

Department of the Army  
 Devens Reserve Forces Training Area  
 Devens, Massachusetts 01434-4424  
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Safety  
**RADIATION SAFETY PROGRAM**

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**HISTORY.** This is the first publication of Devens RFTA Regulation 11-9. It supersedes Devens RFTA Memo 385-11.

**SUMMARY.** This regulation outlines responsibilities and procedures for control of radioactive material and protection of personnel from ionizing radiation hazards.

**APPLICABILITY.** This regulation applies to all units and activities on the Devens Reserve Forces Training Area having or using radioactive material/equipment.

**SUGGESTED IMPROVEMENTS.** The proponent of this regulation is the Safety Management Office. Users are invited to send comments and suggested improvements on DA Form 2028, Recommended Changes to Publications and Blank Forms, directly to the Commander, Devens Reserve Forces Training Area, ATTN: IMNE-DEV-SO, Devens, MA 01434-5520.

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**CONTENTS**

<b>CHAPTER</b>	<b>TITLE</b>	<b>PARA</b>	<b>PAGE</b>
1	RADIATION SAFETY PROGRAM	1	
	References	1-1	3
	Responsibilities	1-2	3
	Leak Tests And Calibration Procedures	1-3	6
	Removal Of Radioactive Sources	1-4	6
	Unwanted Radioactive Materials	1-5	6
	Thermoluminescent Dosimetry Film Badge Service	1-6	7
<b>Appendixes</b>			
A	Unit Radiological Protection Program		8
B	SOP For RADIAC Calibration Operations		10
C	Thermoluminescent Dosimetry		12
D	Instructions For Personnel Occupationally Exposed To Ionizing Radiation		14
E	SOP For Radioactive Material Control Point		16

## **CHAPTER 1. RADIATION SAFETY PROGRAM.**

### **1-1. References.**

- a. AR 11-9, The Army Radiation Safety Program.
- b. AR 40-18, Medical Services – Personnel Dosimetry Guidance and Dose Reporting Procedures for Personnel Occupationally Exposed to Ionizing Radiation.
- c. TB 43-0116, Identification of Radioactive Items in the Army Supply System.
- d. TB 43-0122, Instructions for the Safe Handling and Identification of U.S. Army Communications-Electronics Command Managed Radioactive Items in the Army Inventory.
- e. TB 43-0141, Safe Handling, Maintenance, Storage, and Disposal of Radioactive Commodities Managed by the U.S. Army Troop Support and Aviation Material Readiness Command.
- f. TM 3-261, Handling and Disposal of Unwanted Radioactive Material.
- g. TM 55-315, Transportability Guidance for Safe Transport of Radioactive Materials.
- h. TM MED 522, Occupational and Environmental Health: Control of Health Hazards from Protective Material Used in Self-Luminous Devices.

### **1-2. Responsibilities.**

a. The Safety Management Office (SMO) has overall responsibility for control of and protection from ionizing radiation hazards. The SMO will exercise staff supervision through the installation Radiation Safety Officer (RSO) who will:

(1) Ensure the safety of all operations involving the use, storage, transportation, and maintenance of equipment containing ionizing radiation sources, and adhere to the philosophy of “ALARA” (i.e., keeping exposure to the harmful effects of ionizing radiation to a level that is “as low as reasonably achievable”).

(2) Establish radiation areas and ensure proper posting of warnings on existing or potential radiation hazards.

(3) Establish and monitor protective measures and procedures for controlling exposure of occupationally exposed personnel, including the administration of the film badge and dosimetry services.

(4) Provide guidance, technical information, and assistance to the installation staff, units and activities on radiological hazards and protective measures.

(5) Conduct surveys of established radiation areas to ensure the adequacy of physical security and safeguards for the control and protection of personnel from ionizing radiation.

(6) Maintain a current roster of all employees on the film badge program.

(7) Conduct investigations and prepare reports on all incidents involving the loss of radioactive materials or sources, overexposure of personnel, contamination, and all related radiation hazards.

(8) Review qualifications and exercise approval authority for certification of the local RSOs (LRSO) for the units and activities on the installation.

(9) In conjunction with the Support Services Division (SSD) LRSO, the installation RSO will:

(a) Approve all requests for the transfer or disposal of radioactive materials.

(b) Establish procedures for the preparation of radioactive materials for shipment, including processing, packaging, labeling, and shipper's documentation required by the Department of the Army (DA), and the Department of Transportation (DOT).

(c) Prepare all requests for movement and/or shipment of radioactive materials and provide the installation Transportation Officer with the required certification of contents, packaging, radiation levels, and documentation for compliance with DA and DOT regulations.

(d) Establish procedures for monitoring incoming shipments of radioactive materials to minimize the exposure of supply, transportation, and other receiving personnel to preclude or limit contamination from damaged shipping containers.

(e) Establish procedures for the collection, receipt, control, storage, and disposal of unwanted and unserviceable radioactive materials.

b. The Support Services Chief will provide a qualified individual to function as the SSD Local Radiation Services Officer (LRSO). The SSD LRSO will:

(1) Supervise radioactive material operations within the SSD.

(2) Forward all requests for movement and/or shipment of radioactive materials to the installation RSO for certification after ensuring that the contents, packaging, radiation levels, and documentation meet DA and DOT regulations.

(3) Ensure that the installation RSO has a copy of the SSD LRSO's appointment orders and qualifications.

(4) Conduct a 100% inventory of all radioactive sources stored in the SSD Supply Warehouse and update this inventory on a monthly basis.

(5) Ensure that personnel at the supply receiving point are aware of the potential radiation hazards and are familiar with the standard warning signs and labels used to identify radioactive commodities in transit.

(6) Maintain a complete receiving system for incoming radioactive materials at a central receiving point and shipping section.

(7) Notify the installation RSO of all individually controlled items received and turned-in. Controlled items will not be moved from the shipping section or the central receiving point prior to inspection and approval by the installation RSO.

(8) Operate the installation's radioactive material control point for the collection, processing, storage, and preparation of radioactive materials.

(9) Notify the installation RSO and the installation Traffic Manager immediately of the arrival of any shipment bearing radioactive warning labels. Such shipments will not be opened or moved from any receiving point until monitored for radiation and cleared by the installation RSO or SSD LRSO. Incoming shipments of radioactive materials should be inspected at the time of arrival, and in no case will inspection be delayed for more than three hours after receipt during duty hours, or 18 hours during non-duty hours.

(10) Incorporate the previous procedures into written instructions in coordination with the installation RSO.

c. The SSD Installation Traffic Manager will:

(1) Notify the installation RSO of all incoming shipments of radioactive materials as far in advance as possible.

(2) After notification of an incoming shipment of radioactive material, coordinate with the local commercial carrier, the consignee, and the installation RSO and/or SSD LRSO to attempt to arrange for a specific time and delivery point so the shipment can be inspected and monitored for radiation on its arrival. Shipments arriving should be inspected and monitored by the installation RSO and/or the SSD LRSO at the time of delivery, but in no case should this be delayed more than three hours after receipt during duty hours or 18 hours after receipt during nonduty hours.

d. The Chief of the Test, Measurement, and Diagnostic Equipment (TMDE) Support Center (TSC) will:

(1) Appoint a qualified individual to function as the TSC RSO.

(2) Provide maintenance services for test and calibration sources, including leak testing and shipment to depot for periodic calibration maintenance.

(3) Provide training for unit personnel in Radiation, Detection, Indication, and Computation (RADIAC) calibration procedures and safe practices.

(4) Notify the installation RSO immediately of any suspected leaks in calibration or RADIAC test sources.

e. Commanders/supervisors of units/activities that use, store, or handle individually controlled item radioactive calibration and test equipment will:

(1) Appoint a local RSO and establish and maintain a unit/activity radiation protection program in compliance with procedures contained in appendix A.

(2) Register this equipment or devices with the installation RSO and establish dosimetry services as directed by the installation RSO.

(3) Notify the installation RSO of all incoming shipments of radioactive materials as far in advance as possible.

(4) Provide the installation RSO an inventory of radioactive containing equipment on an annual basis.

### **1-3. Leak Tests And Calibration Procedures.**

a. Leak tests will be performed in the presence of the installation RSO, the SSD LRSO, or the TMDE RSO. The RSO present during testing will furnish copies of the leak test reports and results of the laboratory analysis to the unit or activity having custody of the item tested.

b. Units/activities possessing RADIAC instruments requiring periodic calibration will, on notification by the TSC, submit the items to the TSC for service and/or evacuation to the appropriate calibration and repair facility.

**1-4. Removal Of Radioactive Sources.** Except in emergencies, controlled item radioactive sources will not be loaned, transferred, or removed from authorized storage and use areas without prior approval of the installation RSO.

**1-5. Unwanted Radioactive Materials.** Unwanted, unserviceable radioactive materials and waste will be identified and disposed of as follows:

a. Items requiring disposal as radioactive material may be identified through the following references:

(1) TB 43-0116.

(2) TB 43-0141.

(3) TB 43-0122.

(4) TB 43-0197.

(5) By the radiation warning symbols or labels on the items themselves.

(6) By contacting the installation RSO for assistance.

b. Storage.

(1) Activities generating or accumulating expendable radioactive material, including waste, will store these materials in covered steel drums with leak proof plastic linings. The steel drum containers will be painted yellow and conspicuously marked with radiation symbols and stenciled "CAUTION RADIOACTIVE MATERIAL."

(2) Only low level, noncombustible solid waste may be stored outside the radioactive material control point (RMCP). Notify the installation RSO for disposition of materials that are liquid, gaseous, or combustible.

(3) Waste collection containers will be checked periodically to ensure that radiation levels are less than two millirads per hour at the surface and that containers are free from surface contamination.

(4) Radioactive medical items will be handled through the medical supply channel.

**1-6. Thermoluminescent Dosimetry (TLD) Film Badge Services.**

a. The TLD Film Badge Program. The installation RSO will be responsible for monitoring the TLD film badge program in compliance with the references listed in paragraph 1. Questions concerning the TLD film badge program will be directed to the installation RSO.

b. Unit commanders/activity supervisors will designate a LRSO for issue and turn-in of TLD film badges. The LRSO will be responsible for control of film badges within their units and activities in compliance with schedule provided by the U.S. Army Ionizing Radiation Dosimetry Center.

c. Initiating Service. Unit commanders/activity supervisors will submit a written request to the Safety Management Office, ATTN: Installation RSO. This request will contain name, rank, date of birth and SSN of individual prior to placement on TLD film badge program. In addition, requests will state specific radiation duties to be performed, that the individual has been trained for these duties, and the name of the local RSO at the requesting unit or activity responsible for the TLD film badge service.

d. Terminating Service. Unit commanders/activity supervisors will notify the installation RSO in writing when the TLD film badge service is no longer required for any individual. Written notification will be submitted 30 days in advance and include the reason for termination. The installation RSO will contact the local RSO with termination procedures within five days after receipt of written notification.

OFFICIAL:

*Caryn Suzanne Heard*  
CARYN SUZANNE HEARD  
LTC, EN  
Commanding

DISTRIBUTION:  
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## **APPENDIX A. UNIT RADIOLOGICAL PROTECTION PROGRAM.**

**A1.** This appendix is provided to assist commanders, supervisors, and local RSOs in establishing and evaluating a unit-level radiation protection program. The subject matter contained here is general in nature and intended to be used as a guide. Detailed procedures and requirements should be derived from and kept current with applicable references listed in paragraph 1.

**A2.** Commanders/supervisors of units/activities that use, store, or handle controlled item radioactive sources will:

a. Establish a program for control and protection of personnel from ionizing radiation hazards.

b. Appoint in writing a qualified Local Radiation Safety Officer (LRSO) to supervise the radiation protection program and forward these appointments listing the individual's qualifications to the installation RSO for approval and certification. The minimum LRSO qualifications are specified in the technical manual (TM) or bulletin (TB) covering the particular radioactive source to be used. Due to the strict custodial, operational, and supervisory requirements on calibration sources, the installation RSO will be notified as far in advance as practicable concerning transfer or extended absence of the LRSO.

c. Ensure control of occupational exposure through film badge procedures listed in paragraph 6.

d. Publish standing operating procedures (SOP) covering radiation safety information on the following:

- (1) Instructions to workers on safety precautions and inherent radiation hazards.
- (2) Procedures for storage, handling, and the use of radioactive sources.
- (3) Storage and physical security precautions.
- (4) Procedures to prevent unauthorized or accidental access.
- (5) Directions for removal from storage, handling, and movement to and from the work area.
- (6) Operating instructions.
- (7) Emergency procedures and notifications.
- (8) Limitations on the inspection, maintenance, and transfer of custody.

- (9) Availability and use of monitoring devices.
- (10) Instructions for the wear, storage, and exchange of film badges.
- (11) Program for individual training.
- (12) Restrictions on the presence of non-occupationally exposed personnel in a radiation controlled area.
- (13) Procedures for emergencies in cases of:
  - (a) Fire, explosion, or other disaster.
  - (b) Break-in, evidence of unauthorized handling, tampering, loss, removal, or other unusual incidents.
  - (c) Suspected overexposure.
- e. Ensure availability of current TMs and TBs and other regulations applicable to the radioactive source(s) on-hand.
- f. Ensure maintenance of the following records:
  - (1) Local unit RSO qualifications, approval, and certification.
  - (2) The TLD film badge program current roster.
  - (3) Instructions to workers on safety precautions and hazards.
  - (4) Accomplishment of required training.
  - (5) Radiation surveys, leak tests, and inventories.
- g. Ensure monthly surveys are conducted.

## **APPENDIX B. STANDING OPERATING PROCEDURES FOR RADIAC CALIBRATION OPERATIONS.**

**B1. General.** Calibration of RADIAC instruments using the AN/UDM-2 sources will be confined to the established and posted radiation controlled area (RADIAC Room).

### **B2. Access And Security.**

a. Unsupervised access to the RADIAC Room will be limited to the installation RSO, the TMDE Support Center RSO, and those operators of the AN/UDM-2s who have been certified as approved users by the TMDE Support Center RSO. The TMDE Support Center RSO will supervise access to this area.

b. The RADIAC Room will be locked when not in use. A visual exterior security check will be made at the beginning of each duty day. Any evidence of unauthorized entry or attempted entry will be reported immediately to the DOD Police and the installation RSO.

**B3. Radiological Safety.** The following general safety precautions will be adhered to within the RADIAC Room.

- a. The area will be designated as radiation controlled and posted IAW AR 11-9.
- b. Occupationally exposed personnel will wear their whole body film badges at all times in the controlled area.
- c. Access by non-occupationally exposed personnel will be restricted in time and proximity to radioactive sources so that exposure will not exceed established radiation protection standards.
- d. Storage or use of food, beverages, tobacco, and cosmetics is prohibited.
- e. Wash hands thoroughly after use or handling calibrators or any other device containing radioactive material.

**B4. Emergencies.** The primary concern in emergency situations is always the protection of personnel from injury and overexposure to radiation.

a. Contamination. Leaking of sealed sources and manufactured devices can result in serious contamination of work areas. If this occurs or is suspected:

- (1) Evacuate and lock RADIAC Room.
- (2) Thoroughly wash hands and monitor hands and clothing with appropriate radiacmeter and ultraviolet (UV) light if applicable.
- (3) Notify installation RSO.

(4) Do not re-enter or use the area until determined safe by thorough survey and wipe tests.

b. In the event of fire, explosion, earthquake, or other disaster:

(1) Evacuate and lock RADIAC Room.

(2) Notify the Fire Department and the installation RSO.

(3) If time permits, remove radioactive sources to a safe place.

(4) Advise firefighters of location of radioactive sources.

(5) Do not re-enter radiation controlled area until monitored and determined safe by the installation RSO.

## **APPENDIX C. TLD BADGE PROCEDURES.**

**C1. Occupational Exposure.** This means working in or frequenting posted radiation controlled areas or working with equipment or devices which produce ionizing radiation. Specifically, this includes all personnel whose duties may result in whole body exposure exceeding ten percent (10%) of the annual occupational limits as specified in AR 11-9.

**C2. Restrictions For Occupational Exposure.** Individuals under 18 years of age will not be occupationally exposed to ionizing radiation.

**C3.** Females known or suspected of being pregnant will be counseled IAW NRC Regulatory Guide 8.13, Jun 99.

**C4. Care And Handling Of TLD Film Badges.** When not being worn, TLD film badges will be stored in a designated location outside of the radiation-controlled area, and in the same location as the control film badge. To prevent theft, tampering, and deliberate misuse, the badges will be kept in a locked room or container.

### **C5. Wearing The TLD Badges.**

a. Whole body badges will be worn at all times within a radiation-controlled area and in any other situation where ionizing radiation is present or suspected. The whole body badge will be worn above the hips, below the shoulders, and on the outside of clothing.

b. Wrist badges will be worn, in addition to whole body badges, when operating the AN/UDM-2 calibrator, and at any other time when exposure of the forearms and hands is likely to exceed ten percent (10%) of the annual external dose limit.

### **C6. Issue And Turn-in.**

a. The TLD badges will be issued and turned-in on the last duty day proceeding the wear date of the next Quarters film badges. The unit local LRSO will be responsible for the prompt pick up and turn-in of all film badges for that unit or activity.

b. Individual TLD badge assignments will be made by the unit local LRSO and these names will be provided to the installation RSO. Individual assignments will not be changed without prior coordination with the installation RSO. Badge issue records will be posted at the TLD badge storage location and updated at the end of the wearing period.

c. In cases of actual or suspected exposure, a dosimeter may be turned-in for immediate return to the U.S. Army Ionizing Radiation Dosimetry Branch for emergency processing and evaluation. In such cases, an unused badge from the same period can be returned as a control.

**C7. Visitors To Storage Areas.** Visitors will sign an area visitor's log and provide name, SSN, date of birth, and activity address. The visitor's log will identify the date, time, and length

of use, badge number, and name of user. **In no instance will a visitor or anyone else be issued a badge already assigned to another individual.**

## **APPENDIX D. INSTRUCTIONS TO PERSONNEL OCCUPATIONALLY EXPOSED TO IONIZING RADIATION.**

**D1. General.** References require that all individuals working in or frequenting a radiation area be informed of the existence and nature of the radiation, warned of the potential hazards, and instructed in precautions and procedures for minimizing exposure. The following information constitutes such instruction for occupationally exposed personnel on the Devens Reserve Forces Training Area:

a. Nuclear radiation consists of invisible particles and rays of energy spontaneously emitted by radioactive substances such as radium, or produced by a device such as an x-ray machine. This type of radiation is called “ionizing” and can be harmful to the human body when it is absorbed in amounts beyond established safety standards. The complex chemical changes caused by

ionization can permanently affect the function of living cells and their ability to grow and reproduce. Serious effects include the reduced production of blood cells by the bone marrow, leading to leukemia. Extensive cell damage from radiation can result in serious illness – even death.

b. You should keep in mind at all times the extremely insidious nature of nuclear radiation specifically:

(1) It is not detectable by human senses - you cannot feel it, hear it, smell it, or see it - even in massive doses. You must not let this lull you into a false sense of security or complacency toward safety procedures.

(2) The effects are cumulative and irreversible. Do not risk exceeding the allowable safe dosages. The results of cell/tissue damage may not be immediately evident and the long-term effects are not readily predictable. You should always minimize your exposure, regardless of any current sense of well-being.

c. The following may cause injury to the human body:

(1) Overexposure to Beta/Gamma Rays. This simply results from being too close or too long in the radiation field of the source. As a radiation worker, you will be protected from exposure to ionizing radiation in dangerous amounts. Your exposure will be continuously monitored by a film badge. Complete records of your monthly and accumulated lifetime dosages are maintained and monitored by the RSO to ensure that your exposure is kept to within safe limits as established in AR 11-9 and 10 CFR 20. These documents and your records of exposure (DD Form 1141) are available for your review any time.

(2) Internal Exposure. This may be brought about by swallowing, inhaling, or absorbing radioactive substances used in calibrators. Although these substances are contained in sealed capsules, the capsules may leak due to damage, corrosion, or faulty manufacture, thereby creating spreadable contamination. To prevent such potential hazards, calibrator sealed sources are required to be leak tested periodically. Additionally, you are cautioned not to smoke, drink,

eat, or apply makeup in radiation controlled areas and not to come in contact with potentially contaminated areas when you have open cuts or abrasions on your skin. Thoroughly washing hands when leaving radiation-controlled areas is an obviously important precaution. However, overexposure and serious injury can result from misuse, carelessness, and neglect of safe operating procedures. It is extremely important that you follow the operating procedures and your local SOPS. The more important precautions are repeated here for emphasis:

(a) Wear your whole body badge at all times in the radiation controlled area and always wear the wrist badge when operating the calibrator.

(b) Never look directly into the access hole when the swivel cover is open - serious eye damage can result.

(c) Never place the hands or any part of the body in the direct rays emanating from the access hole.

(d) Never probe the access hole with sharp or pointed objects.

(e) Never disassemble the rate meter or discharge the well assembly.

(f) Do not eat, drink, or smoke when using or handling the calibrators. After use or handling, wash hands thoroughly.

d. Additional information is available in Nuclear Regulatory Guide 8.29, Instruction Concerning Risks From Occupational Radiation Exposure, dated February 1996.

## **APPENDIX E. SOP FOR RADIOACTIVE MATERIAL CONTROL POINT OPERATIONS.**

### **E1. General Radiation Safety Precautions.**

- a. Do not eat, drink, smoke, chew gum or tobacco, or apply cosmetics in areas where materials and equipment with radioactive sources are stored, handled, or processed.
- b. Wear rubber, latex, or vinyl gloves when handling equipment with radioactive sources. Place gloves in plastic zip lock bag and label as to date gloves were worn and operation performed. Put gloves in a rad waste container until monitoring or wipe tests verify that contamination is not present. If contamination is not present, dispose of gloves as normal waste.
- c. Wear a thermoluminescent device (TLD) to record radiation exposure dosage received in areas designated as radiation areas by the installation RSO.
- d. After handling or processing equipment with radioactive sources wash hands and forearms with a non-abrasive soft soap and water.
- e. Store equipment with radioactive sources in protective containers, packaging, or plastic bags when possible.
- f. Process equipment on tables with stainless steel or other non-porous tops to ease decontamination.
- g. Cover workbenches and shelving where equipment with radioactive sources are stored, handled, or processed with craft paper to prevent direct contamination of surfaces and to make decontamination easier.
- h. Appropriate radiation protection training is required for all personnel who handle, inspect, or perform maintenance on equipment containing radioactive sources. The installation RSO will provide the initial and annual refresher training.
- i. Wipe tests and radiac surveys of the facility will be made quarterly by the LRSO or the RSO. Records will be kept in the warehouse office and at the installation RSO office.

**E2. Emergency Procedures.** If a package or piece of equipment containing radioactive material or sources is damaged or you suspect it is leaking radioactive material:

- a. Do not handle the package or equipment.
- b. Stop all activity in the area of the item or package.
- c. Warn all personnel in the area that leakage may have occurred.

d. Isolate the area around the item or package to prevent the spread of contamination. Do not attempt to clean up the area.

e. Minimize contamination by remaining in the area and directing personnel who may have had contact with the item or package to remain in the area until released by the Radiation Safety Officer (RSO) or the Local Radiation Safety Officer (LRSO).

f. Notify the supervisor, LRSO, and RSO of a possible leak and contamination. The RSO will respond and determine if a release of radioactive material has occurred.

g. Inform your supervisor and RSO of any injuries, regardless of how minor.

h. Wash hands and forearms with non-abrasive soap.

i. Do not eat, drink smoke, or chew gum or tobacco or apply cosmetics until monitored for radioactive contamination and you have left the area.

### **E3. Receiving Equipment With Radioactive Sources.**

a. Visually inspect all inbound shipments of equipment with radioactive sources before acceptance.

b. Inspect packages for indications that the radioactive sources may be damaged or leaking. Implement the emergency procedures contained in Section II of this SOP if any damage is noted.

c. Do not release the transport vehicle if damage is apparent or leakage is suspected.

d. Ensure the shipping papers indicate the equipment has radioactive sources, and ensure the shipper's certification correctly identifies the equipment, its source, form, and activity level by comparing with TB 43-0116.

e. The RSO or LRSO will monitor newly arrived shipments by wipe testing (Tritium or Nickel 63 sources) or by using a radiac meter to detect Alpha, Beta, or Gamma contamination.

f. Inbound shipments of equipment or radioactive material with White-I, Yellow-II, or Yellow-III labels must be surveyed by the installation RSO or LRSO before unloading.

g. After surveys are completed, move equipment or sources to designated storage areas.

### **E4. Storage Of Equipment With Radioactive Sources.**

a. Store equipment and material with radioactive sources in separate storage areas approved by the installation RSO.

- b. Ensure Tritium containing items are stored separately from equipment with other kinds of radioactive sources, and ensure the Tritium storage area has ventilation enough to provide at least twelve air exchanges per day.
- c. Ensure all equipment is stored on metal shelving covered with craft paper as required by Section I of this SOP.
- d. Control access to the radiation storage area. Ensure only authorized personnel enter the storage area.
- e. Post storage areas with “CAUTION-RADIOACTIVE MATERIALS” signs.
- f. If a source is damaged or shows signs of leakage while in storage, implement the emergency procedures contained in Section II of this SOP.

#### **E5. Shipping Equipment With Radioactive Sources.**

NOTE: Most radioactive commodities shipped by DRFTA are classified by DOT as “instruments and articles” or “limited quantities” and are exempt from labeling and packaging requirements for more hazardous materials. The installation RSO is responsible for classifying shipments and providing detailed preparation and shipment instructions.

- a. Shipment Preparation of “Instruments and Articles” and “Limited Quantity” Shipments.
  - (1) Prepare shipments of equipment with radioactive sources on benches or tables with metal or other non-porous tops. Cover the bench or table top with craft paper to make decontamination easier.
  - (2) Wear rubber, latex, or vinyl gloves when working with equipment containing radioactive sources.
  - (3) Inspect the equipment to be shipped for any damage that may have allowed the source to leak. Implement the emergency procedures of section II of this SOP if damage is present.
  - (4) Prepare an inner pack for the item. Strong, tight, clean cardboard boxes are suitable for inner packages.
  - (5) Double bag equipment with Tritium sources. Place bagged Tritium items inside the cardboard box inner pack. Add additional absorbent material if the Tritium is in liquid form. Do not close up inner packs until inspected by the installation RSO.
  - (6) Mark the inner pack “Radioactive”.
  - (7) Select a new, clean, undamaged cardboard box for the outer pack. Select and lay aside cushioning material to be used between the inner pack and outer packs.

(8) Notify the installation RSO that shipment packaging is ready for inspection. The RSO will inspect and approve the inner and outer packaging. Follow his/her directions in completing packaging.

(9) The installation RSO will complete wipe tests on the outer packaging, or monitor with a radiac meter, to ensure the outer pack is not contaminated to ensure radiation levels at any point on the exterior pack do not exceed 0.5 millirem/hour. The RSO will verify the outer package is not contaminated and that the quantity of radioactive material does not exceed the levels specified the Table 7 of 49 CFR 173.423.

(10) After packaging has been reviewed and approved by the RSO, tape all seams and edges of the outer and inner packs.

(11) Ensure the outer box or shipping papers are marked with the consignee's name, and the following:

“This package conforms to the conditions and limitation specified in 49 CFR 173.424 for excepted radioactive material, instruments and articles, UN2910”

or

“This package conforms to the conditions and limitations specified in 49 CFR 173.421 for excepted radioactive material, limited quantities, UN2911”

(13) Store completed packages in the designated storage area until picked-up by the carrier.

**E6. Shipment Of Radioactive Equipment Other Than “Instruments Or Articles” Or “Limited Quantities.”** The installation RSO will provide specific directions for packaging, marking, and labeling shipments of equipment with radioactive sources that are not either “instruments and articles” or “limited quantities.”

