licensed material.
- b. Return any sealed sources or devices to the manufacturer in accordance with the manufacturer's specific packaging and shipping instructions.
- c. Describe any other methods you will use, and demonstrate their compliance with the regulations.

18. Not applicable.

19. Not applicable.

20. Not applicable.

21. Not applicable.

22. OTHER PROCEDURES AND PRECAUTIONS

a. Commercial Leak-Test Kits

If you plan to manufacture and distribute commercial leak-test kits for your customers' use, provide samples of each type of kit you intend to distribute. Commercial leak-test kits are designed to be used by your customers to wipe specific sources or to wipe sources in specific devices; the wipes are then returned to you for analysis. Each type of kit you wish to distribute should be identified by a separate model number and clearly labeled as to the type and strength of the source or device it is designed to test.

Each kit should contain all necessary components for use: (1) the swabs, wipes, absorbent-tipped sticks, etc., that are to be used to make the wipes on the specified sources or devices, (2) instructions for safe use of the particular kit (including the type and strength of the source the kit is designed for), step-by-step procedures for making the wipes or smears, surveys to be performed on wipe samples to check for gross contamination, instructions on what to do in case of emergencies, and procedures for returning the wipes to you for analysis, and (3) a label for the customer to fill out that identifies the customer's name, license number, source or device (by manufacturer, model number, and activity) wiped, and the name of the individual who made the wipes.

You must have appropriate sample analysis equipment to properly evaluate the customer's wipes for each type of kit you wish to distribute.

b. Records

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 customer (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.

23. PERSONNEL MONITORING PROGRAM

If personnel monitoring will be used, specify that the organization furnishing the service will be a commercial service company and state the exchange interval.

24. Not applicable.

25. Not applicable.

26. CERTIFICATION

If you are an individual applicant acting in a private capacity, you are required to sign the application form, otherwise, depending upon the legal entity requesting the license, the application should be signed by the senior partner, president, director or chief executive officer.

If any of the calibration sources or instrumentation mentioned in this application are owned by another person or legal entity, you must submit written authorization to use them for the commercial services described in the application. This authorization must be signed by the owner in the case of an individual; or the senior partner, president, director or chief executive officer in the case of another legal entity.