

## APPENDIX C

### RADIATION SAFETY TRAINING PROGRAM

#### I. Introduction

The handling and use of a fixed nuclear gauge are restricted to trained personnel. Individuals working directly with the gauge must be an **Authorized User**--an individual that has completed an approved formal radiation safety class and is specifically listed on a Radioactive Material License.

There are three training components associated with using radioactive material for fixed gauging. Authorized User Training will be provided to individuals who will be independently working directly with or who will be directly supervising the use of the radioactive material. Hazardous Materials (Hazmat) Employee Training will be provided to any worker associated with the packaging and transportation of radioactive material. Ancillary Personnel Radiation Awareness Training will be provided to all personnel who may be near the radioactive material (for example, work station near a permanent or temporary storage area for radioactive material) during their work. The training will be conducted at the frequency specified in the following table:

#### Training Requirement

#### Frequency of Training

- |   |                                  |
|---|----------------------------------|
| • Authorized User Training (including individuals who are supervised by Authorized Users) | Initial; Annual Refresher        |
| • Hazardous Materials (Hazmat) Training   | Initial; Refresher every 3 years |
| • Ancillary Personnel Radiation Awareness Training  | Initial; Annual Refresher        |

#### II. Authorized User Training

- A. Radioactive material will only be used by individuals who have completed a formal radiation safety training program. Authorized Users will complete a training program which has been approved by the Arkansas Department of Health. Any third party course offered by a private company or independent consultant may be used, provided the Department approves the training.

If in-house radiation safety training is provided, it will be conducted in accordance with a training program that has been approved by the Department and incorporated into the company's radiation protection program.

**Criteria for acceptable Authorized User radiation safety training is provided in Attachment 1 of this Appendix.**

- B.** Operating and Emergency (O&E) procedures, including **Lockout Procedures**, are a required training topic. Unless training in the O&E procedures is addressed during third party training and documentation is provided by the trainer demonstrating its inclusion in the course, in-house training in O&E procedures will be provided. O&E procedures training will be conducted by the RSO or another qualified individual and separate documentation of O&E procedures training will be provided for each worker.
- C.** Prior to working with radioactive material, packaging or transporting radioactive material, all Authorized Users and other individuals who may be supervised by Authorized Users in working with the radioactive material, will receive the general radiation safety training as required by the Rules and Regulations for Control of Sources of Ionizing Radiation, Paragraph RH-2803, "Instructions to Workers". The following instructions will be provided:

- ◆ Information on the storage and use of radioactive material, including Operating and Emergency Procedures.
- ◆ The health protection problems associated with exposure to radiation or radioactive material
- ◆ Precautions and procedures used to minimize exposures
- ◆ Applicable provisions of Arkansas' radiation control regulations and the company's radioactive materials license
- ◆ Workers' responsibility to report any unsafe conditions in the workplace
- ◆ Appropriate responses to warnings made in the event of incidents having the potential to involve radiation exposure
- ◆ Reporting requirements for occupational radiation exposures described in Paragraph RH-2804, "Notifications and Reports to Individuals".

This portion of the training will typically last 2 - 4 hours. The duration may vary based on attendees' comprehension of the topics covered. A question and answer session will be held at the end of the training period, and attendees will be encouraged to request clarification as necessary during the presentation.

- D.** Individuals performing non-routine maintenance such as installation, initial radiation surveys, relocation, removal from service, dismantling, alignment, replacement, disposal of the sealed source, and non-routine maintenance and repair of components related to the radiological safety of the gauge. Work involving the sealed radioactive source may only be performed by specifically licensed persons. The use of a radiation survey meter is required during all non-routine maintenance.

<p><b>NOTE:</b>     <b>The training of individuals to perform non-routine operations shall be provided by the manufacturer or by another qualified third party individual specifically approved by the Department.</b></p>
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- E. Documentation of radiation safety training for each Authorized User and other individuals who may be supervised by Authorized Users in working with the radioactive material, will be maintained on file for inspection purposes.

### III. Hazmat Employee/Driver Training

- A. Radioactive material contained in fixed gauges is classified as hazardous material by the U.S. Department of Transportation (DOT). In accordance with DOT regulations (49 CFR Part 172, Subpart H) workers must complete hazmat training prior to performing work (packaging and preparing for transport) that directly affects hazardous material transportation safety. (Exception: employees can work for 90 days without the training, provided a hazmat-trained employee directly supervises them.) Refresher training must be provided at least once every 3 years.
- B. Hazmat training will include the following: general awareness/familiarization, function specific, and safety training. It will be provided either in-house or by qualified third party trainers. **Completion of the AU training can satisfy the hazmat training requirement; however, additional documentation is required (see below).**
- C. Documentation of hazmat training will be maintained for the duration of each worker's employment, plus 90 days, and will include the following information:
- The employee's name and date of most recent training completed;
  - Description, copy or location of training materials used;
  - Name and address of the person providing the training; and
  - Certification that the employee has been trained and tested as required.

### IV. Ancillary Personnel Radiation Awareness Training

- A. Ancillary personnel (office personnel, janitorial personnel, shift personnel, non-radiation workers, etc.) who may work in the general vicinity of the gauges (for example, shift tours in the vicinity of installed fixed gauges, the gauge permanent and temporary storage areas) will receive hazard awareness training to insure that these individuals understand the possible hazards, safety precautions, and emergency procedures related to the use and storage of radioactive material. This training is required by the U.S. Department of Labor, Occupational Safety and Health Administration.
- B. The training will be conducted by the RSO for ancillary personnel at the time of employment. Refresher training for all ancillary personnel will be conducted annually.
- C. The training will last about one hour and personnel will be encouraged to ask questions or request additional discussion of any topic covered in the training.
- D. Documentation of radiation awareness training for ancillary personnel will be maintained on file for inspection purposes.

## APPENDIX C

### ATTACHMENT 1

#### Course Content for Acceptable Training for Authorized Users

Classroom training may be in the form of lecture, videotape, or self-study emphasizing practical subjects important to the safe use of the gauge:

##### **Radiation Safety:**

- Radiation vs. contamination
- Internal vs. external exposure
- Biological effects of radiation
- Types and relative hazards of radioactive material possessed by the Licensee
- ALARA concept
- Use of time, distance, and shielding to minimize exposure
- Radiation survey meters
- Personnel monitoring devices
- Location of sealed source within the gauge

##### **Regulatory Requirements:**

- Applicable regulations
- License conditions, amendments, renewals
- Locations of use and storage of radioactive materials
- Material control and accountability
- Annual audit of radiation safety program
- Transfer and disposal
- Recordkeeping
- Prior events involving fixed gauges
- Handling incidents
- Recognizing and ensuring that radiation warning signs are visible and legible
- Licensing and inspection by regulatory agency
- Need for complete and accurate information
- Employee protection
- Deliberate misconduct

**Practical Explanation of the Theory and Operation for Each Gauge Possessed by the Licensee:**

- Operating and emergency procedures
- Routine vs. non-Routine maintenance
- Lock-out procedures, including radiation surveys

**On-the-job training must be done under the supervision of an AU or RSO:**

- Supervised Hands-on Experience Performing:
  - Operating procedures
  - Test runs of emergency procedures
  - Performing radiation surveys
  - Routine maintenance
  - Lock-out procedures

**Training Assessment**

Management will ensure that proposed Authorized Users are qualified to work independently with each type of gauge with which they may work. This may be demonstrated by written or oral examination or by observation.

**Note:** Additional training is required for those applicants intending to perform non-routine operations such as installation, initial radiation survey, repair, and maintenance of components related to the radiological safety of the gauge, gauge relocation, replacement, and disposal of sealed sources, alignment, or removal of a gauge from service.

**Course Instructor Qualifications**

Instructor should have:

- Bachelor's degree in a physical or life science or engineering
- Successful completion of a fixed gauge manufacturer's or distributor's course for users (or equivalent)
- Successful completion of an 8 hour radiation safety course; and
- 8 hours hands-on experience with fixed gauges

**OR**

- Successful completion of a fixed gauge manufacturer's or distributor's course for users (or equivalent)
- Successful completion of 40 hour radiation safety course; and
- 30 hours of hands-on experience with fixed gauges.

**OR**

- The applicant may submit a description of alternative training and experience for the course instructor.