

## Radiation Safety Officer Manual

### 1. Scope

- 1.1. The Radiation Safety Officer (RSO) Manual has been developed to help ensure compliance with state and federal policies regarding the safe usage and control of nuclear gauges on Alabama Department of Transportation (ALDOT) projects by providing better access to the rules and regulations that apply. The duty of the State and Area RSOs is to fulfill these requirements in accordance with Radioactive Materials License 257 as issued by the Alabama Department of Public Health (ADPH). This manual is not a guide for obtaining nuclear gauge test results such as density, moisture or asphalt content. For information regarding testing procedures, please refer to the ALDOT Testing Manual.

### 2. Abbreviations and Acronyms:

ADPH	Alabama Department of Public Health
ALARA	As Low as Reasonably Achievable
ALDOT	Alabama Department of Transportation
APNGA	American Portable Nuclear Gauge Association
BMT	Bureau of Materials and Tests
CAMMS	Construction and Materials Management System
CFR	Code of Federal Regulations
DOE	Department of Energy
M&T	Materials and Tests
NCAT	National Center for Asphalt Technologies
PEB	Product Evaluation Board
RSO	Radiation Safety Officer
TEDE	Total Effective Dose Equivalent (Whole Body Dose)
USDOT	United States Department of Transportation
U.S.NRC	United States Nuclear Regulatory Commission

### 3. Applicable Documents:

- 3.1. ADPH LG-3 "Guide for the Preparation of Applications for Licenses for the Use of Special Sealed Sources in Portable Gauging Devices"
- 3.2. ALDOT List of Qualified Materials, Sources, and Devices- List II-21 Nuclear Testing Devices.
- 3.3. ALDOT Procedures for Evaluation and Maintenance of Lists- Procedure II-21 Nuclear Testing Devices.
- 3.4. ALDOT-378 Accepting New Nuclear Moisture/Density and Thin Layer Gauges, and Calibrating/Quality Checking Used Gauges.
- 3.5. BMT-89 Daily Use Log For Nuclear Gauges.
- 3.6. BMT-90 Statement of Hand Receipt of Radioactive Materials.
- 3.7. BMT-93 Radiation Safety Inspection Area Storage Checklist.
- 3.8. BMT-94 Radioactive Materials Annual Audit.
- 3.9. BMT-100 Application for Certification

**ADPH Rules Governing Control of Radiation:**

- 3.10. ADPH 420-3-26-.01 "General Provisions"
- 3.11. ADPH 420-3-26-.02 "Licensing"
- 3.12. ADPH 420-3-26-.03 "Standards for Protection Against Radiation"
- 3.13. ADPH 420-3-26-.10 "Notices, Instructions, and Reports to Workers; Inspections"

**USDOT Regulations Governing the Transportation of Hazardous Materials:**

- 3.14. 49 CFR 171 Subpart B "Incident Reporting, Notification, DOE Approvals and Authorization"
- 3.15. 49 CFR 172 "Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, Training Requirements, and Security Plans."
- 3.16. 49 CFR 173 "General Requirements for Shipments and Packaging"
- 3.17. 49 CFR 177 "Carriage by Public Highway"

**U.S.NRC Rules Governing the Transportation and Security of Radioactive Materials:**

- 3.18. 10 CFR Part 71 "Packaging and Transportation of Radioactive Material"
- 3.19. 10 CFR Part 30 "Rules of General Applicability to Domestic Licensing of Byproduct Material"

**4. Organization:**

- 4.1. The administration of the use of nuclear gauges within ALDOT is the direct responsibility of the State RSO. The duties and responsibilities of the State RSO are as follows:
  - 4.1.1. Maintain an accurate Radioactive Materials License with the ADPH by requesting renewals and amendments as necessary. (see section 5)
  - 4.1.2. Provide the ADPH with a current listing of statewide storage locations. (see section 8)
  - 4.1.3. Maintain the required records in accordance with the ADPH. (see section 6)
  - 4.1.4. Update the ALDOT Approved Products List II-21 when necessary. (ALDOT Procedure for Evaluation and Maintenance of List II-21 Nuclear Gauges)
  - 4.1.5. Process Radiation Safety Certifications and Renewals, ensuring that authorized users have received proper training in the safe usage and handling of nuclear gauges. (see section 12)
  - 4.1.6. Ensure the security of nuclear gauges stored in the Nuclear Lab. (see section 8)
  - 4.1.7. Distribute dosimeter badges to Area RSOs and monitor exposure levels. (see section 7)
  - 4.1.8. Provide the Area RSOs with annually calibrated survey meters. (see section 7)
  - 4.1.9. Provide leak test kits to the Area RSOs and ensure that leak testing is performed at the prescribed 6-month intervals. (see section 7)
  - 4.1.10. Conduct a BMT-94 Radioactive Materials Annual Audit. (see section 6)
  - 4.1.11. End any activities that are deemed unsafe.
  - 4.1.12. Assist the Area RSOs when needed.
  - 4.1.13. Document any violations, incidents or program weaknesses that are observed; identify and ensure that corrective actions are developed and implemented.
  - 4.1.14. Dispose of nuclear gauges in accordance with the rules expressed in the Radioactive Materials License. (see section 6)

- 4.2. The administration of the use of nuclear gauges within each Area is the direct responsibility of the Area RSO. The duties and responsibilities of the Area RSO are as follows:
  - 4.2.1. Conduct monthly inspections of active storage locations (locations containing nuclear gauges) within their Area and submit the inspection reports to the Nuclear Lab for review upon the request of the ADPH. (see section 9, BMT-93)
  - 4.2.2. Ensure that all authorized users are properly trained and certified and administer Radiation Safety Refresher testing in accordance with the rules of the ADPH. (see section 12)
  - 4.2.3. Ensure that authorized users have been provided with dosimeter badges and have been instructed in the proper use and storage of dosimeter badges. (see section 7)
  - 4.2.4. Monitor radiation exposure by reviewing the quarterly dosimeter reports provided by the Nuclear Lab. (see section 7)
  - 4.2.5. Perform leak testing at the prescribed six-month intervals and return the swabs to the Nuclear Lab for processing. (see section 7)
  - 4.2.6. Properly investigate and report incidents involving nuclear gauges in accordance with emergency procedures. (see section 13)
  - 4.2.7. Identify nuclear gauges requiring repair, calibration, verification or disposal and transport them to the Nuclear Lab. (see section 6)
  - 4.2.8. Ensure that transportation of nuclear gauges within the Area is done in accordance with applicable regulations. (see section 10)
  - 4.2.9. Maintain two survey meters, providing one to the Nuclear lab for annual calibration when necessary. (see section 7)
  - 4.2.10. Maintain the required records in accordance with the ADPH. (see section 6)
  - 4.2.11. Assist the State RSO when needed.

## **5. Radioactive Materials License:**

- 5.1. ALDOT nuclear gauge use is authorized by Radioactive Material License 257, issued by the ADPH. This license specifies both the radioactive source, the quantity, and the specific nuclear gauge models and manufacturers that can be used. It also allows for repairs and maintenance of the gauges to be performed in the Nuclear Lab at the Bureau of Materials and Test. Contractors and consultants operating on behalf of ALDOT must procure their own license from ADPH to obtain or use gauges on ALDOT projects. Alabama is an "Agreement State" according to the U.S.NRC, with ADPH regulation 420-3-26 providing most of the governing rules. However, any U.S.NRC regulations that are more restrictive must be adhered to.

## **6. ALDOT Procurement and Management of Portable Nuclear Gauges:**

- 6.1. Purchase of ALDOT Nuclear Gauges- See also ALDOT-378
  - 6.1.1. An Area wishing to purchase a new gauge may do so by referring to Approved Products List "II-21 Nuclear Testing Devices". Gauges on this list have been approved by the PEB and are allowed by ALDOT's Radioactive Materials License. A copy of the license must be provided to the vendor at purchase. A copy of the license can be obtained by contacting the State RSO and/or the Nuclear Lab in Montgomery.
  - 6.1.2. After purchase, the gauge must be sent to the Nuclear Lab for calibration before being used on ALDOT Projects.

6.2. Maintenance and Calibration of ALDOT Nuclear Gauges:

6.2.1. Apart from routine cleaning, the Area technicians are prohibited from performing maintenance on nuclear gauges. Nuclear gauges must be transferred to the Nuclear Lab for all maintenance or repair work, including battery replacement for most nuclear gauge models. [ALDOT Radioactive Material License 257 condition 14]

6.2.2. Calibration of Portable Nuclear Density Gauges:

6.2.2.1. ALDOT requires annual calibration of any portable nuclear density gauges that are currently in use. This calibration is to be performed at the Nuclear Lab in Montgomery. Calibration of portable nuclear density gauges that are not currently in use is not required; however, it is recommended that multiple gauges be kept calibrated to reduce down-time. This can be done at the discretion of the Area RSO.

6.2.3. Verification of Nuclear Asphalt Content Gauges:

6.2.3.1. Although nuclear asphalt content gauges are not calibrated by the Nuclear Lab, verification of the gauge's functionality can be determined based on standardized pans used by the Nuclear Lab. This verification can help determine the functionality of the gauge and is recommended annually; however, this can be based on the discretion of the Area RSO. This verification process will not affect the settings of other asphalt mixes stored in the gauge.

6.2.4. Records of calibration, verification and maintenance are to be kept by both the Area RSO and the Nuclear Lab.

6.3. Disposal of Nuclear Gauges: 420-3-26-.03(33)

6.3.1. Nuclear gauges may require disposal based on factors such as functionality, damage or the age of the radioactive source encapsulated in the gauge (age requirements are set by USDOT certification).

6.3.2. If it has been determined that a nuclear gauge must be disposed of, the Area RSO is to contact the Nuclear Lab and arrange a transfer of the gauge. A BMT-90 transfer along with an inventory transfer will be required. The Nuclear Lab will then dispose of it properly.

6.4. Radioactive Materials Annual Audit: 420-3-26-03.(5), (BMT-94)

6.4.1. The State RSO must perform annual audits of the radiation protection program at intervals not to exceed 12 months.

6.4.2. This audit includes an annual inspection of central storage locations at the Nuclear Lab, all 10 Area Offices and a random inspection of at least one active storage location within each Area.

6.4.3. Form BMT-93 may be used for each inspection throughout the calendar year and combined to form the annual audit. Refer to form BMT-94 in conjunction with sections 6 through 13 of this manual to complete the radioactive materials annual audit.

6.4.4. Annual inspection reports are to be kept at the nuclear lab for review upon the request of the ADPH.

- 6.5. Monthly Radiation Safety Inspection: (BMT-93) (see section 9)
- 6.5.1. The Area RSOs must perform monthly inspections of storage locations within the Area, completing a form BMT-93 for each location.
- 6.5.2. Monthly inspection of approved storage locations without gauges is not required until the location again becomes an active storage facility.
- 6.5.3. These monthly inspections are considered part of the radioactive materials annual audit. Records of these inspections must be kept by the Area RSO and/or the Nuclear Lab for review upon the request of ADPH or the State RSO.
- 6.6. Record Retention: 420-3-26-.03(40) to (50)
- 6.6.1. A current copy of the Radioactive Materials License issued by the ADPH must be kept on file and made readily available upon inspection. A copy of the license can be obtained by contacting the State RSO and/or the Nuclear Lab.
- 6.6.2. Records must be kept indefinitely, "until the Agency terminates each license that authorizes the activity that is subject to the record keeping requirement".  
420-3-26-02(30)(a)2
- 6.6.3. The following records are necessary for the fulfillment of the annual radioactive materials audit. These records must be kept by the Area RSO and/or the Nuclear Lab for review upon the request of ADPH or the State RSO:
- 6.6.3.1. Records of training for Authorized Users. (see section 12)
- 6.6.3.2. Inventory and leak test records. (see section 7)
- 6.6.3.3. BMT-90 Records of transfer. (see section 11)
- 6.6.3.4. BMT-89 Daily Use Logs. (see section 8)
- 6.6.3.5. BMT-93 Radiation Safety Inspection Area Storage Checklist. (see section 6)
- 6.6.3.6. BMT-94 Radioactive Materials Annual Audit. (see section 6)
- 6.6.3.7. Records of calibration, verification and maintenance. (See section 6.2)
- 6.6.3.8. Dosimeter reports. (see section 7)
- 6.6.3.9. Records of storage location surveys. (see section 7)
- 6.6.3.10. Survey meter calibrations. (see section 7)

## **7. Protection from Radiation 420-3-26-.03**

- 7.1. "Occupational doses and doses to the public are to be kept As Low as Reasonably Achievable"(ALARA). 420-3-26-.03(5)(b)
- 7.2. "The licensee or registrant shall, at intervals not to exceed 12 months, review the radiation protection program content and implementation." 420-3-26-.03(5)(c) (see section 6)
- 7.3. ALDOT prohibits employees under the age of 18 from operating a nuclear gauge.
- 7.4. The annual occupational TEDE limit for adults is 5 rem (5000 mrem). 420-3-26-.03(6)
- 7.5. The maximum dosage to authorized users has been established at 50 mrem per week. 420-3-26-.03(6)

- 7.6. No one may be permitted to enter a radiation field of greater than 50 mrem per hour.
- 7.7. Authorized users who choose to declare a pregnancy must do so in writing. The Area RSO will then make concessions to lower prenatal radiation exposure. 10 CFR 20.1208
- 7.8. If a pregnancy is declared, the TEDE during the entire pregnancy shall not exceed 500 mrem. 420-3-26-.03(13)
- 7.9. Dosimeter badges: 420-3-26-.03(6)
  - 7.9.1. Dosimeter badges are to be worn by all authorized users when transporting, handling or operating gauges. The badges should be worn on the front of the torso between the waist and the upper chest. Badges not in use must be stored in an area away from nuclear gauges and not exposed to direct sunlight.
  - 7.9.2. The Area RSO is responsible for obtaining dosimeter badges as needed for authorized users in their area. Dosimeter badges may be obtained from the Nuclear Lab.
  - 7.9.3. Dosimeter badges must be turned in to the Nuclear Lab on a quarterly basis.
  - 7.9.4. The State RSO and/or the Nuclear Lab is responsible for collecting the dosimeter badges and must return them to the vendor for analysis.
  - 7.9.5. Dosimeter reports from the vendor analysis are to be kept on file by the Area RSO and the Nuclear Lab and made available for review upon request of the ADPH. These reports are also to be distributed to the appropriate Area RSO on a quarterly basis.
- 7.10. Survey meters: 420-3-26-.03(17)
  - 7.10.1. Two survey meters are to be supplied to each Area RSO by the Nuclear Lab.
  - 7.10.2. The survey meters will be used to determine the background radiation during monthly inspections of approved storage locations. (see section 9)
  - 7.10.3. Records of these radiation surveys are to be maintained near the storage locations for review.
  - 7.10.4. Survey meters must be sent to the Nuclear Lab for annual calibration. This must be done by sending one survey meter every 6 months (December and June), alternating to ensure a calibrated survey meter is always available in the Area Office.
- 7.11. Leak Testing: 420-3-26-.03(16)(a)2
  - 7.11.1. Nuclear gauges must be tested for leakage or contamination at intervals not to exceed 6 months.
  - 7.11.2. Records of the leak tests include the location of the gauge during testing and are used to comply with ADPH rules regarding inventory.
  - 7.11.3. The Nuclear Lab will provide leak testing kits to the Area RSO twice per year. (January and July)
  - 7.11.4. The Nuclear Lab processes the leak tests in February and August.
  - 7.11.5. The Area RSO must submit leak test swabs of the nuclear gauges in their Area to the Nuclear Lab to be analyzed.
  - 7.11.6. The Nuclear Lab must maintain records of the leak test results, reported in microcuries, for inspection by ADPH in accordance with Radioactive Material License 257 condition B.

## **8. Control and Security of Nuclear Gauges: 420-3-26-.03**

- 8.1. Gauges must be stored in a manner that prevents unauthorized use or removal. 420-3-26-.03(25)
- 8.2. Gauges shall be secured behind a minimum of two independent locks. Locks on the gauge storage case or rod handle are not counted. 10 CFR 30.34(i)
- 8.3. Gauges are to be physically inventoried every six months during leak testing (in February and August). This also applies to gauges that have been properly transferred to a non-ALDOT licensee. (see section 7)
- 8.4. A monthly inspection of active storage locations must be performed by the Area RSO to ensure the security of gauges. (see section 9, BMT-xx)
- 8.5. ALDOT is not responsible for gauges that have been properly transferred to a non-ALDOT licensee. These licensees are responsible for the control, security and storage of the transferred gauge under the rules and limitations of their radioactive materials license.
- 8.6. Form BMT-90 must be used to transfer gauges to the appropriate authorized user whenever being transferred to or from the Nuclear Lab, Area storage or an active storage location (project office, asphalt plant). (see section 11)
- 8.7. During use, the BMT-89 Daily Use Log which includes the date, name of the authorized user and location where the gauge is to be used must be displayed and properly maintained at the storage location. These records must be kept by the Area RSO for review upon the request of the ADPH or the State RSO
- 8.8. A list of approved storage locations must be maintained and submitted to ADPH every six months (in April and October), or upon request of the ADPH in accordance with Radioactive Material License 257 condition 11.
  - 8.8.1. The Area RSO is responsible for any storage location changes in their Area and must submit those changes to the State RSO and/or the Nuclear Lab.
  - 8.8.2. The State RSO and/or the Nuclear Lab is responsible for maintaining the database and the submittal of approved storage locations to ADPH.

## **9. Inspection of Approved Nuclear Gauge Storage locations: 420-3-26-03, 10 CFR part 30, (BMT-93)**

- 9.1. Verify that gauges not in use are secured behind a minimum of two independent locks. Locks on the gauge storage case or rod handle are not counted. 10 CFR 30.34(i)
- 9.2. Survey radiation levels monthly to ensure the following conditions are met:
  - 9.2.1. Gauges are stored in a manner that keeps radiation doses to individuals below 100 mrem per year. 420-3-26-.03(14)(a)(1)
  - 9.2.2. Gauges are stored in a manner that maintains radiation levels below 2 mrem in any unrestricted area. 420-3-26-.03(14)(a)(2)

- 9.3. Approved storage locations must have the following documentation posted and visible to all personnel: 420-3-26-.03(27)
  - 9.3.1. A yellow "Caution Radioactive Materials" sign.
  - 9.3.2. ADPH Form 100 "Notice of Where Copies of Documents May be Found", correctly filled out to include the name and contact number of the Area RSO. (Available on the ADPH Office of Radiation Control website)
  - 9.3.3. A copy of the ADPH Form X "Notice to Employees" (Available on the ADPH Office of Radiation Control website)
  - 9.3.4. A current ADPH "Radiological Emergency Assistance Contacts" form. (See section 13)
  - 9.3.5. A Radiological Survey Sheet.
  - 9.3.6. Properly maintained and displayed BMT-89 daily use logs. (see section 8)
  - 9.3.7. An Emergency Procedures Sheet (see section 13)

#### **10. Transportation of Nuclear Gauges: 426-3-26-.02(21), 10 CFR Part 71**

- 10.1. ALDOT prohibits the overnight storage of nuclear gauges in vehicles.
- 10.2. A properly filled out form BMT-90 and emergency procedures must remain in the driver's reach whenever a nuclear gauge is present in the vehicle. (see section 11)
- 10.3. Access to emergency contact information should be readily available.
- 10.4. Nuclear gauges must be secured by the two-lock method. Locks on the gauge storage case or rod handle are not counted. 10 CFR 30.34(i)

#### **11. Transfer of Nuclear Gauges: ADPH 420-3-26-.02(18)**

- 11.1. ALDOT form BMT-90 must be used in the transfer of all ALDOT nuclear gauges. The transferee should be an Area RSO, project engineer or authorized user who is responsible for the storage location the gauge is assigned to. Gauges transferred to the Nuclear lab must be transferred to the State RSO or a Nuclear Lab technician.
- 11.2. Records of transfer (Form BMT-90) shall be kept indefinitely.
- 11.3. Should ALDOT allow the transfer of a nuclear gauge to another organization for use on an ALDOT project, the following criteria must be met:
  - 11.3.1. The organization must be licensed by the ADPH for the use of nuclear gauges.
  - 11.3.2. The Area RSO must obtain a copy of the license from the organization.
  - 11.3.3. The Area RSO must review the organization's license to ensure the type of radioactive material, and the make and model of the gauge being transferred is listed and allowed by the license.
  - 11.3.4. If the Area RSO has determined that the organization's license allows for the transference of the gauge, the transfer is to be completed using a form BMT-90
  - 11.3.5. Once transferred, the ADPH will consider the receiving organization responsible for the gauge according to the regulations and limitations of their license.



## **12. Training and Certifications of Authorized Users 420-3-26-.10(3) & (4)**

- 12.1. Technicians must fill out and submit form BMT-100 along with a Certificate of Completion for online courses. Form BMT-100 is also filled out when attending in-person courses taught by NCAT. The Area RSOs must communicate with their training coordinator when Radiation Safety Training, Radiation Refresher Training or RSO Training is to be conducted for ALDOT Technicians.
- 12.2. Radiation safety training is a condition of ALDOT's agreement with ADPH in accordance with Radioactive Materials License 257. It is a prerequisite to asphalt and earthwork certifications; however, it is not intended to provide technicians with training concerning a gauge's function or obtaining asphalt or earthwork test results.
- 12.3. Records of training for ALDOT authorized users must be maintained for review upon the request of the ADPH or the State RSO.
- 12.4. Non-ALDOT technicians are subject to the regulation and limitations of their organization's own Radioactive Materials License. These licensees are required by the ADPH to retain records of training accordingly. ALDOT is not responsible for the retention of non-ALDOT training records. Letters or certificates of training may be submitted to the State RSO and are used for ALDOT certification purposes only.
- 12.5. Radiation Safety Technician Course 420-3-23-.03(17)(a)
  - 12.5.1. Authorized users must be adequately trained in the transportation, handling, storage and safe operation of portable nuclear gauges. ALDOT technician training is provided by NCAT and is also available to non-ALDOT technicians. They offer several in-person courses annually at various locations throughout the state. Radiation Safety training is also accepted from any USDOT Hazmat approved online courses, such as APNGA, Troxler, Instrotek and other equivalent organizations.
- 12.6. Radiation Safety Refresher Training 49 CFR 172.704(c)(2)
  - 12.6.1. All ALDOT technicians who maintain a dosimeter badge will be considered as authorized users and are required to participate in a Radiation Safety Refresher Course.
  - 12.6.2. Authorized users must receive re-certification every three (3) years by completing a Radiation Safety Refresher Course. For ALDOT technicians, these courses are administered by an RSO. Radiation Safety Refresher training is also accepted from any USDOT Hazmat approved online courses such as APNGA, Troxler, Instrotek and other equivalent organizations.
  - 12.6.3. If a Radiation Safety Refresher Exam is administered by an Area RSO, the RSO may provide a review of the material and/or question and answer session followed by a written test taken in view of the RSO. Open-book exams are allowable and non-ALDOT technicians may attend these courses at the discretion of Area personnel.
  - 12.6.4. Technicians not considered authorized users, who receive Radiation Safety Certification solely for the purpose of maintaining ALDOT Asphalt and/or Earthwork Certification may provide a letter signed by an RSO or representative to the State RSO affirming that the stated technicians do not operate or transport nuclear gauges. These technicians will be re-certified upon receipt of the letter.

12.6.5. Should an ALDOT technician previously exempted from the Radiation Refresher Exam wish to become an authorized user, the technician must contact their Area RSO, be provided with a dosimeter badge and repeat the original Radiation Safety Technician Course.

12.7. Radiation Safety Officer Training 420-3-26-.10

12.7.1. Each Area must maintain a minimum of two RSOs. RSO Training for ALDOT Technicians is provided by NCAT once a year at the Materials and Tests Bureau.

12.7.2. Non-ALDOT RSO's are not required to submit RSO training to the Department. RSO training is a requirement of each licensee's agreement with the ADPH and is not required for ALDOT certification purposes.

**13. Safety procedures: 420-3-26-.02(11), (29), 420-3-26-.03(5), (25), (26), (51), (52), (53)**

13.1. In the event of emergency situations involving nuclear gauges, the RSO must be familiar with the emergency procedures. These procedures can be found on the back of the BMT-90 transfer form and must be kept within reach of the driver during transportation of nuclear gauges and are to be posted at all storage locations. 49 CFR 172

13.2. The ADPH releases a new "Radiological Emergency Assistance Contacts" sheet every January. This sheet can be downloaded from the ADPH Office of Radiation Control website or provided by the Nuclear Lab and is to be posted at all storage locations.

13.3. In case of fire, do not move damaged containers; move undamaged containers out of fire zone.

13.4. Immediate Precautions:

13.4.1. Emergency response may be performed prior to any measurement of radiation.

13.4.2. Notify the Area and/or State RSO of accident conditions.

13.4.3. Detain uninjured persons, isolate damaged equipment and delay cleanup until so instructed by an Area RSO or the State RSO.

13.5. Possible Leakage:

13.5.1. Do not touch damaged containers or exposed contents.

13.5.2. Damage to outer container is not expected to affect sealed sources.

13.6. First Aid:

13.6.1. Use first aid treatment according to the nature of the injury.

13.6.2. Advise medical personnel that victims may have been exposed to low level, class 7 radioactive materials.

13.7. Jobsite Accidents:

13.7.1. Contact the Area and State RSOs immediately.

13.7.2. Do not touch or move the gauge.

13.7.3. Establish a safe boundary with a radius of 15 feet around the gauge.

13.7.4. Keep unauthorized personnel away from the gauge.

13.7.5. Make a visual inspection to determine if there is damage to the housing or shielding.

13.8. Automobile Accidents:

13.8.1. Call 911 and ask for an Alabama State Trooper.

13.8.2. Contact the Area and State RSOs immediately.

13.8.3. If neither can be contacted, contact the State Emergency Operations Center at 205-280-2310 or 1-800-843-0699. If contact is not established, call the Alabama Radiation Control Duty Officer at 334-324-0076.

13.8.4. After contacts have been made, produce information about gauge, check condition of gauge, and establish a radius of 15 feet around the gauge.

13.8.5. Keep unauthorized personnel away from gauge.

13.8.6. Follow directions in "DRIVER'S ACCIDENT REPORT PACKET" placed in each ALDOT owned vehicle.