State of Georgia | Radioactive Materials Program | Rev:Date 1:6/30/98
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1. INTRODUCTION

This guide outlines the type of information that is needed to evaluate an application for a specific license for laboratories and industries using millicurie quantities of radioactive material. The rules referenced in this guide are from Chapter 391-3-17, **Rules and Regulations for Radioactive Material**. The rules will be referenced throughout this guide by the rule number and not the complete chapter number (i.e. Rule .01(5)(c) is the same as referring to Chapter 391-3-17-.01(5)(c).)

This type license is provided for under Rule .02, "Licensing of Radioactive Material." Other regulations pertaining to this type of license are found in Rule .03, "Standards for Protection Against Radiation," and Rule .07, "Notice, Instructions, and Reports to Workers; Inspections." The applicant should carefully study the regulations and this guide before submitting all information requested.

This guide is intended only for general guidance in preparation of the license application and should not be considered a substitute for the applicant's careful safety evaluation of the proposed use of radioactive material.

AS LOW AS IS REASONABLY ACHIEVABLE (ALARA) PHILOSOPHY

Rule .03(4)(b), states that "The licensee shall use, to the extent practicable, procedures and engineering controls based upon sound radiation protection principles to achieve occupational doses and doses to members of the public that are as low as is reasonably achievable (ALARA)." The term ALARA means as low as is reasonably achievable taking into account the state of technology, and the economics of improvements in relation to benefits to the public health and safety and other societal and socioeconomic considerations, and in relation to utilization of ionizing radiation in the public interest.

2. FILING AN APPLICATION

Complete the form "Application for a Radioactive Materials License" (Appendix A). Complete Items 1 through 4 on the form itself. For items 5 through 13 submit the information on supplementary pages. Each separate sheet or document submitted with the application needs to be identified and keyed to the appropriate item number on the application. All typed pages, sketches, or drawings should be on 8-1/2 X 11 inch paper to facilitate handling and review. Complete all items in enough detail for the Program 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.

Please note that license applications are available for review by the general public under the Georgia Open Records Act (Rules .01(5)(c) and .02(7)(f)).[1] Do not submit proprietary information unless absolutely necessary to support the application. Do not submit personal information about your individual employees unless it is essential. For example, the training and experience of individuals should be submitted to show their ability to manage radiation safety programs or to work safely with radioactive materials. Home addresses and home telephone numbers should be submitted only if they are a part of an emergency response plan. Dates of birth, social security numbers, and radiation dose information should be submitted only if specifically requested by the Program.
Prepare the application and supplements in duplicate. Retain one copy for yourself. The license will be issued based

[1] A copy of the Georgia Open Records Law is available from the Georgia Law Library, for the cost of the photocopy. The telephone number for the library is (404) 656-3468.

on the statements and representations made in the application and any supplement to it. The license is also issued based on the requirements in the regulations.

The information contained in the application should be submitted in sufficient detail to allow the Program to determine that the applicant's proposed equipment, facilities, procedures, and control over the use of radionuclides are adequate to protect health and minimize danger to life and property. The amount of detail will depend primarily on the scope of the proposed radioactive materials program.

3. CONTENTS OF AN APPLICATION

This portion of the guide explains the information requested on "Application for Radioactive Materials License." If you have specific questions after careful review of this guide please contact the Radioactive Materials Program staff at (404)362-2675.

Item 1 License Information

Check sub-item A for a new license. For an amendment to an existing license, check sub-item B. Check subitem C for renewal of an existing license. If this is an amendment or a renewal, please fill in the license number.

Item 2a. Name and Mailing Address of Applicant

Enter the applicant's name, mailing address, county, telephone number, and Internet address if applicable. The applicant name should be the legal name of the corporation or other legal entity with direct control over the use of the radioactive material. If the applicant is an individual, the individual should be acting in a private capacity and the use of the radioactive material should not be connected to the individual's employment in a corporation or other legal entity.

The address specified here should be your mailing address for correspondence so that all Program correspondence will reach persons responsible for the radiation safety program. This may or may not be the same as the address where the material will be used as specified in Item 2b.

Item 2b. Locations of Use

You should specify each location of use by the street address, city, and county or other descriptive address (such as 5 miles east on Highway 41, Anywhere, Georgia) to allow us to find your facilities easily. A post office address is not acceptable. If radioactive material will be used at more than one location, you must give the specific address of each location. You also need to provide the latitude and longitude coordinates for each place of use. These coordinates are used for emergency response purposes.

If multiple sites of use are listed, the intended use and facilities for each location will need to be described in items 5 through 11 of the application.

Item 3. Person to Contact

You should provide the name and telephone number of the individual who knows your proposed radioactive materials program and can answer questions (on behalf of management) about the application. This individual, usually the Radiation Safety Officer (RSO) or a principal user of radioactive materials, will serve as the point of contact during the review of the application and for the license. If this individual is not your full-time paid employee, specify your relationship with this individual. Notify the Program if the individual assigned this function changes. Notification of a contact change is for information only and would not be considered an application for a license amendment. However, changing the RSO requires a license amendment.

Item 4. Record Retention

Indicate where records are to be maintained. If temporary job sites or multiple locations are being requested, records for each site's operation must be maintained at that site. All records must be maintained at a central record keeping location at the main Georgia facility location that was indicated in Item 2a or 2b.

Item 5. Radioactive Material

Identify the requested radioactive materials by isotope, chemical or physical form, and activity in millicuries or microcuries. A separate possession limit for each nuclide should be specified. Possession limits requested should cover the total anticipated inventory including stored materials and waste. The requested possession limits should be commensurate with the applicant's needs and facilities for safe handling. If the use of sealed and/or plated sources is contemplated, the isotope, manufacturer and model number of each sealed or plated source should be specified. If a source will be used in a gas chromatograph, gauge, or other device, the manufacturer and model number of the device should be specified.

Item 6. Purposes for Which Material Will be Used

The use to be made of the radioactive materials should be clearly described. Sufficient detail should be given to allow a determination of the potential for exposure to radiation and radioactive materials of both those working with the materials and the public. Any use of radioactive material in animals should be indicated. (Human use applications should be filed separately.)

Item 7. Individual Responsible For Radiation Safety Program and Their Training and Experience

State the name of the person designated by, and responsible to, the applicant's management as Radiation Safety Officer (RSO). The RSO is responsible for the management and coordination of the Radiation Protection Program, maintains the license and associated records, and in most instances, is the contact with the Program in administering the license.

Specify the name of the person who will be designated as the radiation safety officer. This person should be responsible for implementing the radiation safety program and, therefore, should be readily available to the users in case of difficulty. This person should be experienced in radiation protection and in the use and handling of radioactive materials. In a small program the duties of the radiation safety officer may be assigned to one of the authorized users; however it must be established that this person will have sufficient time to devote to the radiation safety program.

The RSO must have independent authority to: maintain an ALARA program, enforce radiation safety polices and procedures, suspend activities deemed unsafe, implement remedial action when necessary, make a decision relative to any and all licensed activities, and if designated as the primary contact with the Program, be delegated the authority to act as a duly authorized person to act for and on behalf of the applicant.

Management should commit to giving the RSO his independent authority to stop unsafe operations and to giving sufficient time to do his or her radiation safety duties and responsibilities.

The RSO's duties and responsibilities should include those areas listed in Appendix C. In lieu of submitting the requested description, you may state, "The RSO's duties and responsibilities will be those listed in Appendix C, "Duties and Responsibilities of the Radiation Safety Officer", of Revision 2 of the "Laboratory and Industrial Use of Small Quantities of Radioactive Materials Licensing Guide."

Item 8. Training Provided Authorized Users

Specify the names of the persons who will supervise the use of radioactive material or who will use radioactive material without direct supervision. Under "Formal Radiation Training" or in an attached resume, describe the training and experience for each listed person. This description should include the type of training (e.g., on-the-job or formal

course work, previous experience with similar type isotopes in a similar setting), location, and duration of the training. All initial training should also include the topics covered by Rule .07(3).

The description of the use of radioactive materials should include the specific isotopes handled, the maximum quantities of materials handled, and where the experience was gained. The duration of experience of each person should be commensurate with the material and its use as proposed in the application.

If the licensee will be providing training for users which have not had any prior experience, provide a description or outline of the training program. Depending on the isotopes and activity used, the training may cover the following areas:

1. Principles and practices of radiation protection;

2. Radioactivity measurements, standardization, and monitoring techniques and instruments;

3. Mathematics and calculations basic to the use and measurement of radioactivity; and

4. Biological effects of radiation.

The use of microcurie quantities of nonvolatile radioactive materials under precisely specified and carefully controlled conditions subject to the surveillance of a competent and adequately trained radiation safety officer by a person with a minimum of training and experience may be justified. Training and experience may consist of a few hours of training and experience in the use of one or more radioactive materials similar to the use proposed in the application under the supervision and tutorship of a licensed user.

The use of millicurie quantities of a number of radionuclides for general laboratory tracer work under unspecified conditions requires more extensive training and experience and, depending on the exact nature of the proposed program of use of radionuclides, may require the completion of formal course work.

The use of larger quantities of material (approaching a curie) under conditions where the potential exists for significant loss and ingestion, inhalation, or absorption of the radioactive material by those working with the material is normally done under carefully controlled conditions using specialized equipment. An individual who will independently use radioactive materials under these conditions should have extensive experience in work with radioactive material and a thorough working knowledge of the equipment required to safely handle the material.

Item 9. <u>Facilities and Equipment</u>

Describe the equipment and facilities for each site of use in detail. The proposed equipment and facilities for each operation to be conducted should be adequate to protect health and minimize danger to life and property.

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. When applicable to facilities where radioactive materials may become airborne, the diagrams should also include schematic descriptions of the ventilation system (with pertinent inflow rates), pressures, filtration equipment, and monitoring instruments. Diagrams should be drawn to 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 Items 2a or 2b.

In describing available equipment and facilities, the following types of information should be included, as appropriate:

1. Physical plant, laboratory, or working area facilities. Fume hood, glove boxes, waste receptacles, special sinks, ventilation and containment systems, effluent filter systems, and all processing, work, and protective clothing change areas should be described.

2. Containers, devices, protective clothing, auxiliary shielding, general laboratory equipment, air sampling equipment, etc. actually employed in the daily use of material. Special consideration for shielding and containment and provisions to minimize personnel exposure should be described.

3. Storage containers and facilities. Indicate both shielding and security of materials.

4. The number, type, and length of remote handling devices.

5. If respiratory protective equipment will be used to limit the inhalation of airborne radioactive material, the provisions for Rule 391-3-17-.03(9) should be followed and appropriate information should be submitted.

Item 10. RADIATION SAFETY PROGRAM

Describe the proposed radiation protection program in detail and include the following:

1. Procedures for ordering radioactive materials, for receipt of materials during off-duty hours, and for notification of responsible persons upon receipt of radioactive materials. These procedures should be adequate to ensure that possession limits are not exceeded, that radioactive materials are secured against unauthorized removal at all times, and that radiation levels in unrestricted areas do not exceed the limits specified in Rule 391-3-17-.03(5)(I). It is preferable that all radioactive materials are received in one location so that they may reliably be accounted for and surveyed expeditiously.

2. Procedures for examining incoming packages for leakage, contamination, or damage and for safely opening packages [Rule .03(11)(f)]. Monitoring should be performed as soon as practicable after receipt of the package of radioactive material. The procedures may vary depending upon the quantity of radioactive material received, but should, at the minimum, include instructions for surveying packages, wearing gloves while opening packages, and checking packing material for contamination.

3. Instructions to Personnel [Rule .07(3)]

   A copy of general instructions to be followed by laboratory personnel or students while working with radioactive materials should be prepared and submitted if individuals will use radioactive material under the supervision of a user authorized on the license. They must meet the requirement of Rule .07(3). The instructions should also include the following information:

   a. Outline control procedures for obtaining permission to use radioactive materials at the institution; give limitations of quantity to be handled per student or allowed per experiment.

   b. Explain what laboratory apparel to wear and what safety equipment to use (e.g., use of laboratory coats, gloves, and remote pipetting devices).

   c. Prescribe limitations and conditions on handling liquid or loose (unencapsulated or dispersable) radioactive materials and what laboratory equipment to use in working with them. For example, explain when materials and operations should be confined to radiochemical fume hoods or glove boxes and explain what shielding or remote handling equipment is to be used when hard beta- or gamma-emitting materials are handled.

   d. Instruct the user about routine survey and monitoring procedures for each contamination control zone.

   e. Instruct the user about movement of radioactive materials between rooms, halls, or in corridors, if applicable.

   f. Explain requirements for storage of radioactive materials and labeling of containers and how areas

will be identified where radioactive materials are used. Explain where and how contaminated articles and glassware are to be handled and stored.

g. Specify personnel monitoring devices to be used, where to obtain them, and instructions given on recording exposure results or properly turning in personnel monitoring devices for processing at appropriate intervals.

h. Instruct the user in waste disposal procedures to follow in the laboratory, including limitations for disposal of liquid or solid wastes by the user and procedures to use for waste storage within each laboratory.

i. Explain what records are to be kept for the use and disposal of radioactive materials.

j. Describe contamination control procedures, including restrictions against smoking and consumption of food and beverages, prohibition of the frequent transfer of potentially contaminated equipment between potentially contaminated areas and unrestricted areas. Specify acceptable removable and fixed radioactive material contamination levels for both restricted and unrestricted areas.

4. Animal Use

Procedures should be prepared and submitted which will be followed if radioisotopes will be used in animals, including:

a. A description of the animal housing facilities;

b. A copy of instructions provided to animal caretakers for handling animals, animal wastes, and carcasses;

c. Instructions for cleaning and decontaminating animal cages; and

d. Procedures for ensuring that animal rooms will be locked or otherwise secured unless attended by authorized users of radioactive material.

5. Records Management Program

Provisions for keeping and reviewing records of surveys, material inventories, personnel exposures, receipt, use and disposal of materials, etc. should be described. Persons responsible for keeping and reviewing records should be identified. Record keeping requirements are generally outlined in Rule .03(13).

6. Emergency Procedures

These instructions should be addressed to all persons in each laboratory or facility area where radioactive materials will be used and should cover actions to be taken in case of such accidents involving radioactive materials as spills, fires, release or loss of material, or accidental contamination of personnel. Specifically, these instructions should (a) specify immediate actions to be taken in order to prevent or limit the contamination of personnel and areas, e.g., the shutting down of ventilation equipment, evacuation of contaminated and potentially contaminated areas, containment of any spills of radioactive material, (b) give the telephone numbers of individuals to be notified in case of emergency, and recovery operations for contaminated facilities. (Note: only properly trained individuals should attempt decontamination and recovery operations.)

10.1 Personnel Monitoring Program

Personnel monitoring is required if a person is likely to receive more than the annual limit of 500 mrem total effective dose equivalent in a year; or 5 rem (sum of deep dose equivalent and committed dose equivalent to individual organs or tissues) in a year; or eye dose equivalent of 1.5 rem in a year; or shallow dose equivalent of 5 rem to the skin and to any extremity in a year. (Lower limits apply to those under 18 years of age, see Rule .03(5)(g) and Rule .03(7)(b). Personnel monitoring is also required if a person enters a high radiation area (greater than 100 millirem per hour). If personnel monitoring equipment will be used, the name of the organization furnishing the service (film badge, thermoluminescent dosimeters) and the frequency for changing personnel monitors should be specified. If pocket chambers or pocket dosimeters are used, the range of the device in milliroentgens, frequency of reading, and the procedures for maintaining and determining the accuracy of the devices should be specified.

If personnel monitoring is not used, a calculation or documentation from radiation surveys which demonstrates that it is unlikely that any individual will receive a dose as indicated above, should be submitted. This documentation must be maintained by the licensee and made available for Program inspections.

Bioassays are normally required when individuals work with 100 millicuries or more of hydrogen-3, or 30 millicuries or more of iodine-125, or iodine-131. The applicant should show in his application that the need for bioassays has been thoroughly considered and should describe his proposed bioassay program in relation to his proposed program for use of radioactive materials. "Acceptable Concepts, Models, Equations, and Assumptions for a Bioassay Program," and "Application of Bioassay for I - 125 and I - 131" are regulatory guides you may want to consult to determine if a bioassay program is needed to support your Radiation Safety Program. If a commercial bioassay service is to be used, the name and address of the firm should be provided. Indicate the frequency of the testing.

Ensure that all workers who are provided personnel monitoring are given a written report of exposure annually as required by Rule .07(4)(b).

Item 10.2 <u>Radiation Detection Instruments</u>

Specify the manufacturer's name and model number, the number available, the type of radiation detected (alpha, beta, or gamma), the sensitivity range (milliroentgens per hour or counts per minute), type of probe/detector, and type of use for each radiation detection instrument. The type of use would normally be monitoring, surveying, assaying or measuring.

If the applicant intends to contract out the calibration of instruments, provide the name of the firm and the frequency of calibration. Survey instruments should be calibrated at least annually or following repair [Rule .03(7)(b)].

If you decide to perform your own calibrations, procedures will need to be submitted. As a minimum the procedures should include a description of the following:

a) Reference standard sources to be used (manufacturer and model number);

b) The nuclide and quantity of radioactive material contained in the source;

c) The accuracy of the source(s) and the traceability of the source to a primary standard;

d) A copy of written calibration procedures and associated radiation safety instructions; and

e) Pertinent experience of each individual who will perform the calibrations.

Quantitative measuring instruments used to monitor the adequacy of containment and contamination control such as those used for measuring leak test, air, effluent, bioassay, work area, and equipment contamination samples should usually be calibrated prior to each use. The procedures and frequency for calibration of such instruments should be submitted and should include:

1. The name of the manufacturer and model number of each of the standards to be used;

2. The nuclide and quantity of radioactive material contained in each of the standard sources;

3. A statement of the accuracy of each of the standard sources (should be NIST traceable);

4. Step-by-step calibration procedures and, if appropriate, associated radiation safety procedures; and

5. The name and pertinent experience of each person who will perform the instrument calibrations.

Item 10.3 Leak Testing

Rule .03(6) requires sealed sources containing more than 100 microcuries of a beta or gamma emitter to be leak tested at six-month intervals. Alpha sources containing more than 10 microcuries of an alpha emitter are required to be leak tested at three-month intervals. If a commercial firm will perform the leak tests, provide the name of the company. If the tests are to be performed utilizing a commercial kit, the name of the kit manufacturer or distributor and the kit model designation should be given.

If the applicant intends to perform his own leak tests (without the use of a commercial "kit"), the following information should be submitted.

1. Qualifications of personnel who will perform the leak test;

2. Procedures and materials to be used in taking test samples;

3. The type, manufacturer's name, model number and radiation detection measurement characteristics of the instrument to be used for the assay of test samples;

4. Instrument calibration procedures including calibration source characteristics, make and model number; and

5. The method (including a sample calculation) to be used to convert instrument reading to units of activity (e.g., microcuries).

Records of leak tests will be recorded in units of microcuries or Becquerel. The records will be maintained for three years [Rule .03(13)(d)].

Item 10.4 Survey Program

You need to provide information on the types, methods, and frequency of your surveys. Program regulations require that surveys be made of external exposure to personnel, air concentrations in the breathing zones of personnel, and effluents from a facility in which radioactive materials are used [Rule .01(2)(zzzz)]. A survey may be a physical measurement or a theoretical calculation. Although a theoretical calculation is usually used to demonstrate the lack of a hazard from either airborne or external radiation, it cannot always be used in lieu of a physical survey. Survey record keeping requirements are outlined in Rule .03 (13)(c).

Except for those cases where sources of radiation and radioactive material are very well known and accurately and precisely controlled, it will usually be necessary that a physical survey be made with appropriate detection and measurement instruments to determine the nature and extent of radiation and radioactive material or, as a minimum, confirm the results of a theoretical determination. A radiation protection program should include surveys for radioactive contamination and radiation exposure levels:

1. In laboratory or plant areas (contamination on bench tops, handling and storage equipment, clothing, hands, etc.)

2. During work with radiation or radioactive materials (breathing zone air surveys; general air surveys; personnel exposure measurements, including eyes and extremities; checking shutters and containment; etc.)

3. Associated with disposal or release of radioactive materials (disposal containers and disposal sites; liquid, gas and solid effluents; filters and filter-duct systems; etc.)

The frequency of surveys will depend on the nature of the radioactive materials and their use; however, surveys should be performed prior to the use of radioactive materials in order to establish a baseline and repeated when changes occur in radioactive materials, their containment systems, method of use, etc. Regularly used laboratories should be surveyed for contamination at the end of each workday (except when quantities handled by an employee at any one time are less than those in Appendix C of 10 CFR 20.1001-20.2401). Repetitive surveys may also be necessary for the purpose of controlling the location of radioactive materials in the handling system, or in the case of the use of sealed sources, outside a shielded container.

For operations involving materials in gas, liquid or finely divided forms, the survey program should be designed to monitor the adequacy of containment and control of the materials involved. The program should include air sampling, monitoring of effluents and surveys to evaluate contamination of personnel, facilities, and equipment.

The description of an air sampling program should include the area where samples will be taken, the frequency of sampling, and location of the sampler with respect to worker breathing zones. The types of assays that will be performed to evaluate the samples and the methods to relate results to actual personnel exposure should be described.

The effluent monitoring program for releases to unrestricted areas should encompass all airborne and liquid releases. Theoretical evaluations should be supplemented by stack monitoring, water sampling or other environmental monitoring appropriate for the planned and potential releases.

For operations involving only sealed sources, a survey program should include evaluation and/or measurement of radiation levels for storage and use configurations. When sources are used in devices having "on" and "off" positions, both positions should be evaluated at the time of installation.

Supplemental surveys should be performed following any changes in operation, shielding, or use.

Item 10.5 Inventories

The Program requires that licensees periodically account for all radioactive material received and possessed under their license. Once your license is approved, there will be a condition stipulating that inventories must be conducted once every six months. You should maintain records of the inventories for the next Program inspection.

Your inventory records should include each radionuclide and amount (in units of Becquerel or millicuries), the location of material, the date of the inventory, and signature of the RSO. If sealed sources are possessed include the manufacturer's name, model number and serial number (if appropriate) of each sealed source/device on the inventory.

10.6 Annual Audit of Radiation Safety Program

Rule .03(4) requires each licensee to: (1) develop, document, and implement a radiation protection program commensurate with the scope and extent of licensed activities and sufficient to ensure compliance with the regulations, (2) use procedures and engineering controls to achieve occupational doses and doses to members of the public that are ALARA, and (3) review, at least annually, the content and implementation of their radiation programs. Licensees are required by Rule .03(13)(b) to maintain records of audits of their radiation protection program for three years. Licensees must maintain records of the provisions of their radiation protection program until the Program terminates the pertinent license.

In lieu of describing the scope and extent of the audits, you may state, "We will conduct audits as described in Appendix D , “Annual Audit Program” of Revision 2 of the “Laboratory and Industrial Use of Small Quantities of Radioactive Materials Licensing Guide”.

You do not need to submit an audit program. However, licensees not conducting annual audits is a common violation cited by the Program.

As noted in Appendix C, the RSO needs to ensure that annual audits are conducted, but does not necessarily need to conduct the audits himself or herself. In fact, if the RSO is one of the authorized gauge users, it may be beneficial for a qualified individual (e.g., a radiation safety consultant, the corporate radiation safety officer) who is not associated with day-to-day operations to conduct the audit. An example of an audit program is provided in Appendix D to this guide.

The results of the audit, identification of deficient areas, and recommendations for change should be documented and provided to licensee management who, in turn, needs to take prompt action to correct any deficiencies noted by the auditor. If the licensee conducts licensed activities under other licenses or at locations other than the one audited, its personnel (at the other locations or working under the other licenses) should be informed of the deficiencies noted during audits and of the actions management expects all personnel to take to avoid similar deficiencies.

Item 11 Description of Waste Disposal Procedures

Rule .03 (12) outlines acceptable waste disposal methods. These methods include:

a. Transfer to a person properly licensed to receive such waste. The name of the firm should be given. (The firm should be contacted in advance to determine any limitations which they may have on acceptance of waste.)

b. Decay and/or release into a sanitary sewer in conformance with Rule .03(12)(c).

c. Release into air or water in concentrations conforming with Rule .03(5)(I). Possible exposure to persons off-site limits the amount that may be released.

d. Other limits specifically approved by the Program pursuant to Rule .03(12)(b).

Your procedures for disposing of radioactive material waste should be described.

Some radioactive material is short-lived (i.e., a half life of less than 65 days). You may be authorized to hod radioactive material for decay in storage before disposal in ordinary trash provided:

a. Radioactive waste to be disposed of in this manner shall be held to decay a minimum of 10 half-lives; and

b. Before disposal as normal waste, radioactive waste shall be surveyed to determine that its radioactivity can not be distinguished from background. All radiation labels shall be removed or obliterated. Indicate in your application if you will be holding radioactive material for decay in storage as described in this paragraph.

Item 12 License Fees

Refer to Appendix B for the appropriate license fee and category. Generally the types of fee categories for this type of license are In Vitro studies (A5), Industrial (other)(C.13), and Academic (nonbroad)(I).

No action will be taken on applications filed without the proper fee. Checks for the fees should be made payable to

the **Department of Natural Resources, Radioactive Materials Program**, and mailed to the following address:

Radioactive Materials Fees
P.O. Box 101161
Atlanta, Georgia 30392

Mail license applications, amendment, renewal requests, and terminations of license to the following address:

Radioactive Materials Program
4244 International Parkway
Atlanta Tradeport, Suite 114
Atlanta, GA. 30354

Item 13. Certification (Signature of Applicant)

Rule .02(7)(c) requires that the license application be signed. If the applicant is not an individual, the application must be signed by a person authorized to sign on behalf of the laboratory or institution. This will usually be an executive officer, the dean of the particular school, the business manager, or some other designated official. This person should be authorized to make commitments on behalf of the laboratory or institution.

3. AMENDMENTS OF LICENSES

Applications for amendment of existing licenses should be filed either on the Application Form or in letter form. The application should clearly identify the number of the license to be amended. The exact nature of the requested changes should be specified and additional supporting information, as necessary, should be provided. References to previously submitted information and documents should identify the pertinent information by date, page, and paragraph. The amendment request should be prepared in duplicate. Retain one copy for your records and submit one to the Program for consideration.

You need to include the appropriate fee for a license amendment with your application. The Program will not issue the amendment prior to receipt of the proper fee as specified in the Fee Schedule, Appendix B.

4. RENEWAL OF LICENSE

Generally licenses are renewed for 5 years. An application ("Application for Radioactive Materials Licenses Form") should be submitted at least 30 days prior to the expiration date of the license. The license will then remain in effect until final action is taken on the application [Rule .02(15)]. A renewal application should include up-to-date information on the licensee's program. References to previously submitted information are permissible provided the references clearly and specifically identify by document, page number and date the information to be considered. General references such as "See previous applications" are not adequate. The renewal should be prepared in duplicate. Retain one copy for your records and submit one to the Program for consideration.

It is important that the appropriate fee accompany your application for license renewal. The Program will not issue the license renewal prior to receipt of the fee.

You may submit an entirely new application for renewal as if it were an application for a new license without referring to previously submitted information. This is the preferred method of renewing a license, especially for those whose licenses reference a large number of documents or old documents. Submitting an entirely new application allows you to reevaluate your program periodically and consolidate the description of your program into one or two up to-date documents. A new application ensures that your program contains all needed information as requested in current licensing guidance.

As an alternative to a new application, you may:

1. Review your current license to determine whether the information accurately represents your current and anticipated program. Identify any necessary additions, deletions, or other changes and then prepare information appropriate for the required additions or changes.

2. Review the documents submitted to the Program in the past to determine whether the information is up to date and accurately represents your facilities, equipment, personnel, radiation safety procedures, locations of use, etc. The documents considered to represent your current program must be identified by date. Also identify any out-of-date and superseded documents and indicate the changes in them that are necessary to reflect your current program. Documents referenced in your license should not be older than five years unless all the information in the document accurately represents your current program. If you need to update information in documents five years old or older, you should submit a new application. If you follow this process you will need to submit an entirely new application every ten years (or each alternating renewal).

3. Review current Program regulations to ensure that any changes in the regulations are appropriately covered in your program description.

4. After you have completed your review, submit a letter to the Program, requesting renewal of your license and providing the information in items 1, 2, and 3, as necessary.

5. Include the name and telephone number of the person to be contacted about your renewal application and include a current mailing address if it is not indicated correctly on your license.

If you do not wish to renew your license, dispose of all licensed radioactive material possessed in a manner authorized by Rule .02(19), “Transfer of Material”. Complete the Program’s form, "Request to Terminate Radioactive Materials License" (see Appendix **H**) and send it to the Program before the expiration date of your license with a request that your license be terminated.

If you cannot dispose of all the licensed radioactive material in your possession before the expiration date, you must request a license renewal for “storage only" of the radioactive material. The renewal is necessary to avoid violating the Program’s regulations that do not allow possession of licensed material without a valid license.

VI. TERMINATION OF A LICENSE

You may request termination of your license at any time. This notification should include a request to terminate the license and must include a completed form, "Request to Terminate Radioactive Materials License" (Appendix E), certifying that all sources have been disposed of properly. A letter containing the same information is also an acceptable method for requesting termination.

Documentation must be provided which shows the disposition of the sources prior to termination being granted. Documentation generally consists of a letter of receipt from the licensee who has received the material from your license whether it is for disposal or transfer to another authorized user. An application for license termination does not relieve the licensee from its obligations to comply with the Program’s regulations and the terms and conditions of the license.

Georgia Department of Natural Resources
Environmental Protection Division
Radioactive Materials Program

APPLICATION FOR RADIOACTIVE MATERIALS LICENSE

INSTRUCTIONS - Complete Items 1 through 13 if this is an initial application or renewal of a license. Use supplemental sheets where necessary. Item 13 on the application must be completed and signed. Retain one copy for your records. Submit original application to: Georgia Department of Natural Resources, Radioactive Materials Program, 4244 International Parkway, Suite 114, Atlanta, Georgia, 30354. Upon approval of this application, the applicant will receive a Georgia Radioactive Materials License. Georgia Radioactive Materials Licenses are issued in accordance with the general requirements contained in the Georgia Department of Natural Resources Rules and Regulations, Chapter 391-3-17. **The Department can be reached via the Internet. The address is rad_materials @ mail.dnr.state.ga.us.**

1.This is an Application for: (Check appropriate item) A.☐ New License B. ☐ Amendment to License C. ☐ Renewal of License
If B or C, Please indicate GA. License Number _____

2.a. Name and Mailing Address of Applicant	2.b. Address where licensed material will be stored and/or used (Street Address)
Name: Address: City, State, Zip Code: County: Telephone Number ( ) _____ -_____ Internet Address:	A. Permanent B. Coordinates 1. Latitude: 2. Longitude: C. Temporary sites throughout Georgia? Yes _____ No_____
3. Person to Contact Regarding this Application Name: Title: Telephone Number ( ) _____ - _____	4. Locations where records will be kept:

SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 X 11" PAPER. THE TYPE AND SCOPE OF INFORMATION ARE DESCRIBED IN THE LICENSE APPLICATION GUIDE.

5. RADIOACTIVE MATERIAL a. Element and mass number, b. Chemical and/or physical form; and c. Maximum amount which will be possessed at any one time.	6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED
7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING EXPERIENCE	8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS
9. FACILITIES AND EQUIPMENT	10. RADIATION SAFETY PROGRAM
11. WASTE MANAGEMENT	12. LICENSEE FEES (SEE DEPARTMENT'S FEE SCHEDULE) FEE CATEGORY: AMOUNT ENCLOSED $ CHECK MAILED ☐ PLEASE INVOICE ☐
MAKE CHECKS PAYABLE TO: DEPARTMENT OF NATURAL RESOURCES RADIOACTIVE MATERIALS PROGRAM	**MAIL FEES TO: RADIOACTIVE MATERIALS PROGRAM, P.O. BOX 101161 ATLANTA, GEORGIA 30392**

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

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATE ON BEHALF OF THE APPLICANT NAMED IN ITEM 1, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH GEORGIA DEPARTMENT OF NATURAL RESOURCES RULES AND REGULATIONS, DESIGNATED CHAPTER 391-3-17 AND THAT ALL INFORMATION CONTAINED HEREIN, INCLUDING ANY SUPPLEMENTS ATTACHED HERETO, IS TRUE AND CORRECT TO THE BEST OF OUR KNOWLEDGE AND BELIEF.

CERTIFYING OFFICER -- TYPED PRINTED NAME AND TITLE	SIGNATURE	DATE

FOR DEPARTMENT USE ONLY

TYPE OF FEE	FEE CATEGORY	AMOUNT RECEIVED	INVOICE DATE	COMMENTS
APPROVED BY			DATE:	

Appendix A

License Category	Licensing Fees				Inspection Fees		Annual Fees		
	Code	Application	Renewal	Amendment	Routine	Non-Routine	Nominal	Small Entity	Lower Tier
Medical Teletherapy	A.1	3,400	790	430	1,200	1,900	3,200	600	135
Institutional Medical-Mult. Use	A.2	710	1,000	430	1,000	1,500	1,200	600	135
Institutional Medical-Single Use	A.3								
Private Practice	A.4								
In-Vitro Studies Only	A.5	500	500	380	1,200	1,200	500	500	135
In-Vitro General Licenses	A.6	0	0	0	0	0	100	100	100
Bone Mineral Analyzers	A.7	710	1,000	430	1,000	1,500	1,200	600	135
Medical Manufacturer for Distribution	A.8.a.	3,400	1,400	460	1,400	1,900	2,900	600	135
Medical Distribution or Redistribution Only	A.8.b.	1,100	500	310	800	1,200	900	600	135
Mobile Nuclear Medicine	A.9	710	1,000	430	1,000	1,500	1,200	600	135
Broad Medical	A.10	2,300	2,000	360	1,600	1,800	3,300	600	135
Eye Applicators	A.11	710	1,000	430	1,000	1,500	1,200	600	135
Depleted Uranium	A.12	110	110	110	290	350	130	130	130
Special Nuclear Material(sealed sources in devices)	B.1	500	500	380	460	1,300	400	400	135
Special Nuclear Material(other)	B.2	690	690	230	690	800	1,000	600	135
Industrial Mfg. for Distribution	C.1	1,300	2,300	550	1,000	2,000	1,500	600	135
In-house Industrial Radiography	C.2	3,000	1,800	490	1,200	2,500	2,600	600	135
Multiple Job-Site Industrial Radiography	C.3								
Gamma Irradiators (Self-Shielded)	C.4.a.	500	480	250	460	690	400	400	135
Gamma Irradiators (<10K Ci)	C.4.b.1.	1,000	750	250	500	1,000	1,000	600	135
Gamma Irradiators (>10K<100K Ci)	C.4.b.2.	5,000	3,750	1,250	1,200	2,400	5,000	600	135
Gamma Irradiators (>100K<1M Ci)	C.4.b.3.	10,000	7,500	2,500	2,500	5,000	10,000	600	135
Gamma Irradiators (>1M Ci)	C.4.b.4.	30,000	22,500	7,500	5,000	10,000	30,000	600	135
Broad Scope Distribution, Specific	C.5.a.	2,300	1,400	230	2,100	2,100	2,100	600	135
GL Distribution (source and/or device evaluation)	C.5.b.	2,500	580	390	690	690	1,700	600	135
GL Distribution (no source and/or device evaluation)	C.5.c.	1,900	940	290	690	690	1,400	600	135
NARM Exempt Distribution (device evaluation)	C.6.a.	2,100	1,100	250	690	690	1,500	600	135
NARM Exempt Distribution (no device evaluation)	C.6.b.	2,600	1,200	350	460	690	1,700	600	135
Well Logging/Tracers	C.7	3,400	2,000	540	800	800	2,300	600	135
Nuclear Laundries	C.8	1,400	1,400	350	1,200	1,900	1,600	600	135
Industrial Research & Development	C.9	1,100	1,100	630	800	930	1,300	600	135
Gas Chromatograph, Installed Gauges, etc.	C.10	500	500	380	1,200	1,200	500	500	135
Portable Moisture Density Gauges, Pb Analyzers, etc.	C.11								
Calibration Sources	C.12								
Industrial (other)	C.13								
Broad Scope (Academic)	D.1	2,300	2,000	500	930	1,200	2,100	600	135
Broad Scope (Industrial R&D)	D.2								
Civil Defense	E.	580	400	310	690	690	500	500	135
Teletherapy Service Co.	F.	1,400	1,100	630	800	690	1,500	600	135
Consultants (Leak Testing Service)	G.	500	500	380	1,200	1,200	500	500	135
Storage Only	H.								
Academic (Non-Broad)	I.								
Device Evaluation	J.1	3,300	0	1,200	0	0	2,100	600	135
Source Evaluation	J.2	690	0	230	0	0	500	500	135
Reciprocity	K.	0	0	0	0	0	Appropriate License Renewal Fee		
Radioactive Waste Disposal-Burial	L.1	50,000	50,000	5,000	12,000	24,000	30,900	600	135
Radioactive Waste Disposal-Incineration	L.2								
Radioactive Waste-Storage, Packaging or Transfer	L.3	2,800	1,900	200	2,100	2,200	3,600	600	135
G L Devices(except tritium safety signs)	GL	0	0	0	0	0	100	100	100

Appendix C

DUTIES AND RESPONSIBILITIES OF THE RADIATION SAFETY OFFICER

The Radiation Safety Officer (RSO) is responsible for implementing the radiation safety program and ensuring that radiation safety activities are performed according to approved procedures and regulatory requirements.

Management commits to giving the RSO the authority to stop unsafe operations. The RSO will be given sufficient time to perform his or her radiation safety duties and responsibilities.

The RSO will:

1. Ensure that licensed material possessed by the licensee is limited to the kinds and quantities of byproduct material listed on the license.

2. Assure that radioactive material is used only by individuals authorized by the license.

3. Ensure that individuals using radioactive materials are properly trained; review operating and emergency procedures; and is informed of all changes in regulatory requirements and deficiencies identified during annual audits.

4. Ensure that personnel monitoring devices, if required, are used as required. Reports of personnel exposure are reviewed in a timely manner. Alert the radiation worker in the event of a high or unusual exposure. Notify the Radioactive Materials Program as required of the high or unusual exposure. Investigate all such unusual exposures and take any necessary corrective action to prevent a similar incident from occurring again. Ensure an exposure report (if required) is given to employees annually [Rule .07(4)(b)].

5. Ensure that radioactive material is properly secured against unauthorized removal or use.

6. Ensure that proper authorities are notified in case of accident, fire, or theft involving radioactive material.

7. Ensure that audits are performed at least annually to meet the requirements of Rule .03(4).

8. Ensure that all incidents, accidents, and personnel exposure to radiation in excess of Rule .03(7)(b) are investigated and reported to the Program and other authorities, as appropriate, within the required time limits.

9. Ensure that licensed material is disposed of properly.

10. Ensure that the license is amended whenever there are changes in licensed activities, responsible individuals, or information or commitments provided to the Program in the licensing process.

Appendix D

ANNUAL AUDIT PROGRAM

An annual audit is conducted to fulfill the requirements of Rule .03(4)(c) for an annual review of the content and implementation of your radiation protection program. It should also identify program weaknesses and allow licensees to take early corrective actions (before a Program inspection). During an audit, the auditor needs to keep in mind not only the requirements of Program regulations, but also your commitments in its applications and other correspondence with the Program.

Guidance is provided here on items you may want to check during the audit:

1. Audit History. Check the date of the last audit, whether any deficiencies were identified, and whether actions were taken to correct the deficiencies.

2. Organization and Scope of Program. Briefly describe the organizational structure, noting any changes in personnel. Describe the scope of licensed activities at the audited location. Check whether the Radiation Safety Officer (RSO) is the person identified in the license and fulfills the duties specified in the license.

3. Training, Retraining, and Instructions to Workers. Ensure that workers have received the training required by Rule .07(3). Be sure that, before being permitted use of radioactive material, the user has received training in the terms and conditions of the license, the Rules and Regulations for Radioactive Materials, and the operating procedures for the laboratory.

4. Audit Records. Verify that audits fulfill the requirements of record keeping requirements as outlined in Rule .03(13), are conducted according to licensee commitments, and are properly documented.

5. Facilities. Verify that the facilities are as described in its license documents.

6. Materials. Verify that the license authorizes the radioactive materials and that the material is used according to license provisions.

7. Leak Tests. Verify that all sealed sources are tested for leakage at the prescribed frequency and/or according to license commitments. Records of results should be maintained for three years.

8. Inventories. Verify that inventories are conducted at least once every six months to account for all radioactive material. Inventory records should be maintained according to the requirements of the condition in the license.

9. Radiation Surveys. Verify that at least one operable, calibrated survey instrument is at each job site and that the instruments are calibrated according to license commitments. Calibration records must be retained for three years after the record is made.

10. Receipt and Transfer of Radioactive Material (Includes Waste Disposal). Verify that radioactive material is received, opened, and surveyed according to Rule .02(19)(d). Records of surveys, receipt, and transfer must be maintained according to Rule .03(13)(I).

11. Personnel Radiation Protection.
Evaluate the documentation that shows unmonitored personnel are not likely to receive more than 10 percent of the allowable limits. Alternatively, if personnel dosimetry is provided and required, verify that it complies with Rule .03(5) and licensee commitments.

Review personnel monitoring records; compare exposures of individuals doing similar work; determine reasons for

significant differences in exposures.

If any worker declared her pregnancy in writing, evaluate the compliance with Rule .03(5)(h). Check whether records are maintained as required by Rule .03(13)(g) and Rule .03(13)(g)4. (See the Program's guide, "Instruction Concerning Prenatal Exposure.")

Rule .07(4)(b) requires that written exposure reports be given to workers on an annual basis.

12. Notification and Reports. Check on the compliance with the notification and reporting requirements in Rule .03(14). Ensure that everyone is aware of the emergency telephone numbers for the Program.

13. Posting and Labeling. Check for compliance with the posting and labeling requirements of Rule .03(11)(b) and Rule .07(2).

14. Record Keeping for Decommissioning. Check to determine compliance with Rule .02(8)(g).

15. Special License Conditions or Issues. Verify compliance with any special conditions on the license. If activities are conducted at locations other than the one being audited, consider the deficiencies identified at the other locations and ensure that the corrective actions implemented in response to those deficiencies have in fact been implemented at the audited locations.

16. Problems or Deficiencies Noted/ Recommendations. Note corrective actions needed and taken.

17. Evaluation of Other Factors. Evaluate management's involvement with the radiation safety program, whether the RSO has sufficient time to perform his or her duties, and whether there is sufficient staff to handle the workload and maintain compliance with regulatory requirements.

GEORGIA DEPARTMENT OF NATURAL RESOURCES
RADIOACTIVE MATERIALS PROGRAM
REQUEST TO TERMINATE RADIOACTIVE MATERIAL LICENSE

1. Licensee Name _____ 2. License Number _____

3. Address _____
No. Street City, State Zip code

4. Contact Person _____ 5. Telephone Number _____

6. Request is hereby made that the Radioactive Material License described above be terminated for the following reason:

_____

_____

7. Radioactive Material possessed under this license has been disposed of as indicated below:

☐ No materials have been possessed or procured by the licensee under this licensee.

☐ All material was used for the licensed purposes, none remains.

☐ All material was leased, and has been returned to lessor.

Name of lessor: _____ License No. _____

☐ Copy notice of receipt attached

☐ Material has been transferred to the following licensee:

Licensee Name _____ License No. _____

Address _____
No. Street City, State Zip code

Date of transfer: _____

☐ Copy of receipt attached

☐ Material has been disposed of in the following manner:

_____

_____

☐ A radiation survey was conducted to confirm the absence of radioactive material and to determine whether any contamination remains at the facility covered by the license.

☐ Copy of survey results attached.

6. Management Official or Radiation Safety Officer

_____ _____
Signature of certifying officer Date

_____ _____
Print name Title

Keep one copy for your records and send original to:

GEORGIA DEPARTMENT OF NATURAL RESOURCES
RADIOACTIVE MATERIALS PROGRAM
4244 INTERNATIONAL PARKWAY, SUITE 114
ATLANTA, GEORGIA 30354

Appendix E