



**UNITED STATES MARINE CORPS**  
MARINE CORPS AIR STATION  
PSC BOX 8003  
CHERRY POINT, NORTH CAROLINA 28533-0003  
AND  
2D MARINE AIRCRAFT WING  
PSC BOX 8050  
CHERRY POINT, NC 28533-0050

AirStaO 5104.1B  
MCAS (SS)  
2d MAW (SS)  
**JUN 24 2008**

AIR STATION ORDER 5104.1B

From: Commanding Officer, Marine Corps Air Station Cherry Point  
Commanding General, 2d Marine Aircraft Wing, Cherry Point  
To: Distribution List

Subj: RADIATION SAFETY PROGRAM STANDING OPERATING PROCEDURES  
(SHORT TITLE: RSP SOP)

Ref: (a) MCO 5104.3A  
(b) Title 10 Code of Federal Regulations  
(c) Title 49 Code of Federal Regulations  
(d) NAVSEA Technical Manual S0410-00-RAD-010 (NOTAL)  
(e) NAVMED P-5055

Encl: (1) Radiation Safety Program Procedural Guide

1. Situation. To provide guidance for the safe use, handling, transportation, storage, and disposal of radioactive material (RAM) per references (a) through (e).
2. Cancellation. AirStaO P5104.1A.
3. Mission. To provide guidance in complying with applicable regulations, orders, licenses, and permits to all government personnel assigned permanently or temporarily, visiting aircraft and military units, and, to a limited degree, contractors working with RAM aboard Marine Corps Air Station Cherry Point.
4. Execution
  - a. Commander's Intent and Concept of Operations
    - (1) Commander's Intent

(a) To protect military and civilian personnel from the harmful effects of ionizing radiation. Therefore, all exposures to ionizing radiation will be kept As Low As

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Reasonably Achievable (ALARA) as mandated by the Nuclear Regulatory Commission (NRC).

(b) To implement a comprehensive RSP which is consistent with applicable standards.

(2) Concept of Operations. This Manual provides guidance for the safe use, handling, transportation, storage and disposal of RAM. All RAM and sources shall be considered hazardous. Any use, possession, storage, transfer, and disposal activities, which involve such items is prohibited until appropriate safety precautions have been established. No personnel shall be permitted to participate in any of the above activities until appropriately trained and until the provisions of this Manual have been met.

(3) Subordinate Element Missions

(a) Comply with the intent and content of this Manual.

(b) Take positive and continuous action to implement this program.

(c) Provide sufficient documentation to demonstrate compliance.

(d) Ensure that local SOPs for radiation safety are developed and followed.

(e) Coordinate all aspects of the RSP with the Installation Radiation Safety Officer.

5. Administration and Logistics

a. Director of Safety and Standardization. Shall maintain overall cognizance of the Radiation Safety Program.

b. Installation Radiation Safety Officer (IRSO), Assistant Radiation Safety Officer (ARSO), and Wing Radiation Safety Officer (Wing RSO). Shall oversee compliance of the RSP as outlined in Chapter 1 of this Manual.

c. Department Heads, Commanding Officers, and Directors. Sections having cognizance of or personnel who may come in contact with, ionizing radiation will appoint in writing

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qualified Command Radiation Safety Officers (CRSO) and Radiation Protection Assistants (RPA) as needed to ensure compliance.

6. Command and Signal

a. Command. This Order is applicable to the Marine Corps Reserve.

b. Signal. This Order is effective the date signed.



C. E. HOLZWORTH  
Chief of Staff



R. C. MANN  
By direction

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RECORD OF CHANGES

Log completed change action as indicated.

Change Number	Date of Change	Date Entered	Signature of Person Incorporated Change

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## Chapter 1

## RSP Elements

1. Purpose. The RSP is designed to prevent the unnecessary exposure of personnel to and contamination of equipment with ionizing radiation, to identify the requirements for compliance with NRC licenses and Naval Radioactive Material Permits (NRMPs), and to establish procedures and practices for meeting these requirements. These procedures include provision for storage, use, possession, transportation and disposal of RAM and training required for personnel involved in any of these activities.

2. Background

a. Safety standards for ionizing radiation from radioactive material (RAM) and other radiation sources are derived from a variety of federal regulations. The NRC has primary responsibility for regulating RAM and it grants permission to receive, possess, distribute, use, transport, transfer, and dispose of RAM under special conditions established in individual licenses.

b. COMNAVSEASYS COM Detachment, Radiological Affairs Support Office (RASO) at Yorktown, VA, manages the Radiological Affairs Support Program (RASP). The RASP includes responsibility for all aspects of radiation safety and control of radiation from licensable and non-licensable RAM, including radioactive waste, but excluding radioactive sources used for medical treatment or diagnosis, radioactivity associated with naval nuclear propulsion, and nuclear weapons.

c. Marine Corps Logistics Command, Radiological Controls Office (RADCON) at Albany, GA, maintains cognizance over Nuclear/ Radiological Materials Permits (NRMP) issued to Marine Corps Commands by the NRC.

d. The IRSO/Wing RSO, appointed by the Commanding Officer or by direction, is responsible for the coordinating the installation RSP of ionizing radiation physically located at the installation. This position is located in the Joint Safety Office aboard the Air Station. The IRSO/Wing RSO establishes internal audits, inspections and oversight procedures to ensure regulatory compliance and proper training, use, handling and control of RAM involving receipt, storage, shipping, emergency

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procedures, and disposal operations by station, visiting units, and tenant commands.

e. The Command Radiation Safety Officer (CRSO) is the designated individual at a tenant command, user activity, or unit level, tasked with direct oversight of radiation safety practices and procedures.

f. The Radiation Program Assistant (RPA) is the designated individual at a tenant command, user activity, or unit level, tasked with assisting the IRSO/Wing RSO. All instructions will be dictated by the IRSO/Wing RSO. RPAs are designated in writing by IRSO/Wing RSO.

g. The CRSO/RPA ensures proper radioactive material (RAM) shipping, receipt, and inventory tracking. The CRSO/RPA coordinates with the IRSO to ensure compliance with the installation RSP SOP, radioactive material held or relocated at the command, activity or unit, and promptly notifies the IRSO upon discovery of broken, damaged or missing radioactive sources or whenever radioactive contamination is found or suspected. The CRSO/RPA assists the IRSO/Wing RSO and ARSO in the management of local RSPs, including but not limited to audits, inspections, surveys, reviews, routine personnel dosimetry, bioassay collection, training, and emergency drills.

3. Policy. To protect military and civilian personnel from the harmful effects of ionizing radiation, such that all exposures to ionizing radiation will be kept ALARA. This is accomplished through the RSP which is consistent with applicable standards.

#### 4. Responsibilities

a. The Commanding Officer has the following responsibilities:

(1) Appoint in writing an Installation Radiation Safety Officer (IRSO) and Assistant Installation Radiation Safety Officer (ARSO) who meet the qualifications as described in reference (a).

(2) Ensure the RSOs have direct access with the Commanding Officer (CO) for discussing matters dealing with radiation safety, including internal audits, inspections, surveys, reviews, operations and compliance.

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(3) Ensure the RSOs have sufficient time and commitment to fulfill RSP duties and responsibilities defined by references and regulations.

(4) Ensure the RSO have independent authority to stop RSP operations that they consider unsafe and authority to seek appropriate guidance and direction from counterparts at RADCON and RASO.

(5) Ensure command directives governing the RSP, including RSP operating and emergency procedures, are endorsed by the Commanding Officer, Marine Corps Air Station Cherry Point.

b. The IRSO/Wing RSO has the following responsibilities:

(1) Shall oversee compliance of the installation RSP and have independent authority to stop RSP operations deemed unsafe.

(2) Will provide advice and assistance regarding all matters pertaining to radiation safety and shall act authoritatively for the Commanding Officer to ensure that personnel exposure to sources of ionizing radiation are maintained As Low As Reasonably Achievable (ALARA).

(3) Shall establish and maintain liaison with the Radiation Health Officer (RHO) to coordinate the RSP in compliance with the Radiation Health Program (RHP).

(4) Shall conduct internal audits and inspections as follows: Quarterly, radiological controls procedures and practices (observation of operations when possible), NRMP compliance, and transportation of RAM shall be inspected. Semi-annually, radiation medical examination (pre-placement, re-examinations, and terminations), occupational radiation exposure and personnel dosimetry records and logs, required records and reports, receipt, transfer, and disposal of radioactive materials, and corrective actions for discrepancies identified during previous audits or inspections. Annually, RSP training, ALARA Compliance, emergency plans and exercises, inventories of equipment containing radiation sources shall be audited and an overall review of the RSP shall be submitted to the Commanding Officer.

(5) Shall perform or coordinate radiation surveys/leak tests to ensure compliance with the reference and NRMPS.

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Surveys/leak tests may be conducted via swipe samples and/or meter readings.

(6) Shall develop, coordinate, and participate in training and orientation programs for occupationally exposed individuals and

other personnel as required by the references. Training will be conducted and evaluated annually or more frequently as required.

(7) Shall promptly report to the Commanding Officer and NAVSEADDET RASO any violation of specific NRMPs, naval directives, or federal requirements, or any mishap, significant incident, personnel injury, suspected overexposure, spread of contamination, or internal deposition involving RAM sources.

c. Assistant Radiation Safety Officer (ARSO) shall assist the IRSO in maintaining an effective RSP and act as the IRSO in the absence of the IRSO.

d. IRSO/ARSO will assist the Wing RSO as needed.

5. Contractors And Other Non-DoD Agencies

a. Contractors and other non-DOD agencies shall implement their own RSP that meets all pertinent radiation protection standards. Where contractors are performing work aboard the Air Station, the following provisions apply:

(1) The contractor shall provide a RSO who will act as such for contractor personnel.

(2) Marine Corps personnel shall not perform radiation services for contractor personnel as performance of such functions may involve assumption of liability.

b. Where Marine Corps and contractor personnel are to work together in areas where RAM or ionizing radiation may be present, the contractor shall provide a separate radiation survey for his personnel. The contractor shall be informed of Marine Corps survey findings, location of RAM and radiation areas, and local controls used. However, the contracting officer or ROICC shall also inform the contractor that the contractor retains legal obligation for the safety of contractor personnel.

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c. The contractor will provide the IRSO with an inventory of all radioactive sources and commodities that will be brought aboard the Air Station and shall assure that transportation of all RAM is in compliance with all pertinent regulations. The inventory will contain:

(1) Complete nomenclature of each source.

(2) Serial number of each source.

(3) Isotope.

(4) Activity in curies.

(5) Location.

(6) Date of the inventory.

(7) Contractor's NRC license number and the name and signature of the individual performing the inventory.

#### 6. The Nuclear Regulatory Commission (NRC).

a. The NRC has the primary responsibility for regulating RAM. It grants permission to receive, possess, distribute, use, transport, transfer, and dispose of RAM under special conditions established in individual licenses.

b. The NRC has issued a Master Materials License to DoN, to control the receipt, acquisition, possession, use and transfer of NRC licensed RAM. The Navy Radiation Safety Committee (NRSC) was established to oversee the Naval RAM Permit (NRMP) program and to control the use of licensed material. The NRSC issues NRMPs to individual commands that have the authorization to use NRC regulated material as well as naturally occurring and accelerator produced materials. RADCON maintains cognizance over all NRMPs issued to USMC commands by the NRC.

c. All conditions and requirements contained in permits and licenses issued must be met by commands possessing, storing, using, and disposing of RAM and using machines that produce ionizing radiation.

#### 7. General Requirements

a. Each unit RSO/RPA must maintain an updated inventory of RAM located in the work area. The inventory will include:

- (1) Item nomenclature.
- (2) National Stock Number (NSN).
- (3) Radioactive source ID number.
- (4) Radioisotope.
- (5) Chemical and physical form.
- (6) Activity (in curies) and date determined.
- (7) Location.
- (8) Custodian's name.

b. Each operation involving RAM must have an SOP specifically tailored for the operation being conducted. As a minimum, the SOP will include:

- (1) The purpose and objective of the SOP.
- (2) Applicability.
- (3) Responsibilities.
- (4) Procurement.
- (5) Storage.
- (6) Inventory.
- (7) Surveillance.
- (8) References.
- (9) Safety procedures (including specifics for use and handling).

(a) Safety procedures in the SOP will include:

1. Specific purpose.
2. Philosophy.
3. Safety rules.

4. Instruction to personnel.
5. Radiation protection standards.
6. Surveys.
7. Caution signs.
8. Labels and signals.
9. Radiological procedures and reporting.

c. RAM, including radioactive commodities, requires special storage procedures. As a minimum, all storage areas containing RAM and the entrances to these areas shall be labeled with signs containing the radiation symbol and the words "Caution - Radioactive Material." Areas used for storage of RAM will be kept to a minimum to facilitate adequate control. Small radioactive sources containing more than one millicurie of activity shall be stored in locked areas or cabinets, access to which is limited to authorized individuals. All losses of control of RAM will be reported to the supervisor, CRSO, RPA, IRSO/Wing RSO as soon as they are noted. This includes temporary misplacement, loss, theft, or unauthorized access.

d. RAM will not be stored in the same warehouse section with flammables, explosives, photosensitive items, food products or other incompatible goods. Proper selection of a fire resistant storage area for RAM will minimize release of radioactivity to the environment in the event of a fire. Whenever feasible, RAM shall be stored in fire resistant containers to minimize contamination spread. RAM shall be stored so that they are protected from adverse weather or conditions which may deteriorate the packaging materials. Commodities that contain radioactive gases, tritium-containing devices, or radium shall be stored in ventilated structures. Smoking, eating, drinking, chewing, applying cosmetics, applying or removing contact lens, or storing consumables will not be permitted in RAM storage areas.

e. A current list of locations where RAM is stored shall be available to personnel who might be called to fight a fire in such areas. This list should identify any unusual problems which might be encountered.

f. Reasonable care shall be taken in packaging and storing contaminated items to prevent the spread of contamination to

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personnel or to other areas. Personnel entering potentially contaminated storage areas shall wear appropriate personal protective equipment (PPE)/anti-contamination clothing.

g. A radiation emergency can occur where RAM or radiation-producing equipment is used, stored or transported. Emergency plans are included in the NRMP application. Emergency plans include:

(1) Procedures to identify conditions constituting an emergency.

(2) A list by priority of cognizant individuals, departments, and regulatory officials (RADCON, RASO) to be notified.

(3) Steps to control radiological exposure.

(4) Actions necessary to abate the radiation hazards.

h. Annually emergency plans shall be reviewed, updated if necessary, and tested via drills/exercises under realistic conditions.

i. Title 10 CFR 19.11, "Posting of notices to workers," requires that each licensee shall post current copies of the regulations contained in part 19 and 20, operating procedures applicable to licensed activities, any notice of violation involving radiological working conditions, proposed imposition of civil penalty, or other actions by the NRC. If posting of a document is not practicable, a notice may be posted which describes the document and states where it may be examined in accordance with reference (b).

j. NRC Form 3, "Notice to Employees," must be posted in all areas where RAM is used or stored. The required form can be acquired at the RADCON website ([www.logcom.usmc.mil/radcon](http://www.logcom.usmc.mil/radcon)) or from the cognizant RSO.

## 8. Medical Requirements

a. Per reference (e), all personnel who are being considered for routine assignments to duties or occupations which require exposure to ionizing radiation shall be given a medical examination prior to assignment or transfer to those duties.

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b. Personnel who are not routinely exposed to ionizing radiation as a result of their normal duties or occupation and are not likely to exceed 0.5 rem (Roentgen Equivalent Man, a unit used to measure radiation exposure) per year are not required to have pre-placement medical examinations.

c. Pre-placement and subsequent medical examinations shall be provided to all x-ray and gamma radiographers and radiographers' assistants.

d. All personnel whose duties may require entry into a high radiation area [100 mrem (milli-rem, a unit indicating 1/1000 rem) or higher in one hour].

e. All personnel required by conditions of individual Naval RAM Permits (NRMPs).

f. All personnel who routinely work with unsealed radium sources containing greater than 0.1 microcuries of radium or with unsealed sources of RAM greater than the exempt quantity limits specified in Schedule B of 10 CFR 30.

g. All personnel deemed necessary by the Commanding Officer.

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## Chapter 2

### Radiation Safety Training Requirements

#### 1. Purpose

a. The development of worker awareness of RSP permits the performance of tasks with greater efficiency and confidence.

b. When individuals are aware that there is some risk associated with their exposure, they can become active participants in the decision to accept and, where possible, reduce the risk as part of their job.

c. The number and seriousness of accidents and incidents can be reduced through training.

2. Responsibility. All Commanding Officers have the responsibility to ensure that occupationally exposed personnel under their jurisdiction maintain exposure to ionizing radiation ALARA. A part of ALARA is the assurance that each person has received radiation safety training commensurate with their potential for occupational exposure to ionizing radiation. All training must be documented.

#### 3. Training Requirements

a. Prior to assuming the duties of RSO/ARSO/Wing RSO/Command RSO, the prospective appointee shall successfully complete initial qualification training at NAVSEADET RASO. Courses offered and required by RASO can be found in reference (d), Section II. RPAs shall be trained by the cognizant RSO with refresher training provided annually.

b. Each military gamma radiographer and radiographers' assistant shall successfully complete the Radiographic Operator Course (A-701-0032) at Service Schools Command, San Diego, CA.

c. Civilian radiographers shall successfully complete the radiation safety training specified in their individual application for a NRMP to conduct gamma radiography.

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d. All gamma radiographers will receive formal training on local command operating and emergency procedures and annual refresher training in radiation safety procedures and regulations specified and described in their individual application for a NRMP to conduct gamma radiography.

e. Initial training for x-ray radiographers shall consist of the successful completion of one of the courses specified in reference (d), Section 2.2.3.

f. Annual refresher training including the topics listed in reference (d), shall be provided by the command.

g. Completion of refresher training shall be documented via a written exam on which students must attain a score of 80 percent or better.

h. Additional training shall be conducted each time there is a substantial change in equipment or operating procedures.

i. Periodic training shall be conducted by the RSO, designated representative, or both.

j. Radiography radiation barrier monitors shall receive initial training consisting of the topics listed in reference (d), Section 2.2.4. A score of 80 percent or better on a written examination is required for documentation of successful completion of initial training. Annual refresher training shall be conducted by the RSO or a designated representative.

k. Radiation workers are personnel who are occupationally exposed to ionizing radiation. They work in controlled areas and are required to have a physical examination. Initial training for radiation workers consists of a minimum of:

(1) Eight hours covering the subjects in reference (d) with a final written examination score of 80 percent or better.

(2) Annual refresher training will be conducted consisting of topics listed in reference (d), Section 2.2.5 and consist of a minimum of four hours duration.

(3) Training will be conducted by the RSO or a designated representative.

l. Limited radiation workers are personnel who are not exposed to ionizing on a routine basis and who do not require a

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physical examination. Their sporadic exposure is monitored. Each limited radiation worker will receive initial and annual refresher training on the topics listed in reference (d), section 2.2.6. Training will be conducted by the RSO or designated representative. The RSO will determine the duration.

m. Prior to being issued dosimetry equipment, all personnel authorized to receive radiation exposure shall be given specific instruction about radiation hazards including prenatal exposure risks to a developing embryo or fetus. All reasonable efforts shall be made to keep ionizing radiation exposure to unborn children to the very lowest practical level. The radiation exposure control level for personnel physically capable of bearing children shall not be extended beyond 0.5 rem per year whenever the "declaration of pregnancy" in Appendix A of reference (d) has been signed. This declaration will be kept in the individual's training record and a copy provided to your cognizant RSO. Instruction concerning prenatal exposure to unborn children shall also be given to personnel who supervise female workers authorized for radiation exposure as the amount of radiation exposure a pregnant female worker receives shall be limited in accordance with regulations. Instruction concerning prenatal exposure to the unborn child shall be given by the cognizant RSO or designated representative during initial and annual training. The U.S. NRC Regulatory Guide 8.13 shall be available and a copy given to individuals receiving the training. No examinations are required as part of the training; however, the training shall be documented.

n. All emergency response personnel who could be exposed to ionizing radiation during the performance of their duties shall receive initial and annual refresher training. Training will include:

(1) Information on sources of radiation in areas where they may be required to respond.

(2) Potential hazards associated with those sources, including prenatal risks for female employees who may be or may become pregnant.

(3) The relative priority of radiological controls versus other safety considerations during an emergency.

(4) Procedures to avoid or reduce potential radioactive contamination in emergency response situations.

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(5) Personal radiation safety requirements for personnel entering radiation areas under emergency conditions.

(6) Familiarization with the physical layout of facilities.

(7) Personnel to contact to provide radiological controls support during or after an emergency.

(8) Though a written exam is not required, initial training shall be a minimum of two hours and must be documented.

(9) Additional training shall also be provided whenever there is a significant increase in radiation exposure potential.

(10) Training shall be conducted by the cognizant RSO or a designated representative.

o Other organization personnel who routinely work in or frequent areas adjacent to radiation areas and RAM storage areas shall receive training including:

(1) Need to heed radiation warning signs and boundary markers.

(2) Nature of potential radiation exposures including those from natural background radiation and medical exposures.

(3) Controls used to protect personnel from radiation exposure.

(4) Initial and refresher training will be given by the cognizant RSO or a designated representative.

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## Chapter 3

## Transportation Of Radioactive Material

1. General. Transportation of RAM is generally considered very complicated because it is regulated by more than one agency posing requirements in pertinent agency regulations. Transportation of RAM must comply with military, NRC, and Department of Transportation (DOT) regulations. The shipper of record is ultimately responsible for compliance. Personnel assigned to duties related to transportation of RAM must be appropriately trained according to Title 49 of the Code of Federal Regulations. Radioactive commodities or RAM shall not be transferred to any Defense Reutilization and Marketing Office (DRMO).

2. RAM Movement Form. The RAM Movement Form is used to maintain an accurate record of the change of location or custody of RAM, sources, commodities, or items containing RAM. This form should be completed in addition to any other required documents, whenever transfers or changes of custody of items involving ionizing radiation take place. One copy should be retained by the unit transferring the item, one copy should be given to the receiving unit, one copy should be given to the appropriate supply activity, and one copy should be sent to the IRSO. RAM Movement Forms are available from the cognizant RSO and may be downloaded from the RADCON website: [www.logcom.usmc.mil/radcon](http://www.logcom.usmc.mil/radcon).

3. Disposition.

a. Disposition instructions for excess, defective or serviceable radioactive items may be requested by message or letter from the Marine Corps Logistics Command, Radiological Controls Office (RADCON,) at Albany, GA before any movement of RAM. The quantity, NSN, serial number, condition codes, applicable NRC license or NRMP numbers, and any other identifying or amplifying information must be provided in the correspondence. It must be noted if any item contains "Tritium Sources" or "Radioactive Materials."

b. RADCON will provide detailed disposition instructions for non-repairable items and repairable items per current maintenance agreements.

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c. Information copies of disposition instructions should be sent to the Logistics Radiation Safety Officer (LRSO), and appropriate RPO's at MCLB Albany, who will initiate tracer actions on shipments not received within 120 days. Copies of disposition instructions for local transfers should be sent to the IRSO, MCAS Cherry Point along with a RAM Movement Form.

#### 4. Traffic Management Office (TMO)

a. The RSO/ARSO of the Traffic Management Office (TMO) shall determine the form and quantity of the material and the type of packaging required in accordance with DOT shipping regulations, i.e., Title 49 CFR 173.422, with individual packaging data sheets (PDS), or with special packaging instructions (SPI).

b. The RSO/ARSO at TMO then applies required shipping labels and certifies the package for shipping via the appropriate mode of transportation.

c. Unless otherwise specified by TMO, intact Marine Corps radioactive commodities shall be shipped using the Proper Shipping Name: "Radioactive Material, Excepted Package-Instruments or Articles" under the provisions of DOT regulations, Title 49 CFR 173.422. Items under the cognizance of other services or commercial activities may require the use of other shipping names or procedures.

#### 5. Shipping & Carriage

a. RAM may not be transported in a private motor vehicle.

b. While transporting RAM within the confines of the Air Station via government motor vehicle compliance with applicable DOT regulations is still required even though the radioactive material or item is not "in commerce."

c. All movement of RAM aboard the installation must be accompanied by a completed RAM Movement Form for purposes of documenting the disposition, transfer, movement, and storage of RAM.

d. Except for local transport of RAM aboard the installation or removal of LLRW by the contractor designated by RASO, TMO shall coordinate and certify shipments of any RAM

being transported or shipped outside the confines of the installation via commercial modes of transportation.

e. Only RAM used for medical or research purposes with a transport index less than 3.0 may be shipped in a passenger plane's cargo hold. Special provisions apply. RAM shipped by cargo plane must display a "Cargo Only" label.

f. The shipper of record is ultimately responsible for compliance with DOT regulations for shipment of hazardous materials including RAM.

## 6. Receipt

a. Arrangements to receive a package containing RAM must be made when the carrier offers it for delivery or when notified of the arrival of the package at the carrier's terminal.

b. Packages known to contain RAM must be monitored for radioactive contamination and radiation levels not later than three hours after receipt:

(1) When the package is labeled as containing RAM.

(2) The package has evidence of potential contamination, such as packages that are wet, crushed, or damaged.

c. If the external radiation levels exceed 200 mrem per hour at the surface, 10 mrem per hour at one meter from the surface, or two mrem per hour in any occupied positions of the vehicle, the receiver will immediately notify the IRSO.

d. A record of the required surveys must be maintained by the receiving unit.

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## Chapter 4

### Disposal Of Radioactive Material

#### 1. Definitions

##### a. Low Level Radioactive Waste (LLRW) includes:

(1) Surplus, unwanted or unserviceable devices that are identifiable as containing RAM.

(2) Commodities that are identifiable as containing RAM.

(3) Instruments or articles that are identifiable as containing RAM.

(4) RAM for which there is no longer a useful purpose or property contaminated with RAM to the extent that decontamination is economically unfeasible. The item manager will advise users if the item may be turned in for reconditioning rather than disposal.

b. Mixed Radioactive Waste includes materials that contain both radioactive materials and other hazardous materials regulated by the Environmental Protection Agency (EPA).

#### 2. Turn-In Procedure

a. LLRW cannot be disposed of as ordinary waste or hazardous waste. It may not be turned in to DRMO.

b. An inventory of LLRW for transfer and disposal must be forwarded to the cognizant RSO as soon as the waste is identified. A RAM Movement Form may be used as a temporary inventory to show possession of RAM for transfer purposes. RAM Movement Forms may be acquired at the RADCON website ([www.logcom.usmc.mil/radcon](http://www.logcom.usmc.mil/radcon)) or from cognizant.

c. The unit disposing LLRW will provide a copy of the turn in document/RAM Movement Form to the unit's supply facility and to the cognizant RSO prior to moving the LLRW to the designated storage site.

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d. Prior to disposal of any mixed radioactive waste, the Director of Environmental Affairs of the Facilities Directorate and the cognizant RSO at RADCON shall be consulted for a disposition of the waste in question.

3. RSO/RPA Responsibilities Involving Disposal Of LLRW

a. Upon notification by a unit that LLRW needs to be turned in for disposal, the cognizant RSO/ARSO at the installation or Wing will arrange for the LLRW to be moved to the LLRW storage site where it will be held secured until the LLRW can be picked up by a disposal contractor designated by RASO. RAM Movement Forms will be completed by the unit RSO/RPA who shall provide copies to all parties concerned including the installation RSO/ARSO or Wing RSO as appropriate.

b. The installation RSO/ARSO or Wing RSO will notify the appropriate point of contact at RASO who will arrange for LLRW to be picked up by a designated contractor that is licensed by the NRC to transport and dispose of RAM.

c. When the LLRW is picked up for disposal by the designated contractor, the installation RSO/ARSO or Wing RSO will assure copies of all documentation showing transfer of the LLRW are acquired and distributed to all parties concerned for recordkeeping purposes. These records shall be retained for audits and inspections involving the disposition of RAM and LLRW.

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## Chapter 5

## General Emergency Guidelines

1. Introduction

a. Each unit handling, storing, using, transporting, receiving or disposing of sources of ionizing radiation, RAM or commodities containing RAM shall have specific guidance as outlined in Chapter 1 and training as described in Chapter 2.

b. The emergency guidelines in this chapter are general in nature. They will be used when an incident involving breakage, or other exposure of personnel to RAM (or radioactivity produced from any source) is discovered by personnel whose positions are not covered by a radiation SOP.

2. Emergency Guidelines

a. In the case of an incident involving RAM, the senior person present shall take immediate steps to control the emergency and request assistance from the cognizant RSO and emergency personnel as required.

b. The initial objective of any accident response involving RAM is to regain control over the event and prevent further spread of any radioactive contamination produced.

c. Actions to save life, aid the injured, fight fires, or control further spread of damage take precedence over concerns for radiological contamination that may arise from fielded Marine Corps equipment.

3. General Steps

a. In order to minimize personnel exposure from possible internal contamination, notify personnel in the immediate area to evacuate and activate the emergency alarm system.

b. In the case of tritium gas, vacate the immediate area and remain upwind for at least 30 minutes or until directed by the emergency personnel and/or cognizant RSO to reenter.

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c. In case of fire, stay upwind from any smoke a minimum of 100 meters or more as directed by emergency personnel. The self-contained breathing apparatus worn by firefighters will provide short-term protection against inhalation of airborne radioactive contamination.

d. As soon as possible, notify the cognizant RSO to ensure proper follow-up actions.

#### 4. Contamination Control

a. Devices with broken sources and any resulting debris should only be handled while wearing rubber or plastic gloves.

b. Devices with broken sources and any resulting debris should be doubly wrapped by inserting them into two plastic bags and sealing each (inner and outer bag) with tape. Clearly label the package as containing a radioactive contaminated device or materials. Retain all broken or non-illuminative devices for disposal as radioactive waste.

c. Personnel who may have received contamination on bare skin should wash with a mild soap and plenty of tepid water. Care should be taken not to irritate or abrade skin. NAVMEDCOM Instruction 6470.10, available at Navy medical commands, offers useful technical guidance for handling radioactively contaminated personnel and monitoring procedures for various radioisotopes. All personnel suspected of exposure to radiation should be evaluated by a health professional.

d. Based on radiological measurements and the circumstances of the incident, contamination of the immediate area and equipment should be considered a possibility. Until determined by the RSO and/or emergency personnel that radioactive contamination did not occur, or the reduction of contamination levels have been reduced below allowable limits, potentially contaminated areas are not to be accessible by unauthorized personnel. Likewise, equipment that may be contaminated shall not be returned to service until surveyed by competent persons trained and qualified for measuring and evaluating radioactive contamination.