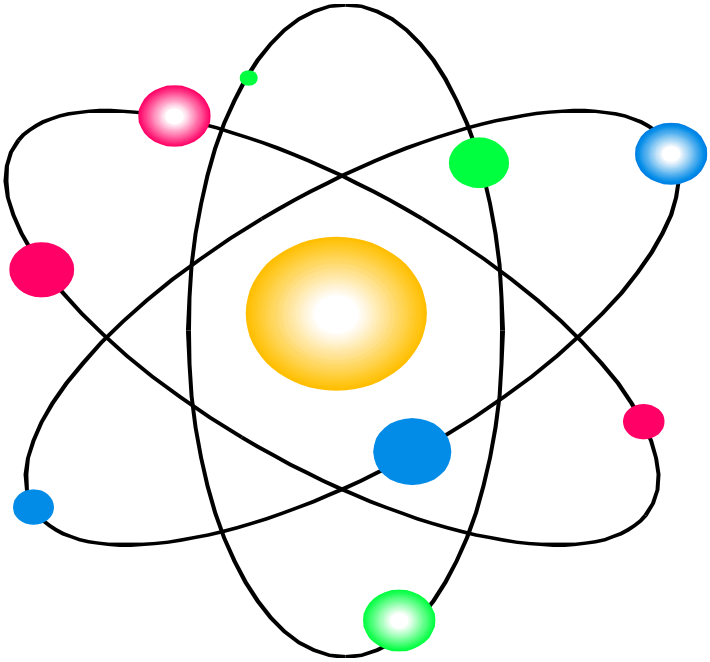
STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT & CONSERVATION
DIVISION OF RADIOLOGICAL HEALTH



GUIDE FOR COMPLETING APPLICATION FOR RADIOACTIVE MATERIAL LICENSE (RHS 8-5)

PORTABLE LEAD DETECTION OR OTHER PORTABLE TYPE ANALYSIS GAUGE

(JANUARY 2014)

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Item 1.(a) List the applicant's name and mailing address.

Item 1.(b) Identify the use and/or storage address if different from 1.(a). (A separate license is needed for each permanent use and/or storage address. A multiple site license is available, but at a higher fee.)

Specify if use is also, or only, at temporary job sites.

Item 2. Not required.

Item 3. Only applicable if renewing a license.

Item 4. Confirm that before using licensed materials, gauge users will have successfully completed an applicable portable gauge manufacturer's training course, or an equivalent course that meets the criteria in Appendix A. As an alternative, you may submit a statement of an individual's training and experience. Applicants wishing to be approved to conduct their own training shall state their commitment to the criteria in Appendix A.

Item 5. Name the Radiation Safety Officer and confirm that before obtaining licensed materials, this individual will have successfully completed one of the training courses described in Item 4. As an alternative, you may provide a statement of training and experience. Typical RSO duties can be found in Appendix B.

Item 6.(a). Indicate each radionuclide that will be used in each source in the gauging device(s).

Item 6.(b). Provide the manufacturer and model number for each source that is approved by the regulatory agency having jurisdiction. This can be found in the Sealed Source and Device Registry maintained by the U.S. Nuclear Regulatory Commission (NRC). Specify the activity of each source. State the number of sources to be licensed.

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Item 7. Provide the manufacturer and model number for each gauge approved for licensing. State the general purpose for use of the gauge, i.e. to measure lead in paint, etc. State the number of gauges to be licensed or if you wish to be authorized for an unlimited number. (Three or more gauges used at temporary jobsites require a higher license fee.)

Items 8 & 9. These need not be completed unless submitting a statement of training and experience as part of Items 4 and 5.

Item 10. Not required. (However, you are responsible to have a survey performed of the gauge in the case of an emergency condition. See Appendix C).

Item 11. Not required

Item 12. Confirm that you will provide gauge users with personnel monitoring devices processed and evaluated by a National Voluntary Laboratory Accreditation Program (NVLAP) approved processor, or that you will maintain for inspection documentation that unmonitored individuals are not likely to receive in one year, a radiation dose in excess of 10 percent of the allowable limits in 0400-20-05 of "State Regulations for Protection Against Radiation." See Appendix D.

Item 13. Submit a diagram of your permanent gauge storage area or container and its surrounding area. Show distances to unrestricted areas from the location of storage, occupancies, any shielding employed, locking mechanisms, and others means of control to be used. (Gauges shall be controlled such that they cannot be tampered with or removed by unauthorized personnel. This requires a locked room, cage, or container [other than the gauge transport case] that is accessible only to licensed personnel. Gauges shall be controlled such that doses to the public including non-occupationally exposed employees will not receive a total effective dose equivalent of 0.1 rem in a year, and that the dose in any unrestricted area does not exceed 0.002 rem in any one hour. See Appendix D. The unrestricted area would be outside the storage area or container).

Item 14. Except for your storage facility, confirm that you will implement the Operating and Emergency Procedures contained in Appendix C, or submit alternative equivalent procedures.

Verify that leak tests of sealed sources will be performed by the device manufacturer, or other persons authorized by the U.S. Nuclear Regulatory Commission or an Agreement State to provide leak testing services, or that the applicant will collect leak test samples for analysis by one of the above using a leak test kit supplied by persons authorized to provide leak test kits and according to the kit supplier's instructions.

Describe how gauges will be secured during transport to minimize the possibility of loss, tampering, or theft.

Item 15. Not applicable. (However, note that gauges shall only be transferred to the manufacturer or another person who is properly licensed for its possession or disposal.)

Item 16. The application shall be signed and dated by a management official for the organization. List this person's title.

APPENDIX A

Criteria for Acceptable Training Courses for Portable Gauge Users

COURSE CONTENT

- 1.5 to 2 hours of radiation safety and regulatory requirements, emphasizing practical subjects important to safe use of the gauge: radiation vs. contamination: internal vs. external exposure; **ALARA** concept; use of time, distance, and shielding to minimize exposure; control and surveillance of gauges; location of sealed source within the portable gauge; inventory; recordkeeping; incidents; licensing and inspection by regulatory agency; need for complete and accurate information; employee protection; deliberate misconduct

- 1.5 to 2 hours of practical explanation of portable gauge theory and operation; operating, emergency, maintenance, and transportation procedures, and field training emphasizing radiation safety and including test runs of: setting up and making measurements with the gauge, controlling and maintaining surveillance over the portable gauge, performing routine cleaning and lubrication, packaging and transporting the gauge, storing the gauge, and following emergency procedures

COURSE EXAMINATION

- 25-50 questions, closed-book written test - 70 percent grade

  – Emphasis on radiation safety of portable gauge storage, use, sealed source location, maintenance, and transportation, rather than the theory and art of making portable gauge measurements
  – Review of correct answers to missed questions with prospective gauge user immediately following the scoring of the test

COURSE INSTRUCTOR QUALIFICATIONS

Instructor should have either:

- Bachelor's degree in a physical or life science or engineering
- Successful completion of a portable gauge user course
- Successful completion of an 8 hour radiation safety course **AND**
- 8 hours hands-on experience with portable gauges

OR

- Successful completion of portable gauge user course
- Successful completion of 40 hour radiation safety course **AND**
- 30 hours of hands-on experience with portable gauges

NOTE: Licensees should maintain records of training.

APPENDIX B

RSO Duties and Responsibilities

The RSO's duties and responsibilities typically include ensuring the following:

- Stop licensed activities that the RSO considers unsafe
- Possession, use, storage, and maintenance of sources and gauges are consistent with the limitations in the license, the Sealed Source and Device Registration sheet(s), and manufacturer's recommendations and instructions
- Individuals who use gauges are properly trained
- When necessary, personnel monitoring devices are used and exchanged at the proper intervals; records of the results of such monitoring are maintained
- Gauges are properly secured
- Proper authorities are notified in case of accident, damage to gauges, fire, or theft
- Unusual occurrences involving the gauge (e.g., accident, damage) are investigated, cause(s) and appropriate corrective action are identified, and corrective action is taken
- Audits are performed at least annually and documented, and corrective actions taken
- Licensed material is transported in accordance with all applicable DOT requirements
- Licensed material is disposed of properly
- Appropriate records are maintained
- An up-to-date license is maintained and amendment and renewal requests submitted in a timely manner

APPENDIX C

Operating Procedures

- If personnel dosimetry is provided:
  - Always wear your assigned personnel monitoring device when using the gauge.
  - Never wear another person's personnel monitoring device.
  - Never store your personnel monitoring device near the gauge.
- Before removing the gauge from its place of storage, ensure that, where applicable, each gauge source is in the fully shielded position. Place the gauge in the transport case and lock the case.
- Sign out the gauge in a log book (that remains at the storage location) including the date(s) of use, name(s) of the authorized users who will be responsible for the gauge, and the temporary jobsite(s) where the gauge will be used.
- Block and brace the gauge to prevent movement during transport and lock the gauge in or to the vehicle. Follow all applicable Department of Transportation (DOT) requirements when transporting the gauge.
- Use the gauge according to the manufacturer's instructions and recommendations.
- Do not place hands, fingers, feet, or other body parts in the radiation field from an unshielded source.
- Always keep unauthorized persons away from the gauge.
- Perform routine cleaning and maintenance according to the manufacturer's instructions and recommendations.
- When the gauge is not in use at a temporary jobsite, place the gauge in a secured storage location (e.g., locked in the trunk of a car or locked in a storage shed).
- Prior to transporting the gauge, ensure that, where applicable, each gauge is in the fully shielded position. Place the gauge in the transport case and lock the case. Block and brace the case to prevent movement during transportation. Lock the case in or to the vehicle.
- Return the gauge to its proper locked storage location at the end of the work shift.
- Log the gauge into the daily use log when it is returned to storage.
- After making changes affecting the gauge storage area (e.g., changing the location of gauges within the storage area, removing shielding, adding gauges, changing the occupancy of adjacent areas, moving the storage area to a new location), reevaluate compliance with public dose limits and ensure proper security of gauges.

Appendix C

Emergency Procedures

If the source fails to return to the shielded position (e.g., as a result of being damaged) or if any other emergency or unusual situation arises (e.g., is dropped, is in a vehicle involved in an accident):

- Immediately secure the area and keep people at least 15 feet away from the gauge until the situation is assessed and radiation levels are known. However, perform first aid for any injured individuals and remove them from the area only when medically safe to do so.
- Gauge users and other potentially contaminated individuals should not leave the scene until emergency assistance arrives.
- Notify the persons in the order listed below of the situation:

NAME*	WORK PHONE NUMBER*	HOMEPHONE NUMBER*
_____	_____	_____
_____	_____	_____
_____	_____	_____

- Fill in with (and update, as needed) the names and telephone numbers of appropriate personnel (e.g., the Radiation Safety Officer (RSO), or other knowledgeable licensee staff, licensee's consultant, gauge manufacturer) to be contacted in case of emergency.
- Follow the directions provided by the person contacted above.

RSO AND LICENSEE MANAGEMENT

- Arrange for a radiation survey to be conducted as soon as possible by a knowledgeable person using appropriate radiation detection instrumentation. This person could be a licensee employee using a survey meter located at the jobsite or a consultant. To accurately assess the radiation danger, it is essential that the person performing the survey be competent in the use of a radiation survey meter.

  Make necessary notifications to local authorities as well as the Department as required. (Even if not required to do so, you may report **ANY** incident to the Department by calling the Tennessee Emergency Management Agency's Operations Center at 1-800-262-3300, which is staffed 24 hours a day. Department notification is required when gauges containing licensed material are lost or stolen, when gauges are damaged or involved in incidents that result in doses in excess of SRPAR 0400-20-05-.50, .55, .56, and .60, and when it becomes apparent that attempts to recover a source stuck below the surface will be unsuccessful.
- Reports to the Department must be made within the reporting timeframes specified in SRPAR.
- Reporting requirements are found in SRPAR 0400-20-05-.140, .141, and .143.

APPENDIX D

STATE REGULATIONS FOR PROTECTION AGAINST RADIATION (SRPAR) DOSE LIMITS

0400–20-05–.50 Occupational Dose Limits for Adults

(1) Except for planned special exposures under 0400–20–05–.54, the licensee or registrant shall limit the occupational dose to individual adults to the following annual dose limits:

(a) An annual limit that is the lesser of:

1. A total dose equivalent of 5 rems (0.05 Sv) or

2. The sum of the deep–dose equivalent and the committed dose equivalent to any individual organ or tissue other then the lens of the eye equal to 50 rems (0.5 Sv).

(b) The annual limits to the lens of the eye, to the skin of the whole body and to the skin of the extremities:

1. A lens-dose equivalent of 15 rems (0.15 Sv), and

2. A shallow-dose equivalent of 50 rems (0.50 Sv) to the skin of the whole body or to the skin of any extremity.

(2) The amount by which occupational dose from all sources exceeds an individual's annual limits shall be subtracted from the individual's limits for planned special exposures for the current year and for lifetime exposure. See 0400–20–05–.54(6)(1)(f)1 and 2.

(3) When external exposure is determined by measurement with an external personal monitoring device, the deep-dose equivalent must be used in place of the effective dose equivalent, unless the effective dose equivalent is determined by a dosimetry method approved by the Division or the Nuclear Regulatory Commission. The assigned deep-dose equivalent shall be for the part of the body receiving the highest exposure. The assigned shallow-dose equivalent shall be the dose averaged over the contiguous 10 cm^2 of skin receiving the highest exposure. Deep-dose, lens-dose and shallow-dose equivalents may be assessed from surveys or other radiation measurements to demonstrate compliance with occupational dose limits. However, this may be done only if the individual monitoring device was not subject to the highest potential exposure, or the individual monitoring results are unavailable.

(4) Derived air concentration (DAC) and annual limit on intake (ALI) values are presented in Schedule RHS 8–30 and may be used to determine the individual's dose and demonstrate compliance with the occupational dose limits.

(5) In addition to the annual dose limits, the licensee shall limit the soluble uranium intake by an individual to 10 milligrams in a week in consideration of chemical toxicity (see footnote 3 of Schedule RHS 8–30).

(6) The licensee shall reduce the dose that an individual may be allowed to receive in the current year by the amount of occupational dose received while employed by any other person.

0400–20–05–.55 Occupational Dose Limits for Minors

The annual occupational dose limits for minors are 10 percent of the annual dose limits specified for adult workers in 0400–20–05–.50

0400–20–05–.56 Dose to an Embryo/Fetus

(1) The licensee or registrant shall ensure that the dose equivalent to an embryo/fetus during the entire pregnancy, due to occupational exposure of a declared pregnant woman, does not exceed 0.5 rem (5 mSv). (For recordkeeping requirements see 0400–20–05–.135).

(2) Using ALARA the licensee or registrant shall make efforts to avoid substantial variation above a uniform monthly exposure rate to a declared pregnant woman.

(3) The dose equivalent to an embryo/fetus shall be taken as the sum of:

(a) The deep–dose equivalent to the declared pregnant woman; and

(b) The dose equivalent to the embryo/fetus from radionuclides in the embryo/fetus and radionuclides in the declared pregnant woman.

(4) If when a woman declares her pregnancy to the licensee or registrant the dose equivalent to the embryo/fetus is found to be 0.45 rem (4.5 mSv) or greater, the embryo/fetus is permitted an additional dose not exceeding 0.05 rem (0.5 mSv) during the remainder of the pregnancy.

Appendix D

0400–20–05–.60 Dose Limits for Individual Members of the Public

(1) Each licensee and registrant shall conduct operations so that:

(a) The total effective dose equivalent received by any individual member of the public from the licensed or registered operation does not exceed 0.1 rem (1 mSv) in a year. This limit is exclusive of the dose contribution from background radiation, from any medical administration the individual has received, from exposure to individuals administered radioactive material and released in accordance with 0400-20-07-.35, from voluntary participation in medical research programs, and from the licensee's disposal of radioactive material into sanitary sewerage in accordance with 0400–20–05–.122; and

(b) The dose in any unrestricted area from external sources, exclusive of the dose contributions from patients administered radioactive material and released in accordance with 0400-20-07-.35 does not exceed 0.002 rem (0.02 mSv) in any one hour.

(2) If a licensee or registrant permits members of the public to have access to controlled areas, the limit for members of the public continues to apply to those individuals.

(3) Notwithstanding paragraph (1)(a) of this rule, a licensee or registrant may permit visitors to an individual who cannot be released, under 0400-20-05-.35, to receive a radiation dose greater than 0.1 rem (1mSv) if:

(a) The radiation dose received does not exceed 0.5 rem (5 mSv); and

(b) The authorized user, as defined in 0400-20-05-07-.05(5) has determined before the visit that it is appropriate.

(4) A licensee, registrant or applicant may apply for prior authorization to operate up to an annual dose limit for an individual member of the public of 0.5 rem (5 mSv). This application by the licensee, registrant or applicant shall include the following:

(a) Demonstration of the need for and the expected duration of operations in excess of the limit in paragraph (1) of this rule;

(b) The licensee's or registrant's program to assess and control dose within the 0.5 rem (5 mSv) annual limit; and

(c) The procedures to be followed to maintain the dose as low as is reasonably achievable (ALARA).

(4) In addition to the requirements of this Chapter, a licensee or registrant subject to the provisions of EPA's generally applicable environmental radiation standards in 40 CFR Part 190 shall comply with those standards.

(5) The Division may impose additional restrictions on radiation levels in unrestricted areas and on the total quantity of radionuclides that a licensee may release in effluents in order to restrict the collective dose.