

**BY ORDER OF THE COMMANDER
HILL AIR FORCE BASE**

**HILL AIR FORCE BASE INSTRUCTION
48-105**



4 SEPTEMBER 2025

Aerospace Medicine

**BASE IONIZING
RADIATION SAFETY PROGRAM**

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

ACCESSIBILITY: Publications and forms are available on e-publishing website at www.e-Publishing.af.mil for downloading or ordering

RELEASABILITY: There are no releasability restrictions on this publication

OPR: 75 OMRS/SGXB

Certified by: 75MDG/CC
(Col Kevin D. Alford)

Supersedes: HILLAFBI48-105, 13 January 2022

Pages: 8

This instruction implements Air Force Manual (AFMAN) 48-148, *Ionizing Radiation Protection*, and AFMAN 40-201, *Radioactive Materials (RAM) Management*. This instruction prescribes the precautionary measures and procedures for requisitioning, handling, storing, using and disposing of RAM, and ionizing radiation producing machines. It applies to all Hill Air Force Base (AFB) personnel, contractors, tenant organizations, Geographically Separated Units (GSUs: Little Mountain, Utah Test and Training Range, and Carter Creek), and other operating locations controlled by Hill AFB using RAM or radiation producing machines. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the Air Force (AF) Form 847, *Recommendation for Change of Publication*; route AF Forms 847 from the field through the appropriate functional chain of command. Ensure that all records generated as a result of processes prescribed in this publication adhere to Air Force Instruction (AFI) 33-322, *Records Management and Information Governance Program*, and disposed of in accordance with Air Force Records Disposition Schedule located in the Air Force Records Information Management System.

SUMMARY OF CHANGES

Interim Change 1 has been integrated. In addition, Bioenvironmental Engineering has been added to Section 2. References to Thermoluminescent Dosimeters have been removed and other needed administrative changes have been made.

1. As Low as Reasonably Achievable (ALARA) Concept. The ALARA concept was developed in response to scientific evidence suggesting that no level of radiation exposure is entirely risk free. Federal regulations have established a level of radiation exposure that is considered to have acceptable risk. The ALARA concept is that the lower the exposure to radiation, the lower the risk of adverse health effects. Therefore, it is prudent to make every effort to reduce exposures to the lowest levels reasonably achievable. The factors involved in deciding what is reasonable are; the state of technology, the risk to the individuals exposed, and the benefit to society from the activity being accomplished.

2. Roles and Responsibilities.

2.1. Supervisors shall:

2.1.1. Be responsible for implementing the ALARA concept.

2.1.2. Immediately notify 75th Operational Medical Readiness Squadron, Occupational Medicine (75 OMRS/SGXO) and 75th Operational Medical Readiness Squadron, Bioenvironmental Engineering (75 OMRS/SGXB) of assignment of personnel to work involving ionizing radiation.

2.1.3. Keep a record of the RAM, including check sources, within the area of supervision and send a copy to the Installation Radiation Safety Officer (IRSO).

2.1.4. In consultation with the IRSO, order, maintain and operate radiation detection equipment necessary to ensure compliance with Federal standards.

2.1.5. Be responsible for the safety of workers in any radiation environment, including preoperative checks of safety equipment (i.e., monitoring instruments and interlocks).

2.1.6. Ensure all necessary safety equipment (shields, protective clothing, monitoring instruments and long-handled tongs) is available and used by personnel working with radiation sources.

2.1.7. Conduct inspections necessary to ensure that all safety equipment remains operative and not damaged.

2.1.8. Be alert for equipment failure, malfunctions, or improper safety procedures used by personnel, which may result in excessive radiation exposure.

2.1.9. Prepare a written training lesson plan and coordinate with the IRSO. These plans must, at a minimum, address the proper use of radiation generating equipment and radioactive materials, emergency procedures and exposure minimization.

2.2. Individual users shall:

2.2.1. Learn and implement the rules of ALARA and radiation safety as described in applicable Federal, United States Air Force (USAF), and Hill AFB instructions as well as in organizational instructions.

2.2.2. Verify radiation monitoring equipment functions properly before beginning work.

2.2.3. Report incidents/accidents and hazardous conditions immediately to their supervisor, Permit Radiation Safety Officer (PRSO), or the IRSO when appropriate.

2.3. Bioenvironmental Engineering

2.3.1. Conduct scatter surveys on new radiation generating equipment.

2.3.2. Conduct annual radiation surveys of radiation generating equipment. The radiation survey may be conducting as part of the Industrial Hygiene Survey in years when such survey is performed.

3. Shipping, Handling and Storage of RAM.

3.1. No individual will procure RAM or radiation producing devices.

3.2. No organization will procure RAM or radiation producing devices without prior approval of the IRSO. Requests for approval will be submitted to 75 OMRS/SGXB for review at least 30 days prior to the expected project/use start date. Requests involving use by a contractor require submission of a requirement package to the organization's contracting section and coordination with the IRSO. The request must clearly identify the sources and/or equipment to be used on Hill AFB.

3.3. The organization will prepare a letter of justification and supporting documentation indicating the materials or equipment desired. This request must be submitted to 75 OMRS/SGXB for review. Requests must include, at a minimum, the following:

3.3.1. Name, title, organization and telephone number of point of contact.

3.3.2. Names, titles and organizations of all personnel who will regularly use the material or equipment.

3.3.3. Exact locations where the material or equipment will be used, maintained and stored.

3.3.4. Brief outline of how the materials or equipment will be used and any special requirements.

3.3.5. A copy of the Nuclear Regulatory Commission License, Agreement State License, USAF RAM Permit or US Navy RAM permit.

3.4. If a RAM permit needs amending, the Permittee shall submit an application for a permit amendment to the Radioisotope Committee Secretariat, in coordination with the IRSO, prior to procuring the RAM.

3.5. Receipt of RAM on Hill AFB and associated GSUs.

3.5.1. All RAM shipped to Hill AFB, regardless of destination, shall be coordinated with the IRSO who shall verify the organization is allowed to receive the RAM IAW applicable standards.

3.5.2. Radioactive materials authorized under a USAF RAM permit must possess documented approval and coordination of both the PRSO and IRSO prior to accepting delivery of RAM.

3.6. Organizations needing to ship RAM must notify the IRSO and obtain IRSO approval, in writing, at least 14 days prior to shipping.

3.7. The establishment of a proposed RAM storage area must be approved by the IRSO.

3.7.1. Store all RAM in safe and secure locations to prevent removal by unauthorized personnel.

3.7.2. Radiation producing machines may be stored in convenient locations identified by the organizational owner, provided they are in a configuration to preclude inadvertent operation.

3.7.3. Excess RAM will be processed through 75 OMRS/SGXB. An authorized RAM storage area shall be established by 75 OMRS/SGXB. This storage area shall be secured/locked and the RAM shall not be stored with other hazardous materials. Only 75 OMRS/SGXB staff are allowed access to the storage area. The storage area shall be posted with a conspicuous sign or signs bearing the radiation symbol and the words "CAUTION RADIOACTIVE MATERIAL."

4. RAM Waste.

4.1. The owning organization where waste containing RAM is generated is responsible for contacting the IRSO for guidance on handling the waste.

4.2. Permitted and non-permitted RAM waste shall be shipped to Building 884 for storage pending disposal upon approval of the IRSO. Permitted or licensed RAM received from off-base organizations will not be disposed of unless approved by the IRSO.

4.3. The following information must accompany RAM waste sent to Building 884:

4.3.1. Name and organization of person turning in the material.

4.3.2. Building number and date the material was turned in.

4.3.3. Item name and/or description.

4.3.4. National stock number (if available).

4.3.5. Part number or model number.

4.3.6. Quantity of each item.

4.3.7. Isotope (e.g., tritium, Cs-137, Ra-226, etc.).

4.3.8. Activity (e.g., 10 mCi, 5 microcuries, 100 nCi, 3 uCi, etc.).

4.4. The IRSO will arrange for disposal of RAM with Air Force Radioactive Recycling and Disposal (AFRRAD) at Wright-Patterson AFB, OH. AFRRAD shall provide disposal instructions. AFRRAD shall be contacted at least biannually to arrange for disposal of RAM waste.

5. Dosimetry Program.

5.1. The workplace supervisor shall submit a written notice via email to usaf.hill.75-mdg.mbx.bio@health.mil and addressed to the Dosimetry Program Manager when personnel are added or deleted to/from the dosimetry program.

5.2. Never place the dosimeter inside the pocket or behind cloth, cigarettes, coins, or any obstruction whatsoever. This will provide some shielding so the recorded exposure would be lower than the actual exposure.

5.3. Tampering with dosimeters is prohibited. If these devices are accidentally damaged or exposed, the wearer must immediately return them to 75 OMRS/SGXB for exchange and subsequent evaluation. The wearer shall explain the nature of the incident to aid in evaluation of the dosimeter.

5.4. Personnel working with industrial x-ray equipment shall wear one Electronic Personal Dosimeter (EPD) as prescribed by the IRSO. This will allow frequent reading of the dosimeters during hazardous procedures. EPDs shall be attached to the front of the outer garment between the neck and waist. Never place EPDs behind dense materials.

5.5. Visitors entering a radiation area are required to register with the supervisor, or acting supervisor, before entry. The supervisor, or acting supervisor, shall issue an EPD, or similar personnel monitoring device, to the visitor and maintain an AFTO IMT 115, *Digital Alarm Dosimeter Result Log*, with the visitor's name, address, date, time in and out, EPD number, and initial and final readings on the EPD.

5.6. The remainder of the dosimetry program will be administered IAW Department of the Air Force Manual (DAFMAN) 48-125, *Personnel Ionizing Radiation Dosimetry*.

6. Training.

6.1. ALARA Training shall be provided IAW AFMAN40-201.

6.2. Awareness training shall be provided to individuals who, in the course of their duties, have the potential to receive an occupational radiation dose, but are not required to receive ALARA training.

6.2.1. Personnel shall be provided awareness training coordinated by the supervisor:

6.2.1.1. Before the individual is permitted to assume duties with or in the vicinity of radiation sources.

6.2.1.2. Annually during refresher training.

6.2.2. Often times the owner's manual will provide sufficient information to cover this training. Topics covered shall include, but are not limited to:

6.2.2.1. Type of radiation.

6.2.2.2. Exposure controls, such as sealed source, interlocks, etc.

6.2.2.3. Proper handling.

7. Radiation Event Notification Procedures.

7.1. Notification procedures are required for events that result in radioactive contamination of facilities or environment, or that may result in the exposure of personnel to hazardous levels of radiation. The IRSO must be notified (via phone at 777-4551) immediately of all potential radiation events.

7.2. The IRSO shall conduct an investigation to determine and assess the extent of exposures from all sources of radiation identified during a radiation event.

8. Records Management.

8.1. The PRSO shall maintain records on their respective USAF permit to include any materials licenses, as required by Code of Federal Regulations Title 10 and AFI 33-322, *Records Management and Information Governance Programs*, and AFRIMS Records Disposition Schedule.

8.2. The PRSO will provide copies of all radiation records to 75 OMRS/SGXB.

DANIEL L. CORNELIUS, Colonel, USAF
Commander, 75th Air Base Wing

Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

AFMAN40-201, *Radioactive Materials (RAM) Management*, 29 March 2019

AFMAN48-148, *Ionizing Radiation Protection*, 20 July 2020

AFI33-322, *Records Management and Information Governance*, 23 March 2020; Incorporating Change 1, 28 July 2021

DAFMAN48-125, *Personnel Ionizing Radiation Dosimetry*, 27 October 2020

Adopted Forms

DAF Form 847, *Recommendation for Change of Publication*

AFTO IMT 115, *Digital Alarm Dosimeter Results Log*

DD Form 1149, *Requisition and Invoice/Shipping Document*

Abbreviations and Acronyms

AF—Air Force

AFB—Air Force Base

AFI—Air Force Instruction

AFMAN—Air Force Manual

AFRIMS—Air Force Records Information Management System

AFRRAD—Air Force Radioactive Recycling and Disposal

ALARA—As Low as Reasonable Achievable

DAFMAN—Department of the Air Force Manual

DLA—Defense Logistics Agency – Distribution Services

EPD—Electronic Pocket Dosimeter

GSU—Geographically Separated Unit

IAW—In Accordance With

IRSO—Installation Radiation Safety Officer

OO-ALC/DPCC—Ogden Air Logistics Complex/Civilian Personnel Office

PRSO—Permit Radiation Safety Officer

RAM—Radioactive Material

RDS—Records Disposition Schedule

USAF—United States Air Force

75 OMRS—75th Operational Medical Readiness Squadron

75 OMRS/SGXB—75th Operational Medical Readiness Squadron/Bioenvironmental Engineering Flight

75 OMRS/SGXO—75th Aerospace Medicine Squadron/Occupational Medicine Flight

75 FSS/FSMPS—75th Force Support Squadron/Military Personnel Flight

775 CES/CEF—775th Civil Engineering Squadron/Fire Protection Squadron

Terms

Annual—Should be scheduled at a nominal 12 months. Performance may be conducted up to three months before to three months after the scheduled date.

As Low As Reasonably Achievable (ALARA) Concept—ALARA is defined as that set of management and administrative actions taken to reduce personnel ionizing radiation exposure to as low a level as possible consistent with existing technology, costs, and operational requirements.

Microcuries—One millionth of a curie. A curie is a term that designates a quantity of radioactive material present. It is the amount of radioactive material that disintegrates at the rate of 37 billion atoms per second. Becquerels is the internationally recognized unit of measure.

Dosimeter—A radiation detection device normally worn by an individual and designed to detect and quantitatively measure beta, gamma, x-ray, and, if required, neutron radiation. Dosimeters are read by the USAF Radiation Dosimetry Laboratory at Wright-Patterson AFB, OH.