

The seal of the State of Arizona is faintly visible in the background. It is a circular emblem with the text "GREAT SEAL OF THE STATE OF ARIZONA" around the perimeter. Inside the circle, there is a shield with a banner that reads "DITAT DEUS". Below the shield, the year "1912" is inscribed, flanked by two stars.

**ARIZONA RADIATION REGULATORY AGENCY  
REGULATORY GUIDE**

**FIXED GAUGE**

**TABLE OF CONTENTS**

ARRA FG ..... Application ..... Pages 1 - 3

ARRA Guide ..... Guide for the Preparation of Application for  
Fixed Gauge ..... Pages 4 – 9

Attachment A..... Training and Experience – Authorized User or  
Radiation Safety Officer..... Pages 10 – 11

Attachment B..... Duties of the Radiation Safety Officer ..... Pages 12 – 13

Attachment C..... Calibration of Survey Instruments..... Pages 14 – 15

    Figure C-1 ..... Survey Meter Calibration Report .....Page 16

Attachment D..... Radiation Safety Program for Fixed Gauges..... Pages 17 – 18

Emergency Procedures ..... Loss, Theft, Fire, Explosion or Vehicle Accident .....Page 19

Attachment E ..... Addendum to Leak Test Program.....Page 20

Item 23..... Legal Structure of the Applicant .....Page 21

**ARRA – FG**

July 2011

ARIZONA RADIATION REGULATORY AGENCY  
APPLICATION FOR RADIOACTIVE MATERIALS LICENSE  
**FIXED GAUGE**

**INSTRUCTIONS:** Complete all items in this application for new license or the renewal of an existing license. Use supplemental sheets where necessary. Item 29 must be completed on all applications. **Mail the original to: Arizona Radiation Regulatory Agency, 4814 South 40<sup>th</sup> Street, Phoenix, Arizona 85040.** Upon approval of this application, the applicant will receive an Arizona Radioactive Materials License.

1a. **NAME AND MAILING ADDRESS OF APPLICANT**  
(Institution, Firm, Individual Owner, etc.) **Include Zip Code**

1b. **STREET ADDRESS(S) AT WHICH RADIOACTIVE MATERIAL WILL BE USED** (If different than 1a.) **Include Zip Code**

2. **PERSON TO CONTACT REGARDING THIS APPLICATION:**

**TELEPHONE NO:**

3. **THIS IS AN APPLICATION FOR:** (Check appropriate item)

A.  NEW LICENSE\*      B.  AMENDMENT TO LICENSE NO. \_\_\_\_\_      C.  RENEWAL OF LICENSE NO. \_\_\_\_\_

4a. **INDIVIDUAL USERS** (Name and individuals who will use or directly supervise use of Radioactive Material).

4c. **TRAINING AND EXPERIENCE** (Check one or more)

Attachment "A" completed and attached for RSO and each user.

Training previously filed under License No. \_\_\_\_\_

4b. A copy of a driver's license and social security card is required for all persons listed by name on the license.

5a. **RADIATION SAFETY OFFICER (RSO)** (Name of person designated as Radiation Safety Officer)

5b. **DUTIES OF RADIATION SAFETY OFFICER** (Check one)

Duties attached

Equivalent Duties attached

6. **RADIOACTIVE MATERIAL**

7. **SEALED SOURCE MANUFACTURER AND MODEL NUMBER OR REGISTRY NUMBER FROM REGISTRY OF SEALED SOURCES AND DEVICES**

8. **ACTIVITY OF EACH SOURCE**

A. \_\_\_\_\_

A. \_\_\_\_\_

A. \_\_\_\_\_

B. \_\_\_\_\_

B. \_\_\_\_\_

B. \_\_\_\_\_

C. \_\_\_\_\_

C. \_\_\_\_\_

C. \_\_\_\_\_

9. **DEVICE AND USE DESCRIPTION** (Make lettering correspond to lettering in items 5, 6, and 7 above)

MANUFACTURER OR DEVICE

MODEL NO.

NO. OF DEVICES

USE

A.

B.

C.

10. **TOTAL NUMBER OF DEVICES TO BE LICENSED:** \_\_\_\_\_

\*FEE REQUIRED FOR NEW LICENSE ONLY (COMPLETE ITEM NO. 24)



11. **MAINTENANCE WORK ON GAUGES** (Check one)

- Applicant will contract with manufacturer or approved consultant for all gauge installation, maintenance, relocation, calibration and/or source change.
- Applicant will do one or more of the following:  
Gauge installation, maintenance, relocation, calibration and/or source change. (Radiation detection instruments required. Complete items 12, 13 & Attachment C).  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
License No: \_\_\_\_\_

12. **RADIATION DETECTION INSTRUMENTS**

List Radiation Detection instruments possessed in this space.

MANUFACTURER	MODEL NO.	RANGE
_____	_____	_____
_____	_____	_____
_____	_____	_____

13. **CALIBRATION OF SURVEY INSTRUMENTS**

(Mandatory for all survey instruments possessed).  
(Check one)

- No radiation detection instruments possessed.
- Calibration will be done at intervals not to exceed 12 months and after each repair.

(Check one)

- Applicant will do own survey instrument calibrations
- Attachment C. calibration procedures signed and attached; or
- Equivalent procedures attached
- Calibration will be done by calibration service agency.

Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 License No: \_\_\_\_\_

14. **PERSONNEL MONITORING** (Required for non-routine use as in Item 11; not required for routine use.) (Check one)

- None (Routine use of fixed gauges only).
- Direct Reading dosimeter.
- Monthly Dosimetry exchange
- Quarterly Dosimetry exchange (TLD's).

Name and address of Dosimetry supplier.

Name: \_\_\_\_\_  
 Address: \_\_\_\_\_

15. **FACILITIES**

- Facilities and storage diagram attached.

16. **RADIATION PROTECTION PROGRAM** (Check one)

- Attachment "D" procedures attached; or
- Equivalent procedures attached.

17. **LEAK TEST PROGRAM** (Check one)

- Applicant will contract with approved outside consultant to do leak tests  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
License No: \_\_\_\_\_

- Applicant will do leak tests using approved leak test kit, mailing kit to manufacturer for counting.  
Manufacturer name: \_\_\_\_\_  
Manufacturer address: \_\_\_\_\_  
Kit number: \_\_\_\_\_

- Applicant will do own leak test including counting. Detailed procedures attached.

18. **LOCK OUT PROCEDURES**

- Lock out procedures attached.

19. **WASTE DISPOSAL** (Check one)

- Nuclear Gauge(s) containing radioactive sealed sources will be returned to manufacturer upon disposal.
- Nuclear Gauge(s) containing radioactive sealed sources will be transferred to another Licensee upon disposal.
- Nuclear Gauge(s) containing radioactive sealed sources will be transferred to a Licensed waste broker upon disposal.

20. **LICENSE FEE REQUIRED**

(See AAC Title 12, Chapter 1, Article 13)

- a. LICENSE FEE CATEGORY (Check one):  
**Fixed Gauge** (  A or  B)
- b. LICENSE FEE ENCLOSED: \$ \_\_\_\_\_  
(Fee not required for Renewal or Amendment)  
(an additional fee is assessed for each permanent storage location).

21. **LETTER TO LOCAL GOVERNING AUTHORITY** (See AAC R12-1-309.5)

- Letter to local governing authority

22. **ALARA PROGRAM**

- ALARA program initiated in accordance with R12-1-407.

23. **LEGAL STRUCTURE**

- Completed form

24. **CERTIFICATION**

- Completed form



# ARIZONA RADIATION REGULATORY AGENCY

## GUIDE FOR THE PREPARATION OF APPLICATIONS FOR FIXED GAUGE LICENSES USING SMALL QUANTITIES OF RADIOACTIVE MATERIAL

### I. PURPOSE OF GUIDE

This guide describes the type of information needed by the Agency staff to evaluate an application for a specific license for laboratories and industries using fixed gauges containing radioactive material. Attachments A through D to this guide are provided to describe model duties and procedures. Each applicant should carefully read the applicable rules, model duties and procedures and then decide if the models are appropriate for its specific radiation safety needs. In the application, applicants may certify that they will follow a model procedure or may develop their own procedure and enclose it for review.

### II. FILING AN APPLICATION

An application for a license is made by completing form ARRA-FG. Some items may be completed on the form itself; however, if additional room is required, an additional sheet may be added. For any supplementary pages, identify and key each separate sheet or document submitted with the application to the item number on the application to which it refers.

All items should be completed in enough detail to allow the Agency to determine that the equipment, facilities, training and experience, and radiation safety program are adequate for a good radiation safety program.

**As most license applications are open to the general public, you may request certain information be protected while it is on file with the Agency. Personal information, such as social security numbers and driver license copies, may be of concern to you and your employees. Other information that you may want to protect includes: home addresses, home telephone numbers, dates of birth, and radiation dose information. Additionally, if submittal of proprietary information is necessary, the applicant may request that such information be handled as such and kept from public dissemination.**

The application should be filed to the address shown in Section III of this guide. The applicant should retain a copy as the applicant will be required to possess and use licensed material according to the statements and representations made in the application and any supplements to it.

### III. CONTENTS OF AN APPLICATION

This portion of the guide explains, item by item, the information requested on Form ARRA-FG. The attachments to this guide serve several different purposes, i.e., to provide additional information on certain subject areas, to provide a model procedure the licensee may adopt in response to an item on the application form, or to provide an outline the applicant may use to develop a procedure for review by the Agency staff.

Any questions concerning the new attachment can be answered by calling the licensing person at the Agency. If, after careful review of this guide, applicants have specific questions, they should contact the Radioactive Materials Program staff at:

Arizona Radiation Regulatory Agency  
Radioactive Materials Program  
4814 South 40th Street  
Phoenix, Arizona 85040  
(602) 255-4845  
Fax (602) 437-0705  
[www.azrra.gov](http://www.azrra.gov)

**Item 1a: Name and Mailing Address of Applicant**

Enter the name, mailing address and telephone number of the applicant. Specify the applicant, corporation or other legal entity by name. Individuals should be identified as the applicant only, if acting in a private capacity and the use of radioactive material is not connected with their employment for a corporation or other legal entity.

**Item 1b: Street Address(es) for Use of Radioactive Material**

List the addresses and locations where radioactive material will be used. If multiple addresses are to be used, explain the extent of use at each address and the facilities and equipment located at each place of use. The actual locations of use should be listed, whether or not they are the same as the mailing address in Item 1.A; e.g., a P.O. Box may be most suitable for Item 1.A. in some cases, but a P.O. Box does not adequately describe the location of use. Item 1.B. must be an in-state address.

**Item 2: Person to Contact**

Enter the name and telephone number (including area code) of the individual to be contacted. This individual should be familiar with the proposed radioactive materials program and be able to answer questions about the application. This individual will serve as the point of contact during the review of the application and during the period of the license, and is able to act on behalf of the license.

**Item 3: Type of Application**

Indicate whether this is an application for a new license, an amendment, or a renewal. If this application is for a new license, the appropriate license fee must accompany the application in order for the review to begin (complete Item 20).

**Item 4a: Individual Users**

List the names of all persons who will be listed on the license as users and will supervise, or direct the use of radioactive material. This list should include the individuals who supervise other individuals in training.

**Item 4b: Identification**

**The applicant must provide with the license application a copy of the social security card and driver's license for each person who will be listed on the license. It is not acceptable to only provide a listing of the applicable numbers.**

**Item 4c: Training and Experience**

Complete Form ARRA-FG Attachment A for the Radiation Safety Officer and each authorized user unless this information has been previously submitted as part of a license application. Designate which license the information was filed under.

The qualifications, training, and experience of each person should be commensurate with the material and its use as proposed in the application. The amount and type of training and experience with radiation and radioactive materials required to support a determination of adequacy by the Agency will vary with the types of maintenance procedures to be performed. As an example, an individual authorized only for routine use of the gauge will require training in the basics of radiation safety, whereas an individual authorized to perform gauge installation and relocation will require manufacturer specific training, or its equivalent, in the installation and relocation of gauges along with specific radiation safety procedures and precautions associated with the installation of gauges.

If other persons will use radioactive materials in the absence of the persons specified above, the specification of the training of such personnel should include (a.) instruction in radiation safety including topics covered and by whom taught, (b.) on-the-job training in use of radioactive materials, and (c.) determination of competency to work in the absence of supervisory personnel.

The use of radioactive materials by a person with a minimum of training and experience under controlled conditions may be justified provided it is done under the surveillance of a Radiation Safety Officer. Such minimum 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 tutorage of a licensed user.

**Item 5a: Radiation Safety Officer (RSO)**

Specify the name of the person who will be designated as the Radiation Safety Officer (RSO). This person will be responsible for implementing the radiation safety program and must therefore be readily available to the users in case of difficulty. He must be trained and experienced in radiation protection and in the use and handling of radioactive materials. In a small program not requiring a full-time RSO, the duties of the RSO may be assigned to one of the persons named under Item 4.A. above. Note, however, that it must be established that the person acting as RSO will have the opportunity to devote sufficient time to the radiation safety aspects of the program for the use of radioactive materials.

**Item 5b: Duties of the RSO**

Attachment B lists model duties for the RSO. If the model duties listed will be used, sign, date and include Attachment B with the application. If equivalent duties will be established, include them with the application. In either case, mark the appropriate box in Item 5.B.

**Items 6, 7, and 8: Radioactive Material Description**

Describe the radioactive sealed sources used by isotope, manufacturer and model number, and activity in millicuries. A separate possession limit for each nuclide must be specified. Limits requested must cover the total anticipated inventory, including stored materials and waste, and should be commensurate with the applicant's needs and facilities for safe handling.

**Item 9: Device and/or Use Description**

Provide the manufacturer and model number of the gauges to be used. Also, the use to be made of the radioactive materials must be clearly described. Sufficient detail must be given to allow a determination of the potential for exposure to radiation and radioactive materials, both to those working with the materials and to the public.

**Item 10: Number of Gauges to be Licensed**

Provide the total number of gauges which will be possessed under this license. This should include all makes and models.

**Item 11: Maintenance Work on Gauges**

If the applicant will not perform any services or repairs on the gauges, to include installation, maintenance, relocation, calibration, and/or source exchange, mark the appropriate box under Item 11 on Form ARRA-FG. Also, indicate under Item 11, the name, address and license number of the consultant or firm which will perform all the above services on the gauges. No radiation detection instruments are required.

If the applicant will perform any of the above services or maintenance, then it will be necessary to provide additional items with the application. Indicate such by marking the appropriate box under Item 11 and completing Items 12 and 13.

**Item 12: Radiation Detection Instruments**

Specify for each radiation detection instrument used in the radiation safety program the manufacturer's name, model number, the number of each type of instrument available, and the range (milliroentgens per hour).

**Item 13: Calibration of Detection Instruments**

If the applicant does not need and does not plan to procure a radiation survey instrument, as indicated in Item 11 above, mark the box labeled "No radiation detection instruments possessed. N/A". Go to Item 14.

If radiation detection instruments are possessed, they must all be calibrated. Designate the frequency of calibration. Designate whether the applicant will do instrument calibration, or whether the applicant will contract with approved service agency for instrument calibration. Attachment C is provided for the convenience of the applicant as acceptable procedures for calibrating dose rate instruments. The applicant may sign, date and submit Attachment C or equivalent procedures for the calibration of dose rate instruments.

**Item 14: Personnel Monitoring**

AAC R12-1-419 specifies when personnel monitoring is required. If film badge or thermoluminescent dosimeters (TLD) will be used, specify the name of the organization furnishing the dosimetry service and the frequency for changing badges, dosimeters, etc. If pocket chambers or pocket dosimeters will be used, specify the useful range of the device, in milliroentgens, the frequency of reading, and the procedures for maintaining and calibrating, to include a check for drift, the devices.

If personnel dosimetry will not be used, submit calculations or documentation from radiation surveys demonstrating that it is unlikely that any individual will receive a dose equal to or greater than that indicated in AAC R12-1-419.

**Item 15: Facilities and Equipment**

Attach to the application a diagram and description of the facilities, storage areas, and equipment. If there is more than one location of use, describe in detail the facilities and equipment for each site. The proposed facilities and equipment for each operation to be conducted should be adequate to protect health and minimize danger to life and property.

**The licensee is now required to provide a copy of the sealed source and device registry description with each application (renewal). A copy should be maintained in the licensee's records.**

**Item 16: Radiation Protection Program**

If the applicant will follow the model radiation protection program listed in Attachment D, then mark the appropriate box under Item 16 on Form ARRA.-FG, sign, date and include Attachment D with the application. If the procedures in Attachment D will not be used, mark the appropriate box under Item 16 and attach a copy of equivalent procedures to the application.

**Item 17: Leak Test Program**

Indicate the method by which the leak test program will be performed by checking the appropriate box under Item 17.

If the applicant will contract with an outside consultant to both perform and analyze the leak tests, give the name, address and license number of the outside consultants:

If the applicant will make use of an approved leak test kit and mail the kit back to the manufacturer for counting, list the kit manufacturer name, address and kit number on the application under Item 17. On Attachment E describe your leak test program as specified below.

- A. If the applicant uses survey instruments in their program, a signed statement indicating that leak test samples will be surveyed prior to mailing to ensure that radiation levels on the surface of the leak test package are less than 0.5 mR/hr and in compliance with postal regulations; or
- B. If the applicant has no survey instruments in their program, a signed statement indicating where the applicant will take leak test samples to survey them in order to be in compliance with the postal regulations listed in A above; or
- C. Hand delivered to appropriately licensed, leak test service for analysis.

If the applicant will perform both the leak test and analysis of the sample, provide a copy of detailed procedures to be followed in the performance of the tests. Included should be complete information on the instrument which will be used to count the sample, complete information on the radioactive source used to calibrate the instrument (to include accuracy), sample calculations indicating the method used to derive the final value for the leak test results, and the name(s) and pertinent experience of person(s) who will perform the analysis.

**Item 18: Lock-out Procedures**

Attach to the application, a copy of the lock-out procedures which will be followed by the applicant. These procedures should indicate when the lock-out procedures are to be implemented, by whom implemented, and a complete description of the lock-out procedure themselves.

**Item 19: Waste Disposal**

Check the appropriate box indicating how the radioactive material contained in the gauges will be disposed of when no longer required.

**Item 20: License Fee Required**

If this is a request for a new license, the appropriate license fee must accompany the application before review of the application can begin. Consult Arizona Administrative Code, Title 12, Chapter 1, Article 13 for determining the license fee category and appropriate fee. All checks should be made out to the Arizona Radiation Regulatory Agency.

**Item 21: Letter to Local Governing Authority**

AAC R12-1-309.5 requires that all applicants for a radioactive materials license demonstrate that a letter has been sent, return receipt requested, to the Mayor's office of the city or town, or if not within an incorporated community, to the County Board of Supervisors in which the applicant proposes to operate which describes the nature of the proposed activity involving radioactive materials and the facility, including use and storage areas. A copy of this letter must be included in the application package.

**Item 22: ALARA Program**

An ALARA Program in conjunction with an annual review of the Radiation Safety Program are required in AAC R12-1-407. Mark the box and attach to the application a description of the proposed annual review and how exposure to radiation will be kept as low as reasonably achievable (ALARA)

**Item 23: Legal Structure Form**

This form must be completed before the application will be processed by the Agency. Feel free to call (602) 255-4845 if there are any questions.

**Item 24: Certification**

Item 24 must be completed on all applications. The form must be dated and signed by the corporate management (not the Radiation Safety Officer unless the management has filed with the Agency a statement authorizing the RSO to sign all applications and radiation safety program commitments)

**IV. AMENDMENTS TO LICENSES**

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

Applications for license amendments may be filed on the application form or in letter form. The application should identify license by license number. References to previously submitted information and documents should be clear and specific and should identify the pertinent information by date, page and paragraph. Amendment applications should be signed and dated by a representative of the licensee's administrative management. An original and one copy of the application for amendment should be prepared, and the original copy should be submitted, as in the case for new or renewal applications.

Retain one copy of the application, with all attachments, because the license will require, as a condition, that the institution follow the statements and representations set forth in the application and any supplement to it.  
Mail the original to:

Arizona Radiation Regulatory Agency  
Radioactive Materials Program  
4814 South 40th Street  
Phoenix, Arizona 85040  
(602) 255-4845  
[www.azrra.gov](http://www.azrra.gov)

**ATTACHMENT A**

**TRAINING AND EXPERIENCE  
AUTHORIZED USER or RADIATION SAFETY OFFICER**  
(Use supplemental sheets if necessary)

<b>1. NAME OF USER/RSO</b>	<b>2. DATE OF APPLICATION</b>
----------------------------	-------------------------------

**3. TRAINING FOR USE OF FIXED GAUGES** (Briefing by Manufacturer/RSO/Authorized User)

GAUGE	MANUFACTURER	TYPE OF GAUGE	ISOTOPE	ACTIVITY	DATE OF BRIEFING	BY WHOM	REMARKS
1.							
2.							
3.							
4.							

**4. NON-ROUTINE USE OF FIXED GAUGES** (Gauge installation, maintenance, relocation, calibration, and/or change)

Certificate of Training attached for each nuclear gauge you are certified by the manufacturer as qualified to service.

**AUTHORIZED USER HISTORY**

GAUGE	MANUFACTURER	MODEL NO.	ISOTOPE	ACTIVITY	RAM LICENSE AUTHORIZATION TO SERVICE NUCLEAR GAUGE			LICENSE NO.	STATE
					FROM - TO	YEARS	MONTHS		
1.									
2.									
3.									
4.									

**5. TRAINING RECEIVED IN BASIC RADIOISOTOPE HANDLING TECHNIQUES**

TYPE OF TRAINING	WHERE TRAINED	DURATION OF TRAINING	FORMAL COURSE	ON THE JOB
A. PRINCIPLES AND PRACTICES OF RADIATION			<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO
B. RADIOACTIVITY MEASUREMENT STANDARDIZATION AND MONITORING TECHNIQUES AND INSTRUMENTS			<input type="checkbox"/> YES   NO	<input type="checkbox"/> YES <input type="checkbox"/> NO
C. MATHEMATICS AND CALCULATIONS BASIC TO THE USE AND MEASUREMENT OF RADIOACTIVITY			<input type="checkbox"/> YES   NO	<input type="checkbox"/> YES <input type="checkbox"/> NO
D. BIOLOGICAL EFFECTS OF RADIATION			<input type="checkbox"/> YES   NO	<input type="checkbox"/> YES <input type="checkbox"/> NO

**6. EXPERIENCE WITH RADIOACTIVE MATERIALS**

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE

**7. RESUME OF RADIATION WORK EXPERIENCE**

DATES OF EMPLOYMENT	EMPLOYER/ADDRESS	JOB TITLE/DUTIES

**ATTACHMENT B****DUTIES OF THE RADIATION SAFETY OFFICER**

1. Ensure that all uses of radiation are conducted safely, adhere to the conditions of the license and license application, and result in exposures to personnel which are As Low As Reasonably Achievable (ALARA).
2. Act as liaison agent with regulatory authorities, be available for assistance in inspection and audits, and notify the Agency:
  - A. In writing before making any change which would render the Application for Radioactive Materials License or Radioactive Materials License no longer accurate.
  - B. Immediately in the event of radiation accident or incident (including high dosimeter reading).
  - C. Within 5 days of any positive leak test result of a sealed source.
  - D. Within 30 days in a report stating remedial action taken after accident or incident.
3. Be familiar with all applicable rules and regulatory guides, and assure that license applications are properly filled out and are submitted in a timely manner.
4. Ensure that all surveys, calibrations, and leak tests are performed in a timely manner and by authorized personnel.
5. Establish and maintain record systems as applicable for radiation area surveys, wipe tests, leak tests, calibration of instruments, personnel dosimetry reports and other records as required.
6. If dosimetry is required, advise individual radiation workers of each high exposure report, and conduct a survey to determine the cause of all overexposures so as to preclude reoccurrence. Establish an ALARA program in accordance with R12-1-407.
7. Procure and maintain an adequate number of operable and properly calibrated radiation survey instruments, of the appropriate range and type, and properly calibrated counting equipment (if applicant will assay contamination and leak tests).
8. Develop and maintain up-to-date operating and emergency procedures.
9. Perform, or cause to be performed, a semi-annual physical inventory of all sealed sources received and possessed.
10. Post conspicuously "Notice to Employees", Form ARRA-6 and notices of items of noncompliance resulting from Agency inspections.
11. Supply employers of terminated radiation personnel with radiation exposure records as required.
12. Establish and cause to be maintained inventory control of radioactive material, ensuring inventory never exceeds amounts licensed.
13. Keep, or cause to be kept, records of receipts of incoming radioactive material and surveys of incoming and outgoing shipments.
14. Ensure that all incoming and outgoing radioactive shipments are properly packaged and labeled according to DOT requirements, and that shipments are accompanied by proper shipping papers.

15. Assure that radioactive materials are disposed of properly, and that records are maintained of all radioactive material disposed.
16. Instruct workers who work or may work in or near the vicinity of the fixed gauge or gauges of all applicable radiation safety rules and procedures: 1.) for all new personnel, 2.) with each change in license condition or safety program, and 3.) instruction in the ALARA program and philosophy.
17. Apprise and inform management of radiation safety status and their responsibilities in maintaining an adequate radiation safety program.
18. Take charge in all emergency situations (loss, theft, fire, explosion, etc.) to ensure correct emergency procedures are carried out, including notification of the appropriate personnel or agencies. Also, evaluate the situation that led to the emergency in order to reduce the chance of reoccurrence.
19. Assure that radioactive materials are used only by individuals authorized by the license.
20. Assure that radioactive materials are properly secured against unauthorized removal.
21. Review the Radiation Safety Program on an annual basis in accordance with R12-1-407.

---

**SIGNATURE**

---

**DATE**

**ATTACHMENT C****CALIBRATION OF SURVEY INSTRUMENTS**

Radiation survey meters shall be calibrated with a radioactive source. Electronic calibrations are not acceptable.

1. The source shall approximate a point source.
2. The source activity or exposure rate at a given distances shall be traceable by documented measurements to a standard source certified within five percent accuracy to the National Institute of Standards and Technology (NIST) calibrations.
3. The frequency shall be at intervals not to exceed 12 months and after servicing. Battery changes are not considered "servicing".
4. A source that has the same photon energy as the environment in which the calibrated device will be employed should be used for the calibration.
5. The exposure rate measured on the instrument scale shall differ from the true exposure rate by less than 10 percent at the point of measurement.
6. The source used must be of sufficient strength to give an exposure rate of 700 mR/hr at 20 cm. Minimum activities of typical sources are 85 mCi of Cs-137, 21 mCi of Co-60, and 34 mCi of Ra-226.
7. The inverse square law and the radioactive decay law must be used to correct for change in exposure rate due to changes in distance or source decay.
8. The following three kinds of scales are frequently used on survey meters:
  - A. Meters on which the user selects a linear scale must be calibrated at no less than two points on each scale. The points should be at approximately 1/3 and 2/3 of full scale.
  - B. Meters that have a multidecade logarithmic scale must be calibrated at no less than one point on each decade and no less than two points on one of the decades. Those points should be at approximately 1/3 and 2/3 of the decade.
  - C. Meters that have an automatically ranging digital display device for indicating rates must be calibrated at no less than one point on each decade and at no less than two points on one of the decades. Those points should be at approximately 1/3 and 2/3 of the decade.
9. A record must be made of each survey meter calibration.
10. At the time of calibration, the apparent exposure rate from a built-in or owner-supplied check source must be determined and recorded.
11. The report of a survey meter calibration should indicate the procedure used and the data obtained. The description of the calibration will include:
  - A. The owner or user of the instrument;
  - B. A description of the instrument that includes manufacturer, model number, serial number, and type of detector;
  - C. A description of the calibration source, including exposure rate at a specified distance on specified date, and is NIST traceable;

- D. For each calibration point, the calculated exposure rate, the indicated exposure rate, the deduced correction factor (the calculated exposure rate divided by the indicated exposure rate), and the scale selected on the instrument;
  - E. The reading indicated with the instrument in the "battery check" mode (if available on the instrument).
  - F. The angle between the radiation flux field and the detector (for external cylindrical GM or ionization-type detectors, this will usually be "parallel" or "perpendicular" indicating photons traveling either parallel with or perpendicular to the central axis of the detector; for instruments with internal detectors, this should be the angle between the flux field and a specified surface of the instrument);
  - G. For detectors with removable shielding, an indication of whether the shielding was in place or removed during the calibration procedure;
  - H. The apparent exposure rate from the check source; and
  - I. The name of the person who performed the calibration and the date on which the calibration was performed.
12. The following information will be attached to the instrument as a calibration sticker or tag:
- A. The source that was used to calibrate the instrument;
  - B. The proper deflection in the battery check mode (unless this is clearly indicated on the instrument);
  - C. For each scale or decade, one of the following as appropriate:
    - 1. The average correction factor; or
    - 2. A graph or graphs from which the correction factor for each scale or decade may be deduced;
  - D. The angle between the radiation flux and the detector during the calibration; and
  - E. The apparent exposure rate from the check source.
13. See Figure C-1 for a form which may be used. If a different form will be used, attach a copy to this Attachment when submitted with the application.

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**SIGNATURE**

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**DATE**



**ATTACHMENT D****RADIATION SAFETY PROGRAM FOR FIXED GAUGES**

The following Radiation Protection Program will be followed at all times. A copy of these procedures shall be maintained in the licensee's radioactive materials license file and copies shall be posted for users of the fixed gauges.

1. Only authorized users shall use or supervise the use of radioactive material.
2. All unauthorized persons shall be kept out of the gauge operating area.
3. The licensee shall not open a source containing radioactive material.
4. No one shall be permitted to touch or handle directly any unshielded sources.
5. Sources shall be locked in the safe (off, closed, or stored) position when not in use.
6. Security of sources shall be maintained at all times.
7. If any malfunction of the gauges occurs, immediately notify the Radiation Safety Officer.
8. The licensee may not install, relocate, do maintenance upon, calibrate, exchange sources, or otherwise service the fixed gauges unless specifically authorized to do so by conditions of the Radioactive Materials License.
9. The licensee shall perform and document radiation surveys of each device containing radioactive material at the time of device installation, relocation or maintenance. Survey records shall be maintained until disposal or relocation of the device.
10. Transportation of nuclear gauges (if any) shall be carried out in accordance with the requirements of Arizona Administrative Code, Title 12, Chapter 1, Article 15 and Department of Transportation (DOT) regulations (49 CFR Parts 100 to 199).
11. The Radiation Safety Officer shall maintain the following material: The Radioactive Materials License and all associated correspondence; A copy of the plant Emergency Procedures; A copy of the plant Operating Procedures relating to the use of radioactive material; and a copy of the Arizona Administrative Code (AAC) Title 12, Chapter 1 (the Arizona rules for the use of radioactive material).
12. Fixed gauges and radioactive materials storage and use areas shall be posted with "CAUTION RADIOACTIVE MATERIALS" signs. Also, Form ARRA-6, Notice to Employees, shall be posted in a conspicuous place wherever individuals work in or frequent any portion of a restricted area. Authorized users shall also be responsible for posting the above at all field locations.

**IF PERSONNEL DOSIMETRY IS REQUIRED, THE LICENSEE WILL ALSO ADHERE TO THE FOLLOWING:**

13. Authorized users and other persons working in the proximity of the nuclear sources when they are being transported or used, shall wear appropriate personnel dosimeters, such as direct reading dosimeters, film badges, or TLDs. Each worker shall be assigned their own dosimeter. On no occasion shall a person wear a dosimeter assigned to another individual.
  - A. Direct reading dosimeters shall be checked annually for proper operation and drift.
  - B. Direct reading dosimeters found to read  $\nabla$  20% or greater than what should be recorded as an

exposure when tested for proper operation shall be replaced.

- 14. Personnel dosimeters will be kept in a cool, dry, low radiation background area when not in use.
- 15. Personnel dosimeters shall be processed immediately if there is any indication of a high or unusual exposure, or if a dosimeter is damaged in any way, the Radiation Safety Officer shall investigate all high or unusual exposures, and take corrective action, if necessary, to prevent other such high exposures. Notification procedures shall be in accordance with AAC R12-1-444 and R12-1-445.
- 16. Exposure records shall be kept on ARRA Form Z or equivalent which shall include all information required on ARRA Form Z. Each entry shall be for a period of time not exceeding one calendar quarter.
- 17. In accordance with AAC R12-1-1004, the licensee shall supply such employees with exposure data on request or termination of employment or hiring by another radiation work employer using ARRA Form Y.

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**SIGNATURE**

---

**DATE**

**EMERGENCY PROCEDURES**

**LOSS, THEFT, FIRE, EXPLOSION, OR VEHICLE ACCIDENT**

1. SECURE THE AREA AROUND THE ACCIDENT. KEEP UNAUTHORIZED PERSONS AWAY. ALERT PEOPLE IN THE VICINITY OF THE PRESENCE OF RADIOACTIVITY AND A POSSIBLE HAZARD.
2. DO NOT LEAVE THE SITE. Send a helper or onlooker to notify the following:
  - A. Radiation Safety Officer: \_\_\_\_\_  
Work Phone: \_\_\_\_\_ Home Phone: \_\_\_\_\_
  - B. Local Police (where applicable): \_\_\_\_\_
  - C. Local Fire Dept. (where applicable): \_\_\_\_\_
3. The Radiation Safety Officer in turn must notify the Arizona Radiation Regulatory Agency at 255-4845 during normal duty hours or the Department of Public Safety at 223-2212 after normal duty hours, and other local authorities as indicated.
4. The radiation worker should inform emergency personnel of the radiation hazard possibly existing, should help them keep the area secure, and should explain to the emergency personnel the location of the radioactive device and the extent of the possible hazard. In no case should the radiation worker leave the site until qualified experts arrive, unless, of course, the worker is seriously injured or incapacitated, and must be removed from the site by emergency personnel.

**ALTERNATE NAMES AND TELEPHONE NUMBERS:**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_  
**SIGNATURE**

\_\_\_\_\_  
**DATE**

**ATTACHMENT E**

**ADDENDUM TO LEAK TEST PROGRAM**

- A.  Leak tests will be performed at intervals not to exceed six months.
- B.  Leak tests will be performed at intervals not to exceed 12 months.
- C.  Leak tests will be performed at intervals not to exceed \_\_\_\_\_ months.

(If frequency is unknown, contact the manufacturer.)

(Check One)

YES    NO

- D.      The leak test samples will be surveyed prior to mailing to ensure that radiation levels on the surface of the leak test package are less than 0.5 mR/hr and in compliance with postal regulations.
- E.      If the applicant has no survey instruments in their program, the leak test samples will be taken to a facility possessing a calibrated survey instrument for survey to meet the postal regulation listed in D. above.
- F.      The leak test sample shall be hand delivered to a local, appropriately licensed, leak test service for analysis.

\_\_\_\_\_  
**SIGNATURE**

\_\_\_\_\_  
**DATE**

**ITEM 23**

**LEGAL STRUCTURE OF THE APPLICANT**

8. **LEGAL STRUCTURE OF APPLICANT**

An Individual       A Partnership       A Limited Liability Corporation       A Corporation   
 An Unincorporated Association       City/County/State Government

A Partnership

Please provide the name and address of each individual or legal entity owning a partnership interest in the applicant.

Please state the percentage ownership of the applicant partnership held by each of the individuals or legal entities listed above.

A Limited Liability Corporation

Memberships

Ownerships

A Corporation

**STOCK OF APPLICANT CORPORATION**

# AUTHORIZED SHARES TOTAL SUBSCRIBERS	# ISSUED SHARES	# SUBSCRIBED SHARES	TOTAL STOCKHOLDERS

Is the applicant corporation directly or indirectly controlled by another corporation or other legal entity?

If "yes" give name and address of other corporation or legal entity and describe how such control exists and the extent of control.

For all entities, please identify the State, District, or Territory under the laws of which the applicant is organized. Include the name and address of any Arizona agent for the applicant.

9. The applicant or any official executing this application on behalf of the applicant certifies that this application has been prepared in accordance with Arizona Administrative Code, Title 12, Chapter 1, and all information contained on this form, including any supplements and attachments, is true and correct to the best of his or her knowledge and belief.

DATE

APPLICANT (ITEM 1)

BY

(TITLE)

\_\_\_\_\_