1.1 **Purpose.** This chapter describes the minimum Safety and Risk Management Program (SRMP) requirements for protecting Indian Affairs (IA) employees and the public from adverse exposure to radiation sources.

1.2 **Scope.** This policy applies to all offices under the authority of the Assistant Secretary - Indian Affairs (AS-IA), including the Bureau of Indian Affairs (BIA) and the Bureau of Indian Education (BIE).

1.3 **Policy.** It is the policy of IA to comply with all applicable federal laws, regulations, and Department of the Interior (DOI) policies and procedures regarding radiation safety, and to ensure that resources are available to facilitate compliance.

1.4 **Authority.**

A. **Statutes and Regulations.**

1) P.L. 91-596, Sec. 19. Federal Agency Safety Programs and Responsibilities, Occupational Safety and Health Act of 1970

2) 10 CFR, Nuclear Regulatory Commission (NRC)

3) 29 CFR 1910, Occupational Safety and Health Standards

4) 29 CFR 1926, Safety and Health Regulations for Construction

5) 29 CFR 1960, Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters

6) 41 CFR 102-80, Safety and Environmental Management

7) 49 CFR, Transportation

B. **Guidance.**

1) 485 Departmental Manual (DM) 21: Radiation Safety

2) Executive Order (EO) 12196: Occupational Safety and Health Programs for Federal Employees, 1980

3) U.S. Nuclear Regulatory Commission Regulation (NUREG) 1556, Section 8.7 Item 7: Individual(s) Responsible for Radiation Safety Program and Their Training and Experience
C. Handbooks.

Additional program information is further detailed in the BIA Safety and Health Handbook for Field Operations (Oct. 5, 2004) and is incorporated into this IAM chapter by reference. The handbook can be found here: https://www.bia.gov/policy-forms/handbooks

1.5 Responsibilities.

A. Director, Office of Facilities, Property, and Safety Management (OFPSM) is the IA-Designated Safety and Health Official (IA-DASHO) and is responsible for managing and administering the IA SRMP. The Director reports to the IA Deputy Assistance Secretary – Management (DAS-M) and is responsible for oversight, policy, and procedures governing IA facilities management and construction, property, safety, and risk management, including the administration and management of the Radiation Safety Program.

B. Chief, Division of Safety and Risk Management (DSRM), OFPSM is responsible for:

1) advising and supporting the IA-DASHO in carrying out Radiation Safety Program responsibilities; and

2) providing technical assistance and guidance to management in carrying out Radiation Safety Program requirements.

C. Regional Director (RD) is responsible for:

1) establishing a Radiation Safety Program;

2) ensuring compliance with statutory and regulatory policy and Radiation Safety Program requirements;

3) providing the resources and staff support necessary for the successful implementation of a Radiation Safety Program;

4) appointing and assigning responsibilities to a qualified Radiation Safety Officer at each applicable facility; and

5) providing required reports associated with the program.

D. BIE Deputy Bureau Director (DBD), School Operations Division is responsible for:

1) establishing a Radiation Safety Program;
2) ensuring compliance with statutory and regulatory policy and Radiation Safety Program requirements;

3) providing the resources and staff support necessary for the successful implementation of a Radiation Safety Program;

4) appointing and assigning responsibilities to a qualified Radiation Safety Officer at each applicable facility; and

5) providing required reports associated with the program.

E. Managers/Supervisors are responsible for:

1) providing support at operating locations to ensure that identified controls are implemented and maintained, and work environments are safe; and

2) ensuring that each employee under their supervision who is an operator of a portable nuclear gauge is fully qualified to operate such equipment under the requirements of this policy, and that only such qualified individuals operate a portable nuclear gauge in the performance of their duties.

F. BIA Radiation Safety Officer (RSO) is responsible for administering the Radiation Safety Program at their level, recommending or approving corrective actions, identifying radiation safety problems, initiating action(s), and ensuring regulatory compliance.

1.6 Definitions.

A. As Low As Reasonably Achievable (ALARA) is the means to make every reasonable effort to maintain exposures to ionizing radiation as far below the dose limits as practical, consistent with the purpose for which the licensed activity is undertaken, taking into account the state of technology, the economics of improvements in relation to state of technology, the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to utilization of nuclear energy and licensed materials in the public interest.

B. Bill of Lading (BL or BOL) is a legal document issued by a carrier to a shipper that details the type, quantity, and destination of the goods being carried. It also serves as a shipment receipt. It must be filled out in accordance with 49 CFR 172.200-204.

C. General Licensed Materials are those materials subject to the NRC regulations listed in 10 CFR 31.5. General licensed materials are devices containing radioactive material and are typically used to detect, measure, gauge, or control the thickness, density, level, or chemical composition of various items. Examples of such devices are gas
chromatographs (detector cells), density gauges, nuclear gauges, fill-level gauges, and static elimination devices.

D. Ionizing Radiation (IR) is the most energetic form of radiation, capable of removing electrons from atoms (ionization) and damaging the DNA within living cells. X-rays, gamma rays, and alpha & beta particles are examples of ionizing radiation.

E. Laser(s) is a device that converts incident electromagnetic radiation of mixed frequencies to discrete frequencies of highly amplified and coherent ultraviolet, visible, or infrared radiation.

F. Naturally Occurring Radioactive Materials (NORM) are naturally occurring uranium and thorium and their decay products present in air, soil, rocks, and water. NORM is a potential health concern when concentrations and radio activities are above typical environmental levels or where anthropogenic processes such as oil and gas production, mining, mineral processing, water treatment, etc., may concentrate uranium and thorium above typical environmental levels.

G. Non-ionizing Radiation (NIR) is radiation having enough energy to excite atoms (make them move more rapidly), but not enough to ionize them (alter them physically). Examples of non-ionizing electromagnetic radiation include microwaves, radio waves, lasers, and visible light.

H. Qualified individual is a person licensed in the types of materials to be used; qualified by training and experience in radiation protection as to protect health and minimize danger to life or property; and must have established administrative controls and provisions relating to organization and management, procedures, record keeping, material control, accounting, and management review that are necessary to assure safe operations.

I. Radon is a naturally occurring radioactive gas found in soils, rock, and water throughout the United States. It has numerous different isotopes, but radon-220 and -222 are the most common. Radon can cause lung cancer.

J. Restricted Area(s) is an area where access is controlled to protect an individual from exposure to radiation or radioactive materials.

K. X-rays are penetrating electromagnetic radiation (photon) having a wavelength that is much shorter than that of visible light. These rays are usually produced by excitation of the electron field around certain nuclei.
1.7 Standards, Requirements and Procedures.

A. Requirements for IR

1) Affected locations must protect employees and the public against exposures to IR, and must comply with the appropriate standards and regulations.

2) Affected locations should make every reasonable effort to maintain exposures to employees and to the public ALARA, and at no time shall exceed the applicable limits set by 10 CFR 20, 29 CFR 1910.1096, and 29 CFR 1926.53.

3) Locations conducting activities or possessing radioactive materials under a license issued by the NRC will conduct activities and handle materials in accordance with their license requirements and applicable NRC regulations. These include General Licensed Materials.

4) Locations possessing or using radiation sources not requiring NRC licensing must implement a program to meet the requirements of 29 CFR 1910.1096.

5) Each affected location will develop, document, and implement a Radiation Safety Program that governs the use and exposure to IR. Radiation Safety Programs must include, at a minimum, the following elements:

   a. Coordinating through the regional Property and Acquisitions offices, and establishing a process that provides accountability and control of IR sources through procurement, use, storage, final disposition, or disposal. This includes an annual physical inventory of radiation sources or more often when specified by governing regulations and established procedures.

   b. Determining functional responsibilities for program implementation and oversight. This determination will be done by the RD or BIE DBD, School Operations Division.

   c. Maintaining airborne concentrations and dose below the applicable limits as specified in the governing standard or regulation.

   d. Conducting surveys and monitoring to determine the magnitude and extent of radiation levels; concentrations, quantities of radioactive material, and potential radiological hazards; and, where applicable, conducting leak tests of sealed sources, x-ray producing devices, and other radiation producing equipment housing radioactive materials.

   e. Evaluating employee and public exposure to ionizing radiation where required or as applicable.
f. Posting “restricted area” or other appropriate radiation caution or danger signage (i.e., 3-bladed, magenta or purple and yellow signage or other accepted color schemata); and providing the physical means to prevent unauthorized access to such areas.

g. Labeling containers in which radioactive materials are transported, stored, or used with the appropriate radiation caution or danger signage, and maintaining appropriate manufacturer’s labels on radiation producing devices.

h. Establishing emergency and immediate evacuation procedures, as applicable.

i. Ensuring that radioactive materials are transported (shipping and receiving) in accordance with the appropriate NRC and U.S. Department of Transportation (DOT) regulations; and conducting radiation surveys as needed on packages containing radioactive materials prior to accepting receipt within the regulated timeframe.

j. Providing appropriate and effective training to employees who are potentially exposed to IR. Training will be provided at the time of initial assignment and repeated if there is a change in operational procedure or exposure. DOT training is required for employees involved in the transportation of radioactive materials at least once every three (3) years.

k. Ensuring that radioactive materials are properly secured and stored.

l. Ensuring that radioactive waste is disposed of in accordance with applicable regulations.

m. Making appropriate notification(s) and reporting of radiation incidences and over exposures to the appropriate governing authority, where applicable.

n. Maintaining records of, including but not limited to, surveys, exposure monitoring, training, public dose, leak testing, maintenance, audits, program review, and other program records.

o. Notifying employees of exposures in accordance with applicable regulations or standards.

p. Establishing procedures to address post-exposure action.

q. Establishing a declared pregnant worker program that initiates appropriate protective actions against exposure to IR once a pregnancy is voluntarily declared in writing to management.

r. Conducting an annual program review, and assessing local program implementation and compliance annually.
s. Repairing, maintaining, and aligning X-ray producing devices, equipment housing General License Materials, and other IR producing and measuring equipment by a trained and qualified individual of the manufacturer or an individual approved by the DSRM or its designee.

t. Ensuring a job hazard analysis for all IR sources is prepared, and maintaining a training log for all personnel using the IR sources.

6) IA will evaluate potential exposures to employees involved in handling and storing NORM, and performing activities at sites where exposures are above background radiation levels (i.e., working in mines with radon or collecting samples from a NORM waste stream.) Applicable procedures and requirements will be implemented to control exposures in order to ensure exposures do not exceed limits in 29 CFR 1910.1096.

B. Requirements for NIR

1) RDs are responsible for establishing programs and controls that prevent NIR hazards, and ensuring employee and public exposures are below recommended regulatory limits.

2) Each affected location will implement a program that addresses the following at a minimum:
   a. Ensuring that potential NIR hazards are properly identified and that appropriate hazard controls are developed.
   b. Using methods such as: warning signs, barriers, and lockout-tagout procedures to prevent accidental exposures to harmful quantities of NIR.
   c. Maintaining inventory of hazardous NIR areas, including all known hazardous electromagnetic and radiofrequency sources and class IIIb and IV lasers.
   d. Evaluating NIR radiation sources, and notifying affected employees of monitoring results and of NIR hazardous equipment and areas. Measurement procedures and techniques recommended in Institute of Electrical and Electronics Engineers (IEEE) C95.3 may be used as basic guidance for evaluating radiofrequency/electromagnetic hazards.
   e. Ensuring that all employees receive appropriate safety training commensurate with potential hazards from NIR sources they may encounter; preparing job hazard analysis for all NIR sources; and maintaining a training log for all personnel using the NIR sources.
   f. Investigating all incidents related to actual or suspected NIR exposures. Investigations will address results of NIR measurements, including detailed
descriptions of circumstances leading to the incident, and recommendations to prevent future reoccurrence.

g. Following guidelines in American National Standards Institute (ANSI) Z136.1 and ANSI Z136.3, and establishing laser safety committees where applicable. Only a qualified expert will design, review, and test controls for access to a Class IIIb or IV laser. A Laser Safety Officer will design or review for adequacy all laser safety standard operating procedures for each such facility.

h. Inspecting NIR sources at least annually and if modifications/repairs are made, performing a radiation survey.

C. Requirements for Nuclear Devices (Gauges)

1) Licensing.

   a. A license for the specific source material to be obtained must be acquired from the NRC prior to the purchase of the nuclear device, and in coordination with the regional Property and Acquisitions offices.

   b. Use of an unlicensed nuclear device to perform IA work is strictly prohibited.

2) Identification of a RSO. A qualified individual will be responsible for the Radiation Safety Program.

3) Handling and Storage.

   a. Nuclear gauges must be stored away from occupied areas and secured against unauthorized removal.

   b. Handling of nuclear gauges must be in accordance with the manufacturer’s instructions.

4) Transportation.

   a. A BOL (also referred to as shipping papers) must be filled out in accordance with 49 CFR 172.200-204.

   b. Shipping papers must accompany the nuclear gauge device in the transport vehicle and be within reach of the driver.

   c. An emergency response information document must be in the transport vehicle and immediately accessible to the driver or emergency personnel.
d. Whenever the nuclear gauge is transported in a vehicle, it must be locked in the trunk of a car, locked in a van, or secured by a lock and chain and properly tied down while in an open bed truck.

e. The nuclear gauge must be in a TYPE A package, and a copy of the gauge manufacture’s TYPE A Package Certificate must accompany the package during transport.

f. The package must be properly labeled, inspected, and sealed prior to each shipment.

5) Public Dose.

a. Nuclear gauge users will ensure that licensed gauges are used, transported, and stored in such a way that members of the public will not receive more than a 1 millisievert (1 mSv) [100 millirem (100 mrem)] in one year and the dose in any unrestricted areas will not exceed 0.02 millisievert (mSv) [2 millirem (millirem)] in any one hour from licensed operations.

b. Members of the public include: persons who live, work, or may be near locations where portable nuclear gauges are used or stored; and employees whose assigned duties do not include the use of licensed materials and who work in the vicinity where nuclear gauges are used or stored.

6) Personal Monitoring and Recordkeeping.

a. All operators must be monitored for radiation exposure by personnel monitoring equipment (i.e. film badges). Processing of personnel monitoring equipment will be per the manufacturer’s directions and be interpreted by a qualified laboratory employee.

b. The gauges must be accounted for periodically. Inventories are to be conducted at not more than six (6) month intervals. Inventory records must be kept for three (3) years and the RSO must maintain copies of these inventories.

7) Records and Reports.

a. Training certificates must be on file with the RSO prior to engaging in nuclear gauge operations.

b. Each facility storing a nuclear gauge must designate an individual to perform an annual audit, and document and note corrective actions taken. The audit will be sent to the RSO for review, verification, and signature. A copy of the signed audit report should be kept by the initiating organization.
c. Records of receipt, transfer, and disposal of nuclear gauges must be maintained.
d. Records of licenses issued by the NRC must be maintained.
e. Physical inventories should be conducted at intervals not to exceed six (6) months.

8) **Emergency Procedures.**

a. Operating and emergency procedures should be developed, implemented, and maintained.
b. Copies of the operating and emergency procedures should be provided to all nuclear gauge users and at each job site.

9) **Leak Testing.**

a. Leak tests must be performed by approved NRC organizations or according to procedures approved by the NRC.
b. Leak tests will be conducted at intervals approved by NRC.

10) **Security.**

a. The nuclear gauge must be controlled by constant surveillance and must be secured against unauthorized use or removal.
b. NRC must be notified immediately if nuclear gauges are lost or stolen.

11) **Maintenance and Maintenance Records.**

a. Maintenance (routine cleaning and lubrication) of nuclear gauges must be in accordance with the manufacturer’s recommendations and instructions.
b. Non-routine maintenance, or repair that involves tasks in which personnel could receive radiation doses exceeding NRC limits, must be performed by the nuclear gauge manufacturer or a person specifically authorized by NRC.

12) **Training.**

a. The operation of a nuclear gauge device without the required training is prohibited while in the performance of official duties. Users must receive refresher training at least every five (5) years to include radiation safety and regulatory requirements; practical safety use of the gauge; radiation vs.
contamination; internal vs. external exposure; concept of time, distance, and shielding to minimize exposure; control and surveillance of nuclear gauges; location of seal source within the portable nuclear gauge; inventory; record keeping; incidents; licensing and inspection by the regulatory agency; need for complete and accurate information; and employee protection and misconduct.

b. Individuals serving as a RSO must receive training as directed in U.S. Nuclear Regulatory Commission Regulation (NUREG) 1556, Section 8.7 Item 7: Individual(s) Responsible for Radiation Safety Program and Their Training and Experience.

D. Requirements for Radon

1) Occupational exposures of employees and volunteers must be maintained at ALARA levels, and at no time will they be above 4 Working Level Month (WLM) per year.

2) Areas at or exceeding 25 pCi/L must be posted as radon hazard areas, and employees’ exposures must be evaluated.

3) Occupational exposures of employees and volunteers under the age of 18 years must be maintained below 0.4 WLM (10% of 4 WLM).

4) Concentrations in IA-owned housing units must not exceed 4 pCi/L. Functional responsibilities for radon in IA-owned housing will be determined by the RD.

Approval

JASON FREIHAGE  Digitally signed by JASON FREIHAGE
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Jason Freihage
Deputy Assistant Secretary –Management

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