



**APPLICATION FOR A RADIOACTIVE MATERIAL LICENSE  
AUTHORIZING THE USE OF PORTABLE NUCLEAR GAUGES**

**INSTRUCTIONS:** Refer to form OR-RH-11.3P for detailed instruction in completing this application. This application must be signed and dated. An application fee in the amount specified in Part 12 of the *Colorado Rules and Regulations Pertaining to Radiation Control* must accompany an application for a new license. Email the completed application and attachments to CDPHE\_hmradmat@state.co.us. Mail the fee payment (and the application and attachments, if they cannot be submitted electronically) to the Colorado Department of Public Health and Environment, Radiation Management Program, HMWMD-B2, 4300 Cherry Creek Drive South, Denver, Colorado 80246-1530. All radioactive materials licenses are issued in accordance with the general requirements contained in the State of Colorado *Rules and Regulations Pertaining to Radiation Control* and Title 25, Article 11, CRS.

1. New Application: \_\_\_\_ (fee required) Renewal: \_\_\_\_ Amendment: \_\_\_\_

2. Applicant Name: \_\_\_\_\_

3. Current License No: \_\_\_\_\_ Expiration Date: \_\_\_\_\_

4. Mailing Address:

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

5. Radiation Safety Officer: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ Email: \_\_\_\_\_

Attach a copy of the training certificate for the designated Radiation Safety Officer.

6. Management Contact: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ Email: \_\_\_\_\_

7. Billing Contact (if different than management contact): \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ Email: \_\_\_\_\_

8. Storage Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

9. Attach a detailed diagram of storage location for the gauges. Be sure to include appropriate facility information as described in the instructions.

10. Attach survey data and/or calculations to demonstrate compliance with dose limits for members of the public. Attachment A has been provided with this application to assist you in calculation of potential public doses for your facility. Please note that the calculations should be done for each direction and area surrounding the storage facility which could be occupied by an individual including areas below and above the storage unit.

11. Specify the gauges and quantity requested:

Manufacturer:	Model Number:	Quantity:
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

**COMMITMENTS:**

- C.1. All uses of radioactive materials will be in accordance with the provisions of the State of Colorado *Rules and Regulations Pertaining to Radiation Control*, Part 4, "Standards for Protection Against Radiation", Part 10, "Notices, Instructions and Reports to Workers: Inspections", and Part 17, "Transportation of Radioactive Material".
- C.2. Prior to any changes in the permanent storage location and configuration, Radiation Safety Officer, or the maximum number or type of authorized gauges, an amendment request will be submitted to the Department and approval granted by the Department.
- C.3. Radiation exposure rates have been calculated or measured for all areas adjacent to the gauge storage area. The results show that members of the public will not receive a dose in excess of 100 millirem in a year and that the dose rate in all adjacent unrestricted areas does not exceed 2 millirem/hour. Documentation of the calculations and/or measurements will be maintained for review by the Department.
- C.4. Radioactive material will only be used by individuals who: 1) are designated as users by the Radiation Safety Officer; 2) have successfully completed a training course in the safe use and handling of portable nuclear gauges which has been accepted by the U.S. Nuclear Regulatory Commission or an Agreement State; and 3) have been instructed in the requirements of the State of Colorado *Rules and Regulations Pertaining to Radiation Control*, Radioactive Materials License, and Company operating procedures. The Radiation Safety Officer will maintain written records indicating the date and basis of approval of designated users.
- C.5. Each user of radioactive material who is likely to receive a dose in excess of 10% of any applicable dose limit in Part 4 of the State of Colorado *Rules and Regulations Pertaining to Radiation Control* will be supplied with, and trained in the use of personnel monitoring devices. Personnel monitoring devices shall be appropriate for the type of radiation emitted from gauging devices. For most gauges, this means that the dosimeter must be capable of detecting both gamma and neutron radiation.

A licensee may submit to the Department for approval, an acceptable application to discontinue the use of individual monitoring devices. The application must include documentation of six months of the use of continuous individual monitoring devices demonstrating that each individual is not likely to receive, in 1 year from sources external to the body, a dose in excess of 10 percent of the limits in 4.6.1.

If approval is granted, the Radiation Safety Officer must maintain written records demonstrating that personnel dose monitoring was not required pursuant to Part 4, Section 4.18 of the Regulations. In addition, the licensee shall include an assessment of individual dose monitoring needs as part of the annual review required under section 4.5.

- C.6. Radioactive material will be stored and used in a manner that will preclude use by unauthorized personnel.
- C.7. A use log indicating date, authorized user, gauge identification, and location of use will be maintained.
- C.8. Each gauge will be used in accordance with the procedures and instructions provided by the manufacturer. Gauges will be used only for the purposes for which they were designed. Sealed sources containing radioactive material will not be opened or removed from their respective source holders.
- C.9. Gauges will be used only at the licensed facility and at temporary job sites anywhere in the State of Colorado where the State of Colorado maintains jurisdiction for regulating the use of radioactive material. Use of gauges outside the State of Colorado and on federal facilities will be in compliance with the applicable reciprocity requirements.
- C.10. The authorized user will maintain control of radioactive materials at temporary job sites. Security shall be provided for all gauges not under the direct surveillance of the authorized user.
- C.11. Written operating procedures for the safe use of radioactive materials will be established, and all authorized users will be instructed to abide by those procedures. A copy of these procedures, including emergency procedures, will be provided to each user and will accompany the user to temporary job sites. A copy will be maintained for inspection by the Department.
- C.12. Transportation will be in accordance with all requirements of the U.S. Department of Transportation and Part 17 of the State of Colorado *Rules and Regulations Pertaining to Radiation Control*. Shipping papers, emergency telephone numbers, and a copy of the current radioactive materials license will accompany the gauge. Gauges transported in an open vehicle will be locked within the transport case and the case securely fastened and locked to the vehicle to prevent loss or theft.
- C.13. In the event of an accident involving a gauge, written emergency procedures will be followed. The authorized user will keep people at least 15 feet away from a damaged gauge until the integrity of the sealed source can be determined. The Radiation Safety Officer and the Colorado Department of Public Health and Environment will be notified. The Radiation Safety Officer will assure that appropriate actions are taken to minimize the radiological impacts to persons and the environment associated with the accident.
- C.14. The Radiation Safety Officer is the designated point of contact with the Department. The Radiation Safety Officer has the responsibility for assuring activities involving gauges are in accordance with license conditions and the State of Colorado *Rules and Regulations Pertaining to Radiation Control*. This includes the conducting of leak tests at the required frequency, overseeing all aspects of personnel radiation dose monitoring, user training, record keeping, and an annual review of the radiation protection program.
- C.15. Each sealed source containing radioactive material shall be tested for leakage and/or contamination in accordance with the conditions of the radioactive materials license. If a sealed source is determined to be leaking, it shall be immediately removed from use and the Department notified. Any repair or disposal of the gauge containing the leaking source shall be in accordance with the State of Colorado *Rules and Regulations Pertaining to Radiation Control*.

- C.16. A physical inventory of each sealed source or device containing radioactive material authorized by the license shall be conducted at intervals not to exceed six months or an alternate frequency specifically approved by the Department. The licensee shall retain each inventory record for 5 years. The inventory records shall contain the date of the inventory, the model number of each sealed source or device, the serial number if one has been assigned, the identity of each source radionuclide and its estimated activity, the location of each sealed source or device, and the name of the individual who performed the inventory.
- C.17. Disposal or transfer of radioactive materials shall only be to persons licensed to receive these materials. A leak test shall be performed on each gauge to be disposed or transferred within the six months prior to the disposal or transfer. Verification of the recipient's license authorization shall be made prior to disposal or transfer. Copies of disposal and transfer records (including leak tests and a copy of the recipient's license) will be maintained.
- C.18. A written radiation protection program has been established to assure compliance with the provisions of Part 4 of the State of Colorado *Rules and Regulations Pertaining to Radiation Control*. This program includes a documented annual review of training, procedures, and the doses to workers and the public to assure that doses are as low as reasonably achievable (ALARA).
- C.19. A copy of the State of Colorado *Rules and Regulations Pertaining to Radiation Control*, Notice to Employees, current Radioactive Materials License, written operating and emergency procedures, and appropriate caution signs will be posted as required by the Regulations. A copy of the current radioactive materials license shall accompany each gauge to temporary job sites.
- C.20. Documentation and records required by the State of Colorado *Rules and Regulations Pertaining to Radiation Control* will be maintained for inspection by the Department. This will include copies of written procedures, personnel exposure reports, use logs, leak tests, results of annual ALARA program reviews, documentation of training, Radiation Safety Officer approval of users, and public dose surveys or calculations.
- C.21. The applicant named in Item 2 shall remain responsible for control and ultimate disposal of all radioactive materials possessed under a radioactive materials license issued by the Department. The requirements of the license and the State of Colorado *Rules and Regulations Pertaining to Radiation Control* will remain in effect until the termination of the license by the Department, even if the license has expired.

**CERTIFICATE**

The applicant and each official executing this certificate on behalf of the applicant named in Item 2, certify that all information contained herein, including any supplements attached hereto, is true and correct to the best of our knowledge and belief. The applicant agrees to abide by all commitments herein, and the requirements of the radioactive materials license and the State of Colorado *Rules and Regulations Pertaining to Radiation Control*.

Management Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Typed or Printed Name: \_\_\_\_\_

Title of Official: \_\_\_\_\_

Radiation Safety Officer Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Typed or Printed Name: \_\_\_\_\_

OR-RH-12.3P Attachment A  
Calculations of Public Doses for Gauge Storage Areas

1. Transport Index (TI) from gauge shipping label. TI = \_\_\_\_\_ mR/hr
2. Maximum number of gauges to be authorized on license = \_\_\_\_\_ gauges.
3. Estimated exposure rate at 1 meter from storage area (line 1 x line 2) = \_\_\_\_\_ mR/hr
4. Distance to nearest member of the public = \_\_\_\_\_ meters.
5. Exposure rate adjustment due to distance from storage area (line 4 x line 4) = \_\_\_\_\_
6. Exposure rate adjustment due to shielding added to storage area \_\_\_\_\_  
no shielding: enter 1.0  
8 inch solid or concrete filled cinder block: enter 0.1  
16 inch solid or concrete filled cinder block: enter 0.01  
2 inches of steel or 1 inch of lead: enter 0.1
7. Estimated exposure rate to nearest member of the public  
(line 3 ÷ line 5) x (line 6) = \_\_\_\_\_ mR/hr
8. Exposure period for members of the public: \_\_\_\_\_ hours/year  
for residence, separate buildings, adjacent  
suites, or areas not controlled by licensee: enter 8760  
for company employee working 40 hrs/wk: enter 2000  
for part time employee or visitors: enter best estimate of actual time
9. Occupancy period adjustment for members of the public: \_\_\_\_\_  
Enter 1 for: offices, work areas, living quarters, areas not controlled by  
licensee  
Enter 0.2 for: hallways, employee lounges and bathrooms  
Enter 0.125 for: hallway doors  
Enter 0.05 for: storage rooms, public bathrooms, outdoor seating areas,  
unattended waiting and vending areas  
Enter 0.025 for: unattended sidewalks, parking lots and drop off areas, attics,  
stairways
10. Estimated annual dose to nearest member of the public  
(line 7 x line 8 x line 9) = \_\_\_\_\_ mR per year

If Line 7 is greater than 2 mR/hr for unrestricted areas or Line 10 is greater than 100 mR per year then you do not meet public dose limits. You can reduce the number of gauges to be authorized, relocate or change the configuration of your storage area to increase distances, or add shielding to the storage area. Make appropriate changes and recalculate. It may be necessary to calculate the dose rate for more than one location in the vicinity of storage area.

**Instructions for the completion of Attachment A**  
**Calculations of Public Doses for the Gauge Storage Area**

1. Consult your gauge manufacturer for the correct gauge Transport Index or enter 0.9.
2. Your storage facility must be able to meet the dose limits for the maximum number of gauges to be listed on the license, even if you will actually have fewer gauges.
3. The actual exposure rate may vary from this estimate due to the storage geometry.
4. **Note:** The nearest member of the public may be within your facility, outside, in an adjacent suite, or directly over or under the gauge storage area. ***Separate calculations should be made for each area in question to ensure that public dose limits are met for all areas.***
5. This is an adjustment based on the inverse square law.
6. Ply wood and drywall provide little shielding. If your shielding differs from that listed in Item 6 of the attachment, please contact the Radiation Management Unit to discuss the correct value to enter.
7. If the estimated exposure rate exceeds 2 mR/hr in any area where the public has unrestricted access, you do not meet the requirements of Section 4.14.1.2 of the regulations. Your options to address these requirements include: **a reduction in the number of gauges** to be authorized on the license, relocating or reconfiguring the storage area **to increase the distance, adding shielding, or controlling access to the area** where the radiation levels are too high. ***A combination of increased distance and added shielding is very effective in reducing the exposure rate in a specific area.***
8. The exposure period may be significantly different for various areas in the vicinity of the gauge storage area. ***Separate calculations should be made for each area in question to ensure that public dose limits are met for all areas.***
9. If you have questions regarding the occupancy factor, please contact the Radiation Management Unit to discuss the correct value to enter.
10. If the estimated exposure rate exceeds 100 mR/year in any area where the public has access, you do not meet the requirements of Section 4.14.1.1 of the regulations. Your options to address this requirement include: **a reduction in the number of gauges** to be authorized on the license, relocate or reconfigure the storage area **to increase the distance, add shielding, or control access to the area** where the radiation levels are too high. ***A combination of increased distance and added shielding is very effective in reducing the exposure rate in a specific area.***