



DEPARTMENTS OF THE ARMY AND THE AIR FORCE
NATIONAL GUARD BUREAU
UNITED STATES PROPERTY AND FISCAL OFFICER FOR NEW YORK
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USP&FO-NY SOP L-2

15 July 2019

**USP&FO-NY EXTERNAL SOP FOR RECEIPT, STORAGE AND SHIPMENT
OF RADIOACTIVE COMMODITIES**

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This SOP supersedes USP&FO-NY SOP L-2 dated 15 April 2018.

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CHAPTER 1
GENERAL INFORMATION

1-1. Purpose.

a. This external standing operating procedure (SOP) establishes guidance for the safe handling, receipt, storage, disposal and transportation of radioactive commodities entering and/or leaving the USP&FO-NY Warehouse.

b. To provide radiation safety guidance for personnel handling radioactive commodities and ensure radiation exposures are maintained as low as is reasonably achievable (ALARA).

1-2. Scope. The procedures outlined in this SOP apply to and are to be followed by all customer units possessing, storing, transporting, maintaining and disposing of radioactive commodities.

1-3. References.

- a. AR 385-10, The Army Safety Program.
- b. DA Pam 385-24, The Army Radiation Safety Program.
- c. NGR 385-24, The Army National Guard Radiation Safety Program.
- d. NYARNG Regulation Number 385-24, Radiological Safety for Ionizing and Non Ionizing Radiation Emitting Products.
- e. TB 43-0137, Transportation Information for U.S. Army Radioactive Commodities.
- f. TB 43-0197, Instructions for Safe Handling, Maintenance, Storage, and Transportation of Radioactive Items 10 CFR Parts 19, 20 & 21 and 49 CFR.
- g. AR 190-51 Security of Unclassified Army Property (Sensitive and nonsensitive)
- h. Watervliet Arsenal, Building 145 Emergency Action Plan.

1-4. Revisions. Revisions to this SOP will be published as required to comply with changes to applicable publications and improve customer support. Forward any recommended changes to USP&FO-NY, ATTN: MNPF-SS, Watervliet Arsenal, Building 40-1, Watervliet, NY 12189 for appropriate action.

1-5. Responsibilities.

a. The U.S. Property and Fiscal Officer, or his designee, will provide adequate resources and personnel to be trained and appointed as Local Radiation Safety Officer (LRSO) and Alternate LRSO (ALRSO).

b. The State Radiation Safety Officer (SRSO) will perform periodic audits to ensure that the safe receipt, handling, storage, shipment and disposal of radioactive materials is conducted in accordance with (IAW) all applicable regulations.

c. The USP&FO Warehouse Foreman will:

(1) Ensure that only trained personnel are involved in the handling and disposal of radioactive materials.

(2) Ensure adequate time and resources are provided to personnel appointed as warehouse LRSO/ALRSO needed to perform their required duties.

(3) Ensure that this SOP is reviewed and updated by the LRSO and ALRSO, as required, and approved by the SRSO and Commander.

(4) Ensure radioactive materials are secured per DA Pam 385-24, (Chapter 8, para 5); AR 150-91 (3-6), and Warehouse Internal SOP for Physical Security. Once an item has been determined stolen or missing, will contact their next higher who will conduct a FLIPL and initiate a 15-6 investigation. In addition notify the LRSO, SRSO, ASRSO and the State Safety Officer or their alternate.

d. The USP&FO Warehouse LRSO/ALRSO will:

(1) Ensure that the guidelines contained in this SOP are adhered to by personnel of the USP&FO.

(2) Serve as the point of contact between the USP&FO and the SRSO on all matters pertaining to radiation safety.

(3) Ensure radiation safety records are accurately completed and maintained on file.

(4) Ensure that all RADIAC instruments used in performance of radiation surveys are calibrated for health and safety use on the "ACTIVE" category and are in current calibration. Ensure instrument response checks are performed, and the results logged, prior to conducting radiological surveys. Maintain a response test log with each instrument.

(5) Designate a secure radioactive material storage area for the storage of excess/unserviceable radioactive materials and conduct quarterly radiological surveys of radioactive material storage/use areas.

(6) Conduct demilitarization (DMIL) operations, as directed by the appropriate Item Manager (IM) for the commodity.

(7) Maintain a current inventory of radioactive items being stored at the warehouse.

CHAPTER 2

RECEIPT OF RADIOACTIVE MATERIALS

2-1. Labeled Radioactive Packages.

a. The LRSO will perform an inspection of all packages arriving with Radioactive Labels (White I, Yellow II or Yellow III) affixed to the package. Radioactive labels indicate that the package contains a quantity of radioactive material equal to or greater than a "Type A" quantity as described in 49 CFR 173 and requires an inspection IAW 10 CFR 20.1906.

b. The inspection will include a measurement of the surface radiation levels and a swipe to assess the surface non-fixed contamination levels. NOTE: An assessment of the surface contamination level is not required if the package contains a "special form" source or a gaseous source (See 10 CFR 20.1906). This inspection will be documented on the Radioactive Material Movement Form (RMMF), contained in Appendix B.

c. The inspection shall be performed as soon as practical after receipt of the package, but not later than three hours if received during normal duty hours. Packages received after duty hours will be inspected not later than three hours after the beginning of the next duty day.

2-2. Unlabeled Radioactive Packages.

a. Packages containing less than "Type A" quantities do not require labeling, however, any package known to contain radioactive material, by noting the word "Radioactive" on the outer surface of the package, or being aware of the nomenclature or stock number on the invoice, and that is damaged during shipment, will be monitored for both contamination and radiation dose rate levels.

b. Upon identification of a damaged package containing radioactive material, the delivery vehicle shall be detained until an assessment of the damage is made. The assessment may be made by use of a survey meter having a pancake probe with a thin window for beta-gamma contamination, or the AN/PDR-77 RADIAC with Alpha probe for alpha contamination.

c. If contamination is present on the surface of a damaged package, the transport vehicle shall be monitored and if contamination is detected, decontaminate as required.

d. If the removable contamination levels exceed 220 dpm/cm² for beta-gamma sources or 22 dpm/cm² for alpha sources, the SRSO will be notified immediately.

CHAPTER 3

PROCEDURES FOR TURN-IN

3-1. Unit Procedures.

a. All serviceable and unserviceable radioactive commodities that require turn-in to the USP&FO warehouse must have the following guidelines adhered to by the unit or the radioactive equipment will not be accepted.

b. All radioactive commodities require an evaluation by a Combined Support Maintenance Shop (CSMS) inspector prior to turn-in. The unit must complete the following forms to accompany the radioactive commodities prior to transport to the supporting CSMS:

(1) Radioactive Material Movement Form (RMMF), a copy of this form is contained in Appendix B. The Supply Sergeant or NBC NCO must complete and sign this form if no installation LRSO is available to sign. (See instructions in para 3-1f(4) below.)

(2) DA Form 2404, Equipment Inspection and Maintenance Worksheet, to request the evaluation and wipe testing.

(3) DA Form 2765-1, Request for Issue or Turn-In, to initiate turn-in action to the USP&FO warehouse.

c. Evaluations will be by appointment only.

d. Units must transport equipment to their supporting CSMS for wipe test requirements.

e. Serviceable and unserviceable items of supply containing radioactive material will be inspected for damage prior to being transported to the supporting CSMS.

f. Package and transport the M43A1 Chemical Agent Detectors (CAD) and Chemical Agent Monitors (CAM) radioactive commodities from the unit to the CSMS as follows:

(1) Place each device in a double plastic bag and tape closed. Place the bags in a fiberboard box. This box should be a new box or one known to be free of radiological contamination. Place sufficient padding in the box so that the devices do not move around inside the box

(2) Close the box and seal with packing tape. Place the unit name and destination name on the box.

(3) Fill out the RMMF. In the space for radiation level readings write "See Comments". In the Comment Section, note the radioactive material is special form Am-

241 or Ni-63 (Cam) and it does not have an external dose rate in excess of 0.5 mrem/hr. In the space for contamination survey annotate: "New or clean material used for packaging". **Note:** If you do not have packaging material that is new or clean, you must wipe the material and have the wipe analyzed, and the results entered on the RMMF prior to transporting the devices.

(4) Maintain a copy of the RMMF on file and send one with the driver.

(5) Write "UN2911" on the outside of the package.

g. All unserviceable items containing radioactive material must be double bagged, taped closed and tagged by the using unit prior to transport, and forwarded in packages that have been properly prepared for shipment IAW instructions above.

3-2. CSMS Procedures.

a. The CSMS LRSO will, upon receipt of serviceable and unserviceable equipment containing radioactive material, evaluate and prepare for transport all radioactive material to the USP&FO Warehouse located in Watervliet. Equipment will be held with all supporting documentation at the CSMS until time of transport to Watervliet.

b. Unserviceable radioactive equipment will be wipe tested by the supporting CSMS before being transported.

c. The CSMS LRSO can certify the IM 174A/PD as "not radioactive" by Radiac-meter survey, if the meter movement has been replaced.

d. The AN/PDR 27 can be certified by the CSMS LRSO if the test sample (i.e., MX-7338) is disposed of as radioactive waste.

e. The CSMS will notify the USP&FO warehouse that the radioactive commodities are ready to be turned in and will complete the RMMF for transport to the USP&FO Watervliet Warehouse.

3-3. USP&FO Warehouse Procedures.

a. Once radioactive commodities are received at Watervliet warehouse, the USP&FO LRSO will verify all documentation to include RMMF and wipe test results. The DA Form 2765-1, turn-in, will be signed and tissue copy will be mailed to the respective Property Book Officer (PBO) for posting to property records.

b. The turn-in for radioactive commodities will be posted to the Global Combat Support System-Army (GCSS-A) for disposition.

CHAPTER 4

STORAGE OF RADIOACTIVE ITEMS

4-1. Procedures.

a. Radioactive commodities will be stored in an area that is secure from unauthorized access. It is recommended that serviceable commodities be stored separately from unserviceable commodities.

b. Radioactive Commodities containing tritium that are not an integral part of a weapon should not be stored in the weapons vault unless the vault can be provided with proper ventilation.

c. Radioactive material will not be stored in the same areas as flammables or explosives, as well as, medical supplies or foodstuffs.

d. Radioactive storage areas will be posted with a sign, or signs, containing the words: "CAUTION-RADIOACTIVE MATERIAL." In addition, the following shall be posted near the storage area, or where they may be viewed by personnel going to and from the storage area.

(1) NRC Form 3 - Notice To Employees.

(2) Section 206 of the Energy Reorganization Act.

(3) The NRC License(s) for the commodities.

(4) The USP&FO SOP for Radiological Operations.

(5) Parts 19, 20 and 21 of CFR Title 10.

(6) The name and phone number of person or persons to contact in event of an incident in the area.

(7) Notice of Violations of License Conditions (when applicable).

(8) No Smoking, Eating, Drinking, etc., sign.

Note: Items (3) through (8) may be maintained in a central location and a notice placed at the storage area informing personnel where these documents may be viewed, use the NGB Placard provided on the DA RSO website.

4-2. Surveying Radioactive Storage Areas.

a. Radioactive storage areas shall be surveyed at least quarterly. The survey will include a radiation survey and a contamination survey. The survey will be documented on a form as shown in Appendix E, or similar form containing the same information. (The primary purpose of the survey is to ensure that radiation exposure, from the stored material, to personnel in adjacent uncontrolled areas, will not exceed 2 mrem in any one hour or 100 mrem in a year, if continuously present in the area).

b. In addition to the quarterly survey, surveys will be performed when:

(1) Radioactive material emitting gamma (i.e., penetrating) radiation is added or removed from the storage area.

(2) The storage area contains a commodity that requires monthly radiation surveys, such as the AN/UDM-2 RADIAC Calibrator Set.

(3) All material is removed and the storage area is to be closed out. NOTE: Contact the ARNG RSSO for guidance prior to conducting close-out surveys.

c. The survey will include a contamination survey using the appropriate wipe material. If the storage area contains alpha, beta and gamma sources the NUCON wipe may be used, EXCEPT for tritium and Nickel-63 sources. If tritium devices or commodities containing Nickel-63 are stored in the area, nitrocellulose filters (e.g., Metricel or Whatman), will be used. For storage areas containing both alpha and beta-gamma emitting sources, to include either Nickel-63 or tritium, both types of wipes will be used.

d. Sufficient wipes will be taken to assess the surface contamination levels. These wipes will be sent to the CECOM Directorate for Safety Laboratory for analysis, using the Wipe Test Analysis Request Form in Appendix F.

4-3. Inventory of Radioactive Material. The LRSO will maintain an inventory of all radioactive material in the warehouse. This inventory will list serviceable material separate from excess material. The LRSO will provide a copy of the inventory to the SRSO and it will be updated on a regular basis.

4-4. Disposal of Excess Radioactive Material. When sufficient excess material is on hand to warrant a request for disposal, the SRSO will send an inventory of the material to be disposed of to the ARNG RSSO.

a. The inventory list will include:

- (1) NSN of Commodity
- (2) Nomenclature of Commodity
- (3) Radionuclide, such as Ra-226, H-3, Th-232, etc.
- (4) Activity of nuclide (Bq).
- (5) Total number of each commodity.
- (6) Total activity (Bq and mCi).
- (7) POC and telephone number at the USP&FO.
- (8) Exact location of items (including county).

b. The RSSO will verify the list and forward it to the U.S. Army Joint Munitions Command, ATTN: AMSJM-SFR, for eventual disposal instructions.

CHAPTER 5

TRANSPORTATION OF RADIOACTIVE ITEMS

5-1. Commercial Carrier. *NOTE: TB 43-0137 contains detailed guidance on the requirements necessary to properly prepare a radioactive commodity for shipment and should be followed explicitly.*

a. Commodities offered to a commercial carrier for transportation will be packaged, marked and prepared for shipment in accordance with 49 CFR 172 and 173. The majority of military commodities are shipped as "Limited Quantities" (LQ) or "Instruments and Articles" (I&A) in excepted packages.

b. For all commercial shipments ensure the IATA shipping label is attached to the exterior of the package

5-2. Military Vehicle. *NOTE: TB 43-0137 contains detailed guidance on the requirements necessary to properly prepare a radioactive commodity for shipment and should be followed explicitly.*

a. Tactical Situations. Commodities may be transported in military vehicles. When commodities are being transported by military vehicle in a tactical situation, the commodity should be in its "in use" configuration. That is, such things as fire control devices are mounted on the gun or in the design movement/storage position.

b. Administrative Situations. When devices are being transported in administrative situations, such as movement of devices from the warehouse to using unit, the commodities will be prepared for shipment using guidance contained in TB 43-0137. This guidance addresses specific packaging criteria, package markings, surface radiation levels, and contamination limits.

(1) Unless it is known that the radiation level on the surface of the commodity is less than 0.5 mrem/hr, as is the case for tritium devices and Chemical Detection Equipment (CDE), the container will be surveyed for radiation prior to movement.

(2) A RMMF as shown in Appendix B will be completed for each shipment. A copy of the RMMF will be forwarded with the package and a copy maintained on file.

(3) A contamination survey wipe shall be sent to the ARNG RSSO for counting at the address shown on the Wipe Test Analysis Request Form. If the packing material (box) is new and has not been in contact with radioactive material, the contamination survey may be omitted. In this case the RMMF will be annotated with an explanation.

(4) The commodity shall be placed in a plastic bag(s) if the commodity is not known to be free of surface contamination. When the commodities are placed in the package, sufficient padding or filler should be placed in the package to prevent movement of the commodity within the package.

5-3. Documentation. A file folder containing a copy of all applicable documents will be maintained for each shipment. The minimum documents required for each shipment are:

- a. A copy of the Bill of Lading or other form showing shipping information.
- b. A copy of the RMMF.
- c. A copy of the Wipe Test Analysis Form with results on analysis annotated.

The proponent office for this SOP is the United States Property & Fiscal Office Supply and Services Division, MNPF-SS. Users are invited to send comments and suggested improvements directly to ATTN: MNPF-SS, Watervliet Arsenal, 1 Buffington Street, Watervliet, NY 12189.

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<http://dmna.ny.gov/uspfo/?id=supp>

APPENDIX A

EMERGENCY TELEPHONE NUMBERS

Watervliet Arsenal Fire Department	911 or (518) 266-5222
Police Department	911 or (518) 266-5444
Ambulance	911 or (518) 266-5333
Local Radiation Safety Officer	(518) 272-3818
Alternate Local Radiation Safety Officer	(518) 272-3818
State Radiation Safety Officer	(518) 791-1623
Alternate State Radiation Safety Officer	(585) 899-9900
JFHQ-NY Joint Operations Command (JOC)	(518) 786-6104
Radiation Safety Staff Officer, CECOM LCMC DS	Cml (443) 395-3790 or DSN 648-3790

APPENDIX B

RADIOACTIVE MATERIAL MOVEMENT FORM

CHECK ONE: _____ SHIPMENT _____ RECEIPT				MOVEMENT NUMBER: _____		
From:			To:			
COMMODITY DESCRIPTION						
Number of Containers	QTY	NSN	Nomenclature	Isotope	Activity	Total Activity
MODE OF SHIPMENT		PHYSICAL CHARACTERISTICS		RADIATION SURVEY RESULTS		
_____ Air _____ Truck _____ Rail _____ Water _____ Parcel Post _____ Other		_____ Special Form _____ Normal Form _____ Solid _____ Liquid _____ Gas		Instrument Used: _____ ID No.: _____ DATE CALBR: _____ CALBR VOID: _____ Transport Index: _____ Surface: _____ mrem/hr One Meter: _____ mrem/hr Background: _____ mrem/hr		
WIPE TEST PERFORMANCE/RESULTS (*New Packaging Material Used – No Wipe Test Performed – Check Here <input style="float: right;" type="checkbox"/> * This applies to Excepted Packages ONLY.)						
Wipe Taken by: _____		Sample Counted by: _____		Removable: _____ dpm/300 cm ²		
Date: _____		Date: _____		LLD: _____ µCi _____ Bq		
BASIC DESCRIPTION						
_____ UN 2911, Radioactive Material, Excepted Package – Instruments & Articles, 7 _____ UN 2910, Radioactive Material, Excepted Package – Limited Quantity of Material, 7 _____ UN 2909, Radioactive Material, Excepted Package – Articles Manufactured from Natural or Depleted Uranium or Natural Thorium, 7 _____ UN 2908, Radioactive Material, Excepted Package - Empty Packaging, 7 _____ UN 3332, Radioactive Material, Type A Package, Special Form, <i>Non Fissile or Fissile-Excepted</i> , 7 _____ UN 2915, Radioactive Material, Type A Package, Non-Special Form, <i>Non-Fissile or Fissile-Excepted</i> , 7						
Labeling		Marking		Shipping Papers		
_____ White I _____ Yellow II _____ Yellow III _____ Exempt _____ Handling (IATA) _____ Cargo Aircraft		_____ Radioactive _____ Radioactive LSA _____ UN Number _____ Other (_____)		_____ Included & Complete _____ Exempt		
EACH INSTRUMENT & ARTICLE DOSERATE < 10 mrem/Hr AT 4 INCHES _____ (INITIAL HERE). TYPE A Requirement: 24 HOUR EMERGENCY RESPONSE PHONE NUMBER (_____) _____ TYPE A Requirement: CERTIFICATION STATEMENT INCLUDED: _____ (INITIAL HERE). COMMENTS:						
Printed Name of RSO or Designee:			Signature:		Date:	

APPENDIX C

SAFE HANDLING PROCEDURES FOR RADIOACTIVE EQUIPMENT

1. Safety. Radioactive Equipment.

a. If a piece of equipment containing a radioactive element is broken or becomes an exposure hazard, DO NOT TOUCH IT. Immediately contact the LRSO/SRSO to obtain necessary procedures for safe handling, decontamination (if needed) and disposal of the radioactive material.

b. Employees with minor injuries, such as cuts, abrasions or open sores, must be cleared by the LRSO before being allowed to work with any radioactive equipment. In all cases, the LRSO must make the decision in conjunction with the SRSO.

c. Exposure of employees and other personnel to radioactive material will be minimized (kept as low as reasonably achievable, the ALARA principal). At no time will personal exposures exceed the limits specified in Title 10 CFR and DA PAM 385-24.

d. NEVER eat, drink, smoke or apply cosmetics while working on or around radioactive equipment.

e. Before handling a self-luminating device all personnel will review and become familiar with the safety precautions in TB MED 522 and any other applicable guidance (e.g., CECOM Technical Report for Tritium containing devices).

f. If items such as wristwatches and compasses are damaged they will be placed in double plastic bags and tagged on the outside with NSN, Nomenclature, and Activity. This will be done immediately.

2. Monitoring and Decontamination.

a. A monitoring system to include personal dosimetry will be established if determined necessary by the LRSO, SRSO or ASRSO and/or other supervisory personnel in accordance with DA PAM 385-24 and TB MED 522. If in doubt, call the NGR RSSO.

b. Contaminated personnel will be required to wash their hands, nails and any exposed skin with soft soap for two (2) minutes. Any contaminated clothing will be removed and sealed in double plastic bags. The outer bag will be properly marked as radioactive waste to include the Radionuclide and activity (if known). Individual persons and suspected contaminated clothing will be surveyed using appropriate, properly calibrated, "ACTIVE" Radiac survey equipment. The LRSO/ALRSO or a designated representative will process the report by completing a Radiation Incident Report Form.

3. Injuries Involving First Aid.

a. As soon as possible after an accident or incident involving radioactive material, actual or suspected, contaminated victims will seek medical attention. This action should be coordinated with the SRSO/ARSO or a designated representative prior to evacuation of personnel if locally trained personnel perceive no immediate life or limb threat. All information as to the type of accident, radioactive material involved, and time of exposure, will be included.

b. The following first aid will be administered while awaiting medical attention:

(1) Small cuts or skin abrasions: Flush the wound with a large amount of clean water. Allow bleeding freely for a few seconds. Flush again and cover with a bandage.

(2) Large cut or punctures: Place a large sterile absorbent bandage over the wound and evacuate the injured person to a medical facility. Do not stop the bleeding unless the injury caused arterial bleeding.

(3) Contamination of the eyes, nose or mouth: Promptly rinse the affected area with a large amount of clean water. If the nose is affected, draw water into the nostrils, blow it out and repeat. If facial areas are involved, do not attempt to swallow until examined by a physician.

4. Emergencies.

a. In the event of an accident or incident involving radioactive commodities, immediately contact the LRSO/ALRSO, who will immediately contact the SRSO or ARSO.

b. Close off the area and do not allow any unnecessary exposure to individuals.

c. Do not attempt to clean up any materials, coordinate with and wait for instructions from the SRSO or ASRSO.

d. Fill out the Radiation Incident Report.

e. In the event of a fire, explosion, injury or other incident, notify the LRSO, SRSO, ASRSO and the State Safety Officer or their alternate. Contact the Watervliet Arsenal Fire Department at 518-266-5222 and Watervliet Arsenal Police Department 518-266-5520/5297. During non-duty hours and holidays the NYARNG Staff Duty Officer (SDO) will be contacted to reach the SRSO/ASRSO.

APPENDIX D

SAFE HANDLING PROCEDURES FOR TRITIUM

1. Receiving.

a. All equipment that contains tritium source must be carefully handled at all times. To facilitate the safe handling of this equipment, certain procedures must be followed when accepting equipment into the warehouse for turn-in.

b. These items must have proper paperwork filled out as outlined in Chapter 3 of this SOP.

c. Authorized personnel turning in equipment containing tritium must go through their CSMS to obtain a technical inspection prior to turn in.

d. The LRSO or ALRSO at the USP&FO warehouse must be contacted to make an appointment.

e. All radioactive items being turned in must be doubled bagged if unserviceable, or placed in a cardboard box if serviceable.

2. Storage. Procedures for the storage of all classes of radioactive items to include equipment containing tritium source is located in Chapter 4 of this SOP.

3. Shipping. Procedures for the transporting of radioactive items to include equipment containing tritium source is located in Chapter 5 of this SOP.

a. All items will be packed and inspected by the LRSO or ALRSO.

b. All items will be surveyed and wipe test samples sent to CECOM for analysis prior to shipment.

c. All records of shipments of tritium source will be kept at the warehouse.

4. Accidental Exposure Reporting Procedures. In the event that an accidental exposure occurs, personnel should use the following steps to control the situation:

a. Secure the equipment, do not alter the configuration.

b. Notify the Chain of Command or first line Supervisor.

c. Ensure that the potentially exposed individual receives an appropriate medical evaluation within 24 hours of the exposure.

d. Notify the Local Radiation Safety Officer within 24 hours.

e. Notify the U.S Army Public Health Command Laser/Optical Program within 24 hours (800-473-3549).

f. Receive written statements from the individual reporting the incident and other individuals that were present and possibly exposed.

g. Obtain copies of the device description from applicable Technical Manuals (Power Characteristics, etc.).

h. Typically, an on-site investigation will be conducted when an individual lesion or ocular complaint may have resulted from exposure to non-ionizing radiation.

5. Additional References for Safety Procedures with Tritium.

a. DA PAM 700-48 Handling Procedures for Equipment Contaminated with Depleted Uranium or Radioactive Commodities.

b. AR 40-5, Preventive Medicine.

c. TR -94-11 (Revision 2), Radiation Safety Information for the Safe Handling of Tritium Sources in Radio luminescent Devices.

d. Title 10 Code of Federal Regulations Part 20, Standards for Protection Against Radiation.

APPENDIX E

RADIATION SURVEY FORM - USP&FO SERVICEABLE STORAGE AREA
Quarterly Survey: Circle One: 1Q (Jan-Mar); 2Q (Apr-Jun); 3Q (Jul-Sep); 4Q (Oct-Dec).

(Bird's Eye View Drawing Goes In This Space or on Back)

Legend:

Survey Meter Readings: All readings are in mR/hr at waist level unless otherwise indicated. (*) denotes "Contact Reading Taken at This Point." Background (BKG) Reading: _____ mR/hr

Contamination Survey: Each wipe covers an area of 100 cm² ○ = Wipe Location (N = NUCON; M = Metrical/Whatman) (See attached Wipe Test Analysis Request Form (WTARF), dated April 2011)

Dose Rate Survey Points:

S1: _____ S2: _____ S3: _____ S4: _____ S5: _____
 S6: _____
 S7: _____ S8: _____ S9: _____ S10: _____ S11: _____
 S12: _____

Postings:

- | | |
|--|--|
| 1. Standing Operating Procedure _____ | 6. 10 CFR Parts 19, 20 & 21 _____ |
| 2. Caution Radioactive Material Sign _____ | 7. No Smoking, Etc. Sign _____ |
| 3. NRC Form 3 (5-2012) _____ | 8. Notice of Violations <u>N/A</u> |
| 4. Public Law 93-438 _____ | 9. Notice To Workers _____ |
| 5. NRC License(s) _____ | (Emergency, i.e., the NGB Storage Placard) |

Survey Instrument Used:

Nomenclature: _____ SN: _____
 Detector: _____ SN: _____
 Date Calibrated: _____ Calib Void Date: _____
 Pre-Operational Checks Performed: YES or NO (Circle One), Results: SAT or UNSAT (Circle One)

Comments: _____

Surveyor: _____ **Date:** _____
 (PRINT NAME and SIGNATURE)

APPENDIX E

RADIATION SURVEY FORM - USP&FO SHIPPING AREA

Quarterly Survey: Circle One: 1Q (Jan-Mar); 2Q (Apr-Jun); 3Q (Jul-Sep); 4Q (Oct-Dec).

(Bird's Eye View Drawing Goes In This Space or on Back)

Legend:

Survey Meter Readings: All readings are in mR/hr at waist level unless otherwise indicated. (*) denotes "Contact Reading Taken at This Point." Background (BKG) Reading: _____ mR/hr

Contamination Survey: Each wipe covers an area of 100 cm² ○ = Wipe Location (N = NUCON; M = Metritel/Whatman) (See attached Wipe Test Analysis Request Form (WTARF), dated April 2011)

Dose Rate Survey Points:

S1: _____ S2: _____ S3: _____ S4: _____ S5: _____ S6: _____
S7: _____ S8: _____ S9: _____ S10: _____ S11: _____ S12: _____

Postings:

- 1. Standing Operating Procedure _____
- 2. Caution Radioactive Material Sign _____
- 3. NRC Form 3 (5-2012) _____
- 4. Public Law 93-438 _____
- 5. NRC License(s) _____
- 6. 10 CFR Parts 19, 20 & 21 _____
- 7. No Smoking, Etc. Sign _____
- 8. Notice of Violations N/A
- 9. Notice To Workers _____
- (Emergency, i.e., the NGB Storage Placard)

Survey Instrument Used:

Nomenclature: _____ SN: _____
Detector: _____ SN: _____
Date Calibrated: _____ Calibration Void Date: _____
Pre-Operational Checks Performed: YES or NO (Circle One), Results: SAT or UNSAT (Circle One)

Comments: _____

Surveyor: _____ **Date:** _____
(PRINT NAME and SIGNATURE)

APPENDIX E

RADIATION SURVEY FORM - USP&FO UNSERVICEABLE STORAGE AREA
Quarterly Survey: Circle One: 1Q (Jan-Mar); 2Q (Apr-Jun); 3Q (Jul-Sep); 4Q (Oct-Dec).

(Bird's Eye View Drawing Goes In This Space or on Back)

Legend:

Survey Meter Readings: All readings are in mR/hr at waist level unless otherwise indicated.
 (*) denotes "Contact Reading Taken at This Point." Background (BKG) Reading: _____
 mR/hr

Contamination Survey: Each wipe covers an area of 100 cm²  = Wipe Location (N = NUCON; M = Metricel/Whatman) (See attached Wipe Test Analysis Request Form (WTARF), dated April 2011)

Dose Rate Survey Points:

S1: _____ S2: _____ S3: _____ S4: _____ S5: _____ S6: _____
 S7: _____ S8: _____ S9: _____ S10: _____ S11: _____ S12: _____

Postings:

- | | |
|--|--|
| 1. Standing Operating Procedure _____ | 6. 10 CFR Parts 19, 20 & 21 _____ |
| 2. Caution Radioactive Material Sign _____ | 7. No Smoking, Etc. Sign _____ |
| 3. NRC Form 3 (5-2012) _____ | 8. Notice of Violations <u>N/A</u> |
| 4. Public Law 93-438 _____ | 9. Notice To Workers _____ |
| 5. NRC License(s) _____ | (Emergency, i.e., the NGB Storage Placard) |

Survey Instrument Used:

Nomenclature: _____ SN: _____
 Detector: _____ SN: _____
 Date Calibrated: _____ Calibration Void Date: _____
 Pre-Operational Checks Performed: YES or NO (Circle One), Results: SAT or UNSAT (Circle One)

Comments: _____**Surveyor:** _____

(PRINT NAME and SIGNATURE)

Date: _____

APPENDIX F
WIPE TEST ANALYSIS REQUEST FORM

CECOM Radiological Analysis and Calibration Laboratory

WIPE TEST ANALYSIS REQUEST FORM

(Instructions On Reverse Side)

FROM:

TO:

Commander, U.S. Army CECOM
ATTN: AMSEL-SF-R (LAB)
3200 Raritan Avenue
Aberdeen Proving Ground, MD 21005-1850
Phone (443) 395-4017 or DSN 648-4017
FAX (443) 395-3836 or DSN 648-3836

SAMPLE	DESCRIPTION OF WIPE	ISOTOPE (S)	WIPE TYPE*
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

*** TYPE OF WIPE (INSERT LETTER ABOVE):**

- | | |
|-----------------------------|---|
| (Q) QUARTERLY SURVEY | (T) TRANSPORTATION |
| (I) INCIDENT | (C) COMMODITY |
| (K) KRAFT PAPER | (O) OTHER (PLEASE SPECIFY IN COMMENTS) |

WIPE TAKEN BY:

DATE:

PHONE:

COMMENTS:

POC EMAIL ADDRESS :

ALTERNATE POC EMAIL ADDRESS :

MY UIC is:

Instructions for Completing Form

- (1) **FROM:** Your mailing address (where our Directorate sends the analysis results if you do not provide an E-mail address).
- (2) **TO:** Our laboratory mailing address (where you send the samples for analysis).
- (3) **SAMPLE:** Print this sample number on the corresponding NuCon wipe flap (not on the wipe itself) or vial cap submitted for analysis.
- (4) **DESCRIPTION OF WIPE:** Brief description of what you wiped, i.e., package, commodity (NSN), storage area survey wipe, locker, floor, shelf, etc.
- (5) **ISOTOPE(S):** List the radioactive isotope you want the wipe analyzed for, i.e., Tritium (H3), Radium-226 (Ra226), Strontium-90 (Sr90), Americium-241 (Am241), Thorium-232 (Th232), Promethium-147 (Pm147), Nickel-63 (Ni63), Cobalt-60 (Co60), Cesium-137 (Cs137), Plutonium-239 (Pu239), and Depleted Uranium (DU).
- (6) **WIPE TYPE:** Enter the type of wipe test performed: (Q) Quarterly Survey; (T) Transportation; (I) Incident; (C) Commodity; (K) Kraft Paper; or (O) Other (Please Specify in Comments)
- (7) **WIPE TAKEN BY:** Person who performed wipe test.
- (8) **DATE:** Enter the date the wipe test was performed.
- (9) **PHONE:** Your DSN and Commercial Numbers.
- (10) **COMMENTS:** Use this block to communicate with us. You can request more NuCon and/or Whatman wipes, indicate administrative changes, or just give us more information about your request for analysis.
- (11) **POC & ALTERNATE POC EMAIL ADDRESS:** Enter your email address and an alternate's email address. The Results of Analysis memorandum will be sent to each email address.
- (12) **MY UIC:** Enter your Unit Identification Code.

NuCon Wipe or Metricel Filter/Whatman #1 Which to Use and When?

NuCon Wipe: A 1.75 inch, cloth disk with an adhesive back. The NuCon wipe is used to detect removable gross alpha/beta contamination. It can be used to wipe packages, work surfaces, shelves, and perform leak test where the isotope is anything **other than H3 or Ni63**, i.e., Ra226, Sr90, Am241, Th232, Pm147, Co60, Cs137, Pu239, and DU.

Metricel: A 1.85 inch, **WHITE (NOT BLUE)** nitrocellulose membrane filter. It is used to collect **H3, Ni63 and other low energy beta emitting isotopes**. Metricel wipes are to be sent in vials; **DO NOT** mark or place labels on surface of vials, mark lids only.

Whatman #1: A 1.7 inch, **WHITE** cellulose paper filter. It is used to collect **H3, Ni63 and other low energy beta emitting isotopes**. Whatman #1 wipes are to be sent in vials; **DO NOT** mark or place labels on surface of vials, mark lids only.

WIPE TEST ANALYSIS REQUEST FORM (con't)

SAMPLE	DESCRIPTION OF WIPE	ISOTOPE	WIPE TYPE*
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
21.			
22.			
23.			
24.			
25.			
26.			
27.			
28.			
29.			
30.			
31.			
32.			
33.			
<p>* TYPE OF WIPE (INSERT LETTER ABOVE): (Q) QUARTERLY SURVEY (T) TRANSPORTATION (I) INCIDENT (C) COMMODITY (K) KRAFT PAPER (O) OTHER (PLEASE SPECIFY IN COMMENTS)</p>			

Revised: April 2011