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Medical Command



**RADIOACTIVE MATERIALS (NON-NUCLEAR
WEAPONS)**

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1. The use of radioactive materials is beneficial, and often essential to success, in medicine, research and development, and operational activities. However, there are potential hazards associated with these substances which must be controlled to protect human health and the environment. This directive establishes policy for control of radioactive materials, including those regulated by the US Nuclear Regulatory Commission (NRC), but excluding those used in nuclear weapons or, which are otherwise exempted by the Atomic Energy Act.
2. The Air Force will fully comply with Federal regulations for control of radioactive material.
3. The Air Force will limit the use of radioactive materials as much as possible.
 - 3.1. Radioactive materials will only be used when justified.
 - 3.2. Radiation exposures to workers and the public will be maintained below Federal limits and as low as reasonably achievable (ALARA).
 - 3.3. Radioactive materials will only be used on Air Force installations when properly authorized by an appropriate permit or license and when approved by the installation commander.
4. Only individuals qualified by appropriate training and experience will be allowed to use, or to supervise the use of, radioactive materials.
5. The Air Force will have a formal program to assess compliance with this policy, provisions of the Air Force Master Materials License and with US Air Force Radioactive Material Permits.
6. The following responsibilities and authorities are established:
 - 6.1. The Office of the Secretary of the Air Force and the Air Staff provide policy, advocate resources for, and oversee the control of radioactive materials.

6.2. The Air Force Radioisotope Committee, under HQ USAF/SG, functions as the Air Staff radiation safety committee, manages the Air Force Master Materials License, and approves Air Force uses of radioactive materials.

6.3. Commanders of Air Force organizations handling radioactive materials ensure only authorized activities are conducted, establish programs to ensure activities are safely done and in compliance with requirements, and identify resources needed to comply with this policy.

6.4. Individual users are responsible for effective control of radioactive materials by:

6.4.1. Complying with radiation safety procedures in the license or permit authorizing use of the material, the directives referenced, local operating instructions or directives, and verbal instructions of the Radiation Safety Officer (RSO) and supervisors.

6.4.2. Informing their RSO or supervisor about radiologic conditions of which they believe are unsafe or in noncompliance and about incidents or accidents involving radioactive materials.

7. This policy applies to all Air Force organizations and employees who acquire or possess radioactive materials. It also applies to any agency or person who brings radioactive materials onto Air Force installations or uses radioactive materials on Air Force installations. It does not apply to radioactive materials transferred from the Department of Energy (DOE) to the Department of Defense (DoD) as components of nuclear weapon systems; certain radioactive components of weapons systems; nuclear reactor systems components and fuel controlled under Section 91b of the Atomic Energy Act; and DOE activities related to SAFE HAVEN requirements.

8. This directive implements national policies and regulatory requirements of: the Atomic Energy Act (AEA) of 1954 and Energy Reorganization Act of 1974 (Public Law 93-438); Title 10, Code of Federal Regulations, Parts 0-199, *Energy*; Title 49, Code of Federal Regulations, Parts 100-177, *Transportation*.

9. See **Attachment 1** for measures of compliance to this policy.

10. See **Attachment 2** for terms explained.

11. See **Attachment 3** for interfacing publications.

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Attachment 1

MEASURING AND DISPLAYING COMPLIANCE WITH POLICY

A1.1. Three objective measures of overall compliance with policy are the number of accidents and incidents involving radioactive materials; the number of regulatory violations identified against Air Force users by the primary regulating agency, the NRC; and recorded occupational exposures to workers.

A1.1.1. Incidents. The total number of events involving radioactive materials reported in a calendar year (**Figure A1.1.** by Air Force units to HQ AFMOA/SGPR as an accident or incident and determined by HQ AFMOA/SGPR to be a valid reportable event as defined in Title 10, Code of Federal Regulations, Parts 0-199, *Energy*, or AFI 40-201, *Management of Radioactive Material in the US Air Force* (formerly AFR 161-16).

A1.1.2. Violation Rate and Violations I-III. The number of violations per inspection and the number of Severity Level I, II, or III (Title 10, Code of Federal Regulations, Part 2, *Rules of Practice for Domestic Licensing Proceedings*) violations of NRC regulations, Air Force Master Materials License or US Air Force Radioactive Materials Permit conditions cited by the NRC in a calendar year. The NRC sends HQ AFMOA/SGPR all their reports involving a Notice of Violation.

A1.1.3. Personnel Radiation Exposure Summary RCS: HAF-SGP(A) 9232. The average annual dose for all individuals working with radioactive materials and the highest annual dose to an individual materials worker (**Figure A1.2.** as recorded in personnel dosimetry and bioassay records in the Air Force master registry of exposures to ionizing radiation maintained by the Armstrong Laboratory. Armstrong Laboratory prepares and forwards the report to HQ AFMOA/SGPR by 1 April each year. Continue reporting during emergencies.

A1.2. Data are compiled annually and compared against the previous 4 years. Goals are no incidents or violations for the Air Force and doses to workers well below limits and with a overall downward trend.

Figure A1.1. Sample Metric of Radioactive Materials -- Incidents and Violations.

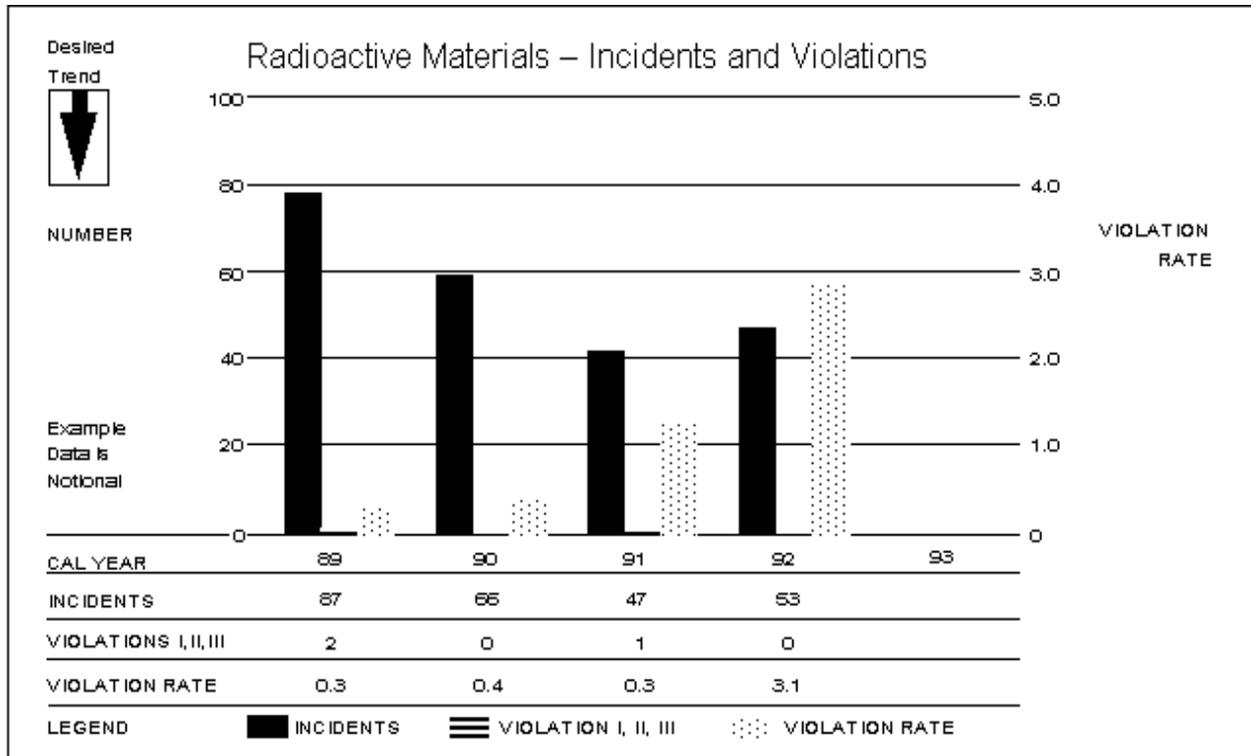
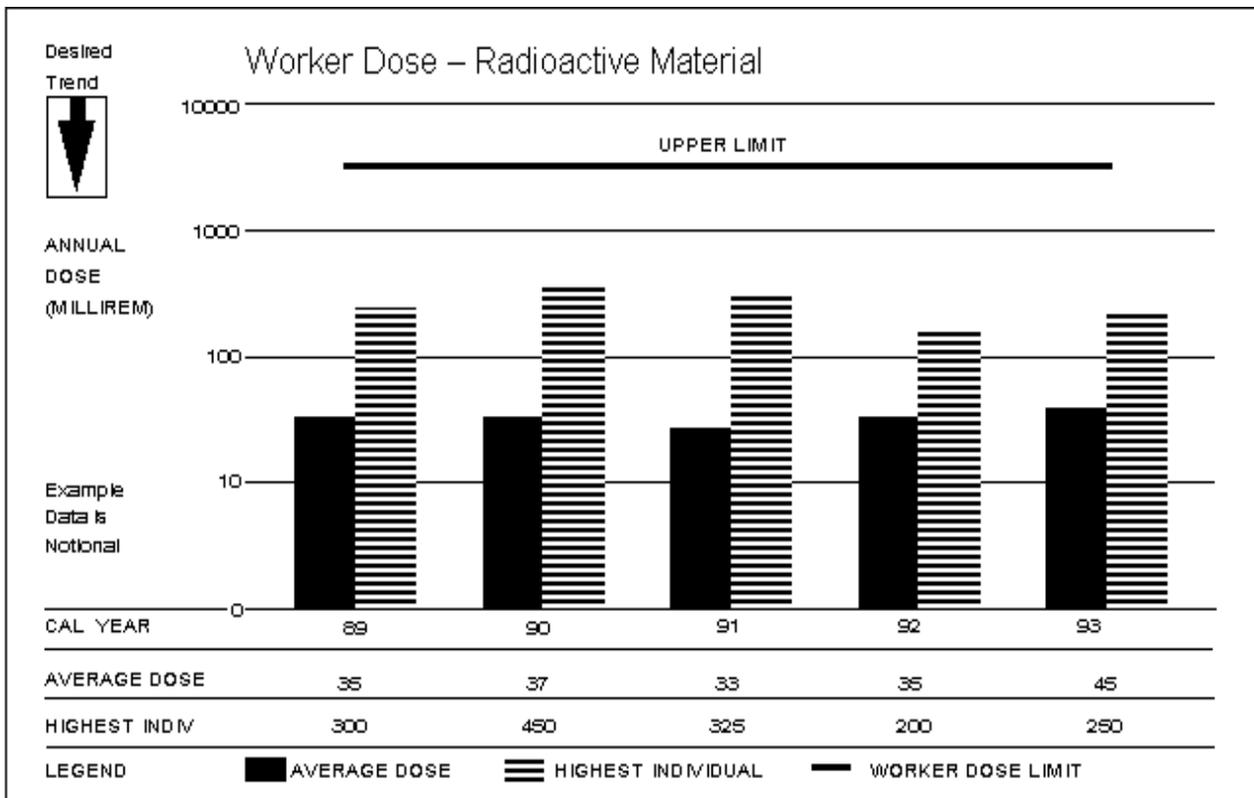


Figure A1.2. Sample Metric of Worker Dose--Radioactive Material.



Attachment 2

ABBREVIATIONS, ACRONYMS, AND TERMS

A2.1. Accident. For purposes of this directive, an accident is an event involving a nuclear reactor, radioisotope power system, or radioactive material resulting in any of the following:

A2.1.1. An uncontrolled nuclear reactor criticality resulting in damage to the reactor core or release of fission products from the reactor core to the surrounding environment or atmosphere.

A2.1.2. A loss of control of radioactive material which presents a hazard to life, health, or property. This includes loss of control which may result in any person in an unrestricted area exceeding the limits for exposure to ionizing radiation as stated in Title 10, Code of Federal Regulations, Part 20, *Standards for Protection Against Radiation*.

A2.1.3. Any unexpected event involving radioactive materials or radiation exposure which is serious enough to warrant the interest or action of officials or agencies outside the Air Force. This category includes; events having domestic or international implications, those which may cause inquiries by the public or press, and those requiring immediate notification to the NRC under Title 10, Code of Federal Regulations, Part 20, *Standards for Protection Against Radiation*.

A2.2. Air Force Master Materials License. The single Nuclear Regulatory Commission license issued to the US Air Force Radioisotope Committee delegating to the Air Force regulatory authority over Byproduct, Source, and limited quantities of Special Nuclear Material used by the Air Force.

A2.3. As Low As Reasonably Achievable (ALARA). That set of actions taken to reduce personnel exposures to as low as possible consistent with existing technology, cost, and operational requirements.

A2.4. Byproduct Material. Radioactive material (except Source and Special Nuclear Material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or using Source or Special Nuclear Material.

A2.5. Incident. For purposes of this directive, an incident is any event involving a nuclear reactor, radioisotope power system, or radioactive material which is not defined as an accident, or which may result in adverse public reaction. This includes possible premature release of information.

A2.6. License. Nuclear Regulatory Commission or Agreement State written authorization to receive, possess, use, or transfer Byproduct, Source, or Special Nuclear Material.

A2.7. Naturally Occurring Radioactive Material. Radioactive material that occurs in nature such as, Carbon-14, Radium-226, Thorium-232, Uranium-238, etc.

A2.8. Permit. US Air Force or US Navy Radioactive Material Permit issued to a unit within the respective service under authority of a Master Materials License.

A2.9. Section Ninety-One b (91b) Material. Radioactive material exempted from Nuclear Regulatory Commission licensing controls under Section 91 of the Atomic Energy Act of 1954, as amended, in the interest of national defense.

A2.10. Radiation Safety office (RSO). An individual with the specific education, military training, and professional experience in radiation protection practice designated by a commander or the US Air Force Radioisotope Committee to manage radiation safety programs. The term "Radiation Safety Officer" is a functional title and does not denote a commissioned status or job classification in the Air Force.

A2.11. Radioactive Material. Material whose nuclei, because of their unstable nature, decay by emission of ionizing radiation. The radiation emitted may be alpha or beta particles, gamma or X-rays, or neutrons.

A2.12. SAFE HAVEN. Temporary storage and protection provided the Department of Energy classified shipment transporters at Department of Defense facilities in order to ensure safety and security of nuclear material or non-nuclear classified material.

A2.13. Source Material. Uranium or thorium or any combination thereof in any physical or chemical form; or ores that have, by weight, one-twentieth of 1 percent (0.05 percent) or more of uranium, thorium, or any combination thereof. Source material does not include special nuclear material.

A2.14. Special Nuclear Material (SNM). Plutonium, Uranium-233, uranium enriched in the isotope 233 or in the isotope 235, and any other material that the Nuclear Regulatory Commission determines to be SNM. SNM does not include source material.

A2.15. US Air Force Radioactive Material Permit. Written authorization from the US Air Force Radioisotope Committee for Air Force organizations to receive, possess, distribute, use, transfer, or dispose of radioactive materials.

A2.16. US Air Force Radioisotope Committee (RIC, The Committee). A committee established according to, and the named licensee on, the Air Force Master Materials License to coordinate the administrative and regulatory aspects of licensing, possessing, distributing, using, transferring, transporting, and disposing of all radioactive material in the Air Force except that transferred from the Department of Energy to the Department of Defense in nuclear weapon systems, certain radioactive components of weapons systems and nuclear reactor systems, and components and fuel controlled under Section 91b of the Atomic Energy Act.

Attachment 3

INTERFACING DOCUMENTS

DoD Publications

DoD Directive 5100.52, *DoD Response to an Accident or Significant Incident Involving Radioactive Material*, December 21, 1989

DoD Instruction 6055.8, *Occupational Radiation Protection Program*, March 31, 1989

DoD Manual 6050.5 With Change 1, *Hazardous Material Information System Procedures*, July 1981

Departmental Publications

AFPD 24-2, *Preparation and Movement of US Air Force Material*, (Formerly AFR 75-1)

AFPD 32-40, *Disaster Preparedness*, (Formerly AFR 355-1)

AFPD 32-71, *Environmental Compliance Program*, (Formerly AFRs 19-2, 19-7, 19-8, and 19-11)

AFPD 40-4, *Air Force Clinical Investigation and Human Use*, (Formerly AFRs 169-3 and 169-6)

AFI 32-401, *Disaster Preparedness*, (Formerly AFR 355-1)

AFR 67-8, *Radioactive Commodities in the DoD Supply Systems* (**Joint Dept. Publication**)

AFR 71-4, *Preparing Hazardous Materials for Military Air Shipments* (**Joint Dept. Publication**)

AFI 40-201, *Management of Radioactive Material in the US Air Force*, (Formerly AFR 161-16)

AFI 91-310, *Nuclear Safety Review and Launch Approval for Space or Missile Use of Radioactive Material and Nuclear Systems*, (Formerly AFR 122-16)

AFI 91-404, *Investigating and Reporting Mishaps*, (Formerly AFR 127-4)

AFI 91-408, *Air Force Occupational Safety, Fire Prevention and Health Program*, (Formerly AFR 127-12)