

U.S. NUCLEAR REGULATORY COMMISSION MANAGEMENT DIRECTIVE (MD)

**MD 10.131 PROTECTION OF NRC EMPLOYEES
AGAINST IONIZING RADIATION**

DT-17-04

Volume 10, Personnel Management

Part 5: Benefits, Health Services, and Employee Safety

Approved By: Victor M. McCree
Executive Director for Operations

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Division of Material Safety, State, Tribal, and Rulemaking Programs

Contact Name: Kathy Modes

EXECUTIVE SUMMARY

Management Directive 10.131, "Protection of NRC Employees Against Ionizing Radiation," is revised to—

- Establish responsibilities for the Office of Nuclear Material Safety and Safeguards (NMSS) to be the lead organization for coordination of Radiation Safety Officers (RSO).
- Change the reporting requirement for new employees and those requesting a dosimeter from reporting a lifetime occupational dose to reporting only occupational radiation dose received during the current year.
- Identify the Office of New Reactors (NRO), the Office of Nuclear Security and Incident Response (NSIR), and the Office of the Chief Human Capital Officer (OCHCO) as additional program offices that must appoint an RSO and establish a radiation safety program.
- Change the requirement for Radiation Safety Program audits from annually to every two years.
- Introduce administrative dose limits and investigation levels to the personnel monitoring program.

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I. POLICY

It is the policy of the NRC to maintain radiation doses to NRC employees and members of the public below the limits established in this management directive (MD) and As Low As Is Reasonably Achievable (ALARA) while conducting NRC activities. The NRC provides dosimeters to employees in accordance with the provisions of this MD. The NRC also provides potassium iodide (KI) and other protective equipment, as appropriate, to employees involved in emergency response activities. When an approved radiation safety program exists at a site, the NRC relies on that program to protect NRC employees assigned to the site (e.g., resident inspectors) or visiting the site (e.g., inspections). This requirement applies to normal operations and emergency response activities.

II. OBJECTIVES

Establish procedures and standards for protecting NRC employees from ionizing radiation hazards associated with the activities conducted by the NRC. These procedures and standards are—

- Consistent with 10 CFR Part 20, “Standards for Protection Against Radiation.”
- Consistent with 10 CFR Part 19, “Notices, Instructions, and Reports to Workers: Inspection and Investigations.”
- Consistent with regulations of the Occupational Safety and Health Administration (OSHA), Department of Labor, as required by Executive Order 12196, “Occupational Safety and Health Programs for Federal Employees.”
- Consistent with the radiation protection guidance to Federal agencies prepared by the former Federal Radiation Council, “Radiation Protection Guidance to Federal Agencies for Occupational Exposure,” (52 FR 2822, January 27, 1987) or by the Environmental Protection Agency (EPA), “Manual of Protective Action Guides and Protective Actions for Nuclear Incidents,” EPA 400-R-92-001, May 1992.

III. ORGANIZATIONAL RESPONSIBILITIES AND DELEGATIONS OF AUTHORITY

A. Executive Director for Operations (EDO)

1. Responsible for overall development and implementation of standards for protection against ionizing radiation for NRC operations.
2. Delegates to the Director of the Office of Nuclear Material Safety and Safeguards (NMSS) responsibility for establishing radiation protection standards and providing technical expertise and coordination of the radiation safety programs for NRC employees.
3. Delegates the technical oversight of each radiation safety program to the respective office director or regional administrator for the following offices and regions: NMSS, Office of New Reactors, Office of Nuclear Reactor Regulation, Office of Nuclear Security and Incident Response, Office of the Chief Human Capital Officer, and Regions I, II, III, and IV.

B. Director, Office of Nuclear Material Safety and Safeguards (NMSS)

1. Maintains this MD and reviews and approves, or disapproves, any proposed deviation (other than emergency actions) from the provisions of this MD.
2. Establishes radiation protection standards and provides technical expertise and coordination of the radiation safety programs for NRC employees.

3. Appoints a Radiation Safety Officer (RSO) to establish a radiation safety program. Establishes the minimum qualification for the NMSS RSO commensurate with the radiological safety hazards.
4. Develops and implements a written radiation safety program that complies with this MD. At a minimum, the program must address radiation safety training requirements, radiation monitoring requirements, the safe and secure storage of non-exempt radioactive materials, and if applicable, ensure that NMSS employees have an understanding of the use and storage of non-exempt radioactive materials as well as radiation-producing devices (e.g., for package or parcel x-ray).
5. Ensures technical oversight of the NMSS radiation safety program by overseeing NMSS employee occupational radiation exposures; attending radiation safety meetings, as appropriate; and reviewing radiation safety audit reports and approving correction actions.
6. Provides the Contracting Officer Representative (COR) for the personnel dosimetry contract that provides individual monitoring devices and services for NRC employees.
7. Provides interpretations of the provisions of this MD in consultation with the Office of the General Counsel (OGC).
8. Coordinates an annual counterpart meeting for the Agency RSOs to exchange information, discuss NRC radiation safety program matters, and resolve problems. Provides minutes that reflect the results of the meeting to the Executive Director for Operations (EDO), program office directors, and regional administrators as an annual report for the NRC radiation safety program.
9. Informs the Director, Office of Administration (ADM), of any radiological exposure that requires reporting to OSHA as referenced in MD 10.130, "Safety and Occupational Health Program."
10. Ensures that NMSS employees are informed of, and comply with, the provisions of this MD.
11. Provides NMSS employees with equipment for radiation protection necessary to perform his or her assigned duties.
12. Ensures that any NMSS employee is promptly notified if the employee has exceeded the radiation dose limits as specified in Sections II.A and III.B.4 of the handbook to this directive.
13. Ensures that an audit of the NMSS radiation safety program is conducted every two years.

14. Ensures that records are maintained as required by Section V of the handbook to this directive.

C. Director, Office of New Reactors (NRO)

1. Appoints an RSO to establish a radiation safety program. Establishes the minimum qualification for the NRO RSO commensurate with the radiological safety hazards.
2. Develops and implements a written radiation safety program that complies with this MD. At a minimum, the program must address radiation safety training requirements, radiation monitoring requirements, the safe and secure storage of non-exempt radioactive materials, and if applicable, ensure that NRO employees have an understanding of the use and storage of non-exempt radioactive materials as well as radiation-producing devices (e.g., for package or parcel x-ray).
3. Ensures technical oversight of the NRO radiation safety program by overseeing NRO employee occupational radiation exposures; attending radiation safety meetings, as appropriate; and reviewing radiation safety audit reports and approving correction actions.
4. Ensures that NRO employees are informed of, and comply with, the provisions of this MD.
5. Provides NRO employees with equipment for radiation protection necessary to perform his or her assigned duties.
6. Ensures that any NRO employee is promptly notified if the employee has exceeded the radiation dose limits as specified in Sections II.A and III.B.4 of the handbook to this directive.
7. Ensures that the NRO RSO or designee participates in the annual RSO counterpart meeting.
8. Ensures that an audit of the NRO radiation safety program is conducted every two years.
9. Promptly informs the Director of NMSS of any action that results in a substantial deviation from the provisions of this MD.
10. Ensures that records are maintained as required by Section V of the handbook to this directive.

D. Director, Office of Nuclear Reactor Regulation (NRR)

1. Appoints an RSO to establish a radiation safety program. Establishes the minimum qualification for the NRR RSO commensurate with the radiological safety hazards.

2. Develops and implements a written radiation safety program that complies with this MD. At a minimum, the program must address radiation safety training requirements, radiation monitoring requirements, the safe and secure storage of non-exempt radioactive materials, and if applicable, ensure that NRR employees have an understanding of the use and storage of non-exempt radioactive materials as well as radiation-producing devices (e.g., for package or parcel x-ray).
3. Ensures technical oversight of the NRR radiation safety program by overseeing NRR employee occupational radiation exposures; attending radiation safety meetings, as appropriate; and reviewing radiation safety audit reports and approving correction actions.
4. Provides radiation safety support to all other NRC headquarters office directors that do not have a designated RSO, including the Office of Nuclear Regulatory Research (RES).
5. Provides assistance to NRC ADM mailroom for all radioactive material packages to ensure proper handling.
6. Ensures that NRR employees are promptly informed of, and comply with, the provisions of this MD.
7. Provides NRR employees with equipment for radiation protection necessary to perform his or her assigned duties.
8. Ensures that any NRR employee is promptly notified if the employee has exceeded the radiation dose limits as specified in Sections II.A and III.B.4 of the handbook to this directive.
9. Ensures that the NRR RSO or designee participates in the annual RSO counterpart meeting.
10. Ensures that an audit of the NRR radiation safety program is conducted every two years.
11. Promptly informs the Director of NMSS of any action that results in a substantial deviation to this MD.
12. Ensures that records are maintained as required by Section V of the handbook to this directive.

E. Director, Office of Nuclear Regulatory Research (RES)

1. Appoints a point of contact from RES to interact with the NRR RSO who provides radiation safety services to RES employees, including radiation dosimeter issuance.

2. Provides the COR and technical monitor for oversight and maintenance of the NRC's Employee Exposure Dosimetry System (EEDS) and the Radiation Exposure Information Reporting System (REIRS).
3. Ensures that the RES point of contact with the NRR RSO or designee participates in the annual RSO counterpart meeting.

F. Director, Office of Nuclear Security and Incident Response (NSIR)

1. Appoints an RSO to establish a radiation safety program. Establishes the minimum qualification for the NSIR RSO commensurate with the radiological safety hazards.
2. Develops and implements a written radiation safety program that complies with this MD. At a minimum, the program must address radiation safety training requirements, radiation monitoring requirements, the safe and secure storage of non-exempt radioactive materials, and if applicable, ensure that NSIR employees have an understanding of the use and storage of non-exempt radioactive materials as well as radiation-producing devices (e.g., for package or parcel x-ray).
3. Ensures technical oversight of the NSIR radiation safety program by overseeing NSIR employee occupational radiation exposures; attending radiation safety meetings, as appropriate; and reviewing radiation safety audit reports and approving correction actions.
4. Ensures NRC incident response plans address radiation safety protective equipment and services for deployed NRC employees, including KI, respiratory protection, bioassays and dosimetry.
5. Ensures that NSIR employees are promptly informed, and comply with, the provisions of this MD.
6. Provides NSIR employees with equipment for radiation protection necessary to perform his or her assigned duties.
7. Ensures that any NSIR employee is promptly notified if the employee has exceeded the radiation dose limits as specified in Sections II.A and III.B.4 of the handbook to this directive.
8. Ensures that the NSIR RSO or designee participates in the annual RSO counterpart meeting.
9. Ensures that an audit of the NSIR radiation safety program is conducted every two years.
10. Promptly informs the Director of NMSS of any action that results in a substantial deviation to this MD.

11. Ensures that records are maintained as required by Section V of the handbook to this directive.

G. Regional Administrators

1. Appoint an RSO to establish a radiation safety program. Establish the minimum qualification for the region's RSO commensurate with the radiological safety hazards.
2. Develop and implement a written radiation safety program that complies with this MD. At a minimum, the program must address radiation safety training requirements, radiation monitoring requirements, the safe and secure storage of non-exempt radioactive materials, and if applicable, ensure that regional employees have an understanding of the use and storage of non-exempt radioactive materials as well as radiation-producing devices (e.g., for package or parcel x-ray).
3. Ensure technical oversight of the regional radiation safety program by overseeing regional employee occupational radiation exposures; attending radiation safety meetings, as appropriate; and reviewing radiation safety audit reports and approving correction actions.
4. Ensure that regional employees are promptly informed, and comply with, the provisions of this MD.
5. Provide regional employees with equipment for radiation protection necessary to perform their assigned duties.
6. Ensure that any regional employee is promptly notified if the employee has exceeded the radiation dose limits as specified in Sections II.A and III.B.4 of the handbook to this directive.
7. Ensure that the regional RSO or designee participates in the annual RSO counterpart meeting.
8. Ensure that an audit of the region's radiation safety program is conducted every two years.
9. Promptly inform the Director of NMSS of any action that results in a substantial deviation to this MD.
10. Ensure that records are maintained as required by Section V of the handbook to this directive.
11. Ensure NRC incident response plans address radiation safety protective equipment and services for deployed NRC employees, including KI, respiratory protection, bioassays and dosimetry.

H. Director, Office of Administration (ADM)

1. Serves as the Designated Agency Safety and Health Official for the NRC, responsible for the management and administration of nonradiological safety and health programs for NRC employees, and administrative support of the radiation safety programs with regard to interaction with OSHA.
2. Ensures that the provisions of this MD are consistent with the safety and health regulations issued by OSHA and acts as the NRC representative with OSHA.
3. Develops and implements the procedures for the distribution of dosimeters to NRC headquarters employees and provides administrative support with regard to dosimetry contract related activities.
4. Coordinates with the NRR RSO for assistance with packages labeled to contain radioactive material to ensure proper receipt and handling.

I. Chief Human Capital Officer (CHCO)

1. Appoints an RSO to establish a radiation safety program. Establishes the minimum qualification for the OCHCO RSO commensurate with the radiological safety hazards.
2. Develops and implements a written radiation safety program that complies with this MD. At a minimum, the program must address radiation safety training requirements, radiation monitoring requirements, the safe and secure storage of non-exempt radioactive materials, and if applicable, ensure that OCHCO employees have an understanding of the use and storage of non-exempt radioactive materials as well as radiation-producing devices (e.g., for package or parcel x-ray).
3. Ensures technical oversight of the OCHCO radiation safety program by overseeing OCHCO employee occupational radiation exposures; attending radiation safety meetings, as appropriate, and reviewing radiation safety audit reports and approving correction actions.
4. Establishes and offers Site Access and Site Access Refresher training courses to employees and maintains training records of employees who have successfully completed this training.
5. Ensures that OCHCO employees are promptly informed, and comply with, the provisions of this MD.
6. Provides OCHCO employees with equipment for radiation protection necessary to perform his or her assigned duties.

7. Ensures that any OCHCO employee is promptly notified if the employee has exceeded the radiation dose limits as specified in Sections II.A and III.B.4 of the handbook to this directive.
8. Ensures that the OCHCO RSO or designee participates in the annual RSO counterpart meeting.
9. Ensures that an audit of the OCHCO radiation safety program is conducted every two years.
10. Promptly informs the Director of NMSS of any action that results in a substantial deviation to this MD.
11. Ensures that personal protective equipment and radiation monitoring devices are adequate to support training courses.
12. Ensures that records are maintained as required by Section V of the handbook to this directive.

J. Radiation Safety Officers (RSO)

1. Ensure that the radiation safety program of the applicable NRC office implements the provisions of the handbook to this directive.
2. Authorize the issuance of dosimeters to employees.
3. Ensure that the radioactive material controls are implemented in accordance with the handbook to this directive.
4. Review radiation exposure information for monitored employees, and ensure that exposure information is accurately recorded.
5. Ensure that when investigation levels are established, an investigation is conducted for all dosimetry records that exceed these levels. If no investigation levels are established, the administrative dose limits become the level to conduct a review for accuracy of the dose records.
6. Distribute information to monitored employees and their managers, as appropriate, to allow them to maintain doses ALARA. Furnish reports of overexposures to the employee and notify the appropriate office director or regional administrator, the Director of NMSS and the Deputy Executive Director for Materials, Waste, Research, State, Tribal, Compliance, Administration, and Human Capital Programs (DEDM). The release of employee exposure information must be conducted with due regard for employee rights under the provisions of the Privacy Act of 1974, as amended (5 U.S.C. 552a).
7. Coordinate an audit of his or her office or regional radiation safety program every two years. At a minimum, the audit must be focused on (1) verification that accurate

exposure records are maintained for each employee being monitored, (2) evaluation of radiological risks in NRC offices or buildings, and (3) verification that the programs, as implemented, address these risks. Employees performing audits will have technical expertise in radiation safety but no direct responsibility for the program being audited.

8. Participate or appoint a designee to participate, in the annual RSO counterpart meeting, and share the results of the program audits conducted as required in Section III.J.7 of this directive.
9. Determine, in consultation with an employee's immediate supervisor, when it is necessary or desirable to furnish bioassay services to an employee and arrange for bioassay of the employee. Perform internal dose assessments, as appropriate.
10. Coordinate with the NRC incident response organization during agency response to incidents, as needed.
11. Determine and assign appropriate radiation dose to employees who have incomplete dose records (e.g., resulting from loss of or damage to his or her dosimeters).
12. Review radiation dose information submitted by licensees (e.g., on NRC Form 525, "Request for and Authorization of Release of Dosimetry Records") and ensure that the results are entered into the EEDS, when licensee dosimetry is used for the dose of record. (NRC Form 525 is available in the [NRC Forms Library](#).)
13. Furnish radiation exposure data to current and former employees as required by Section V.G. of the handbook to this directive.
14. Prepare records for each planned special exposure in accordance with 10 CFR 20.2105(a).

K. NRC Employees

1. Comply with the handbook to this directive and any NRC office or regional procedures.
2. Make every reasonable effort to minimize both internal and external radiation exposure.
3. Use personal protective equipment as required by the NRC or the licensee.
4. Follow the licensee's radiation safety procedures during site visits and inspections.
5. Notify the appropriate RSO and obtain written approval from his or her office director or regional administrator before exceedance of the administrative dose limits listed in Section III.B.4 of the handbook to this directive.

6. Report any unexpected radiation hazards to the employee's supervisor or appropriate licensee staff, as soon as possible.
7. Coordinate with the appropriate RSO before receiving or taking possession of any non-exempt radioactive material.
8. Use radioactive material and radiation-producing devices in accordance with the handbook to this directive and applicable office or regional procedures.
9. Inform the appropriate RSO of any occupational exposure history in accordance with the handbook to this directive and applicable office or regional procedures.
10. Inform the appropriate RSO before wearing dosimetry if the employee has undergone a medical procedure involving radioactive material.
11. Request dosimeter results from the licensee when monitored by a licensee's dosimeter, instead of an NRC required dosimeter, and notify his or her RSO. NRC Form 525, may be used to request this information from the licensee.
12. Ensure that dosimeters provided by the NRC are handled in accordance with applicable office and regional procedures. Report lost, damaged or unintentionally exposed dosimeters in a timely manner to his or her RSO.
13. A female employee may voluntarily declare, in writing, to her immediate supervisor that she is pregnant or intends to become pregnant. The immediate supervisor will inform the appropriate RSO of all declared pregnancies. Regulatory Guide (RG) 8.13, "Instruction Concerning Prenatal Radiation Exposure," contains a sample letter for declaring pregnancy and information that can help pregnant employees and others make decisions regarding radiation exposure during pregnancy. These employees should discuss any questions regarding the information contained in RG 8.13 with the appropriate RSO or the employee's immediate supervisor.
14. Discuss his or her radiological safety concerns with their immediate supervisor and the appropriate RSO.

IV. APPLICABILITY

The provisions of this directive and handbook apply to all NRC employees. This management directive applies to occupational exposures received by employees during official duties at any location. The policy and guidance in the MD also apply to members of the public when those members are present in NRC offices that possess non-exempt radioactive material, use radiation-producing devices, or when NRC-controlled radioactive material is being disposed. The term "members of the public" includes those NRC employees who are not expected to receive an occupational dose in performance of his or her official duties.

V. DIRECTIVE HANDBOOK

Handbook 10.131 contains guidelines and standards for protection of NRC employees and members of the public against ionizing radiation to be applied in conformance with the requirements of this MD.

VI. AUTHORIZATION FOR PLANNED SPECIAL EXPOSURES

The need for a planned special exposure is not anticipated, but, if necessary, an office director or a regional administrator may authorize an adult employee to receive a planned special exposure, provided that the conditions specified in 10 CFR 20.1206 are satisfied.

VII. REFERENCES

Code of Federal Regulations

10 CFR Part 19, "Notices, Instructions, and Reports to Workers: Inspection and Investigations."

10 CFR Part 20, "Standards for Protection Against Radiation."

10 CFR Part 30, "Rules of General Applicability to Domestic Licensing of Byproduct Material."

10 CFR Part 35, "Medical Use of Byproduct Material."

10 CFR Part 40, "Domestic Licensing of Source Material."

Executive Order

Executive Order 12196, "Occupational Safety and Health Programs for Federal Employees," February 26, 1980 (45 FR 12769; February 27, 1980).

Nuclear Regulatory Commission Documents

NRC Management Directive 10.130, "Safety and Occupational Health Program," August 14, 2015.

NUREG-0910, "NRC Comprehensive Records Disposition Schedule," Revision 4, March 2005.

Regulatory Guide 8.13, "Instruction Concerning Prenatal Radiation Exposure," June 1999.

NRC Forms Library:

<http://fusion.nrc.gov/nrcformsportal/default.aspx>.

Other Federal Guidance

Environmental Protection Agency, "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents," EPA 400-R-92-001, May 1992.

Federal Radiation Council, "Radiation Protection Guidance to Federal Agencies for Occupational Exposure" (52 FR 2822; January 27, 1987).

United States Code

Privacy Act of 1974, as amended (5 U.S.C. 552a).

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- Change the reporting requirement for new employees and those requesting a dosimeter from reporting a lifetime occupational dose to reporting only occupational radiation dose received during the current year.
- Identify the Office of New Reactors (NRO), the Office of Nuclear Security and Incident Response (NSIR), and the Office of the Chief Human Capital Officer (OCHCO) as additional program offices that must appoint an RSO and establish a radiation safety program.
- Change the requirement for Radiation Safety Program audits from annually to every two years.
- Introduce administrative dose limits and investigation levels to the personnel monitoring program.

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I. GENERAL PROVISIONS

A. Purpose

The purpose of this handbook is to provide for the adequate protection of the health and safety of NRC employees and members of the public so that radiation doses arising from the conduct of NRC activities do not exceed the standards of radiation protection prescribed herein and are maintained As Low As is Reasonably Achievable (ALARA). This handbook describes appropriate controls for the possession, use, storage, transfer, and disposal of sources of radiation, including radiation-producing devices. This handbook contains standards to protect those employees who are expected to receive an occupational dose and standards to protect members of the public.

B. Training

The delegated NRC offices must establish provisions for radiation safety training commensurate with the duties of their employees.

II. RADIATION DOSES, LEVELS, AND CONCENTRATIONS

A. Occupational Dose Limits

The occupational dose limits applicable to NRC employees, when performing duties that may result in the employee receiving an occupational dose are listed in 10 CFR 20.1201, 20.1206, 20.1207 and 20.1208.

B. Determination of Prior Dose

The employee's immediate supervisor, in coordination with the responsible Radiation Safety Officer (RSO), must ensure that the occupational radiation dose received by the employee during the current year has been determined before authorizing official duties likely to cause an employee to receive an occupational dose requiring monitoring pursuant to Section III.B of this handbook. NRC employees, in coordination with his or her immediate supervisor, will provide a completed NRC Form 5, "Occupational Dose Record for a Monitoring Period," or equivalent, to the responsible RSO. Estimates may be used if no dose limit is being approached. Acceptable methods of obtaining prior occupational dose are provided in 10 CFR 20.2104. NRC Form 5 is available in the [NRC Forms Library](#).

C. Dose Limits for Members of the Public

The NRC will conduct its activities so that the public doses are ALARA, and that the dose limits applicable for members of the public listed in 10 CFR Part 20, Subpart D, "Radiation Dose Limits for Individual Members of the Public," are not exceeded.

NRC employees who do not, in the course of their official duties, receive an occupational dose, are considered members of the public.

D. Exposure of Employees to Airborne Radioactive Materials

The use of respiratory protection equipment by employees must be consistent with the provisions in 10 CFR 20.1703.

E. Planned Special Exposures

1. The need for a planned special exposure is not anticipated, but, if necessary, an office director or a regional administrator may authorize an adult employee (18 years or older) to receive a planned special exposure, provided that the conditions specified in 10 CFR 20.1206(c), (d), and (e) are satisfied. A letter authorizing the planned special exposure must be signed by the employee and the employee's immediate supervisor, with organizational concurrence through the level of office director or regional administrator.
2. Before an employee is allowed to participate in a planned special exposure, the NRC employee, in coordination with his or her immediate supervisor, must provide to the responsible RSO a signed NRC Form 4, "Cumulative Occupational Dose History," that shows each period that the employee was monitored for occupational exposure to radiation and the results of that monitoring.

F. Compliance with Dose Limits for Members of the Public

The NRC offices possessing non-exempt radioactive material and radiation-producing devices must measure radiation levels, as appropriate, to demonstrate compliance with the dose limits for members of the public. Compliance must be demonstrated using methods consistent with those specified in 10 CFR 20.1302.

III. PRECAUTIONARY PROCEDURES

A. Surveys

1. Surveys will be made at NRC offices, as necessary, to comply with provisions of this handbook and to determine the extent of any radiation hazard that may be present (e.g., from x-ray machines and non-exempt radioactive material storage).
2. Instruments and equipment used for quantitative radiation measurements (e.g., dose rate measurements) by employees or at NRC offices will be calibrated periodically for the radiation measured. The instruments should be calibrated annually or at a frequency recommended by the manufacturer.

B. Personnel Monitoring

1. Employees must wear dosimetry devices issued by licensees while at licensed facilities, in addition to any NRC-issued dosimeter. The terms “licensee facility” and “licensee facilities,” as used in this handbook, also include facilities, buildings, structures, and sites that are not licensed by the NRC or subject to NRC control, but to which an employee may enter or deploy in furtherance of his or her official duties (e.g., a Department of Energy facility, a facility or site under Agreement State jurisdiction, or a facility or site located in a foreign country). Similarly, the term “licensee” also includes RSOs or their functional equivalent, for purposes of individual dosimetry monitoring, at facilities, buildings, structures, and sites not licensed by the NRC or subject to NRC control.
2. When NRC issues a dosimeter, it will be the primary dosimeter of record unless there is reason to believe that another dose measurement (e.g., licensee dosimeter) or estimate is more accurate; in which case, the more accurate dose shall be the dose of record.
3. The NRC RSOs shall ensure that individual monitoring devices, supplied by NRC or the licensee, are issued to employees and used during visits to licensee and/or NRC facilities where radioactive material is stored or used if any of the following criteria are met:
 - (a) An adult employee is likely to exceed the conditions listed in 10 CFR 20.1502(a)(1).
 - (b) Any employee under 18 years of age is likely to exceed the conditions listed in 10 CFR 20.1502(a)(2).
 - (c) A declared pregnant woman is likely to exceed the conditions listed in 10 CFR 20.1502(a)(3).
 - (d) An employee is entering a high or a very high radiation area as specified in 10 CFR 20.1502(a)(4).
4. The NRC administrative dose limits are numerical dose constraints established, at levels below the dose limits specified above, to administratively control and maintain doses ALARA.
 - (a) Because NRC’s objective is to maintain personnel radiation dose ALARA, the NRC administrative dose limits during routine conditions are:
 - (i) 2,000 mrem (20 mSv) per year and 500 mrem (5.0 mSv) per quarter Total Effective Dose Equivalent (TEDE) for an adult occupational radiation worker; and

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- (ii) 250 mrem (2.5 mSv) TEDE over the entire gestation period for a declared pregnant woman.
 - (b) The responsible RSO and the office director or regional administrator, as appropriate, must provide prior written approval to an employee before that employee is authorized to perform any official duties that could result in the employee exceeding the administrative dose limits listed above. An employee who becomes aware that he or she may exceed an administrative dose limit in performance of official duties is expected to promptly notify the responsible RSO and his or her immediate supervisor.
5. All NRC personnel dosimeters used to demonstrate compliance with the dose limits in this handbook shall comply with the provisions in 10 CFR 20.1501(d). Appropriate pocket ionization chambers and electronic dosimeters may be used.
 6. If monitoring is required and the employee does not wear an NRC provided dosimeter, then the employee is responsible for obtaining the monitoring results from the licensee. An employee may use NRC Form 525, "Request for and Authorization of Release of Dosimetry Records," to request his or her dose record from the licensee. Upon receipt of the dose record, the employee shall provide the information to the responsible RSO for review. The RSO shall ensure the results are entered in the U.S. Nuclear Regulatory Commission's (NRC) employee exposure database system (EEDS). (NRC Form 525 is available in the [NRC Forms Library](#).)
 7. An employee who visits licensee facilities in the performance of his or her official duties, where he or she may be exposed to radiation or non-exempt radioactive materials, may accept the licensee's personnel exposure records and rely on the radiation safety programs established at the licensee's facility.
 8. When the RSO becomes aware of an employee's potential intake of radioactive materials, the RSO will determine if bioassay services are necessary and coordinate appropriate bioassay services as needed.

C. Caution Signs, Labels, and Notice of Availability

1. Caution signs and labels will be used at NRC offices as specified in 10 CFR 20.1901, 20.1902, 20.1903, 20.1904, and 20.1905.
2. A notice of availability of this handbook and any applicable office or regional operating procedures applicable to employees whose duties involve exposure to radiation or non-exempt radioactive material will be posted in conspicuous locations at NRC offices.

D. Picking Up, Receiving, and Opening Packages

Each applicable NRC office shall maintain and follow appropriate procedures consistent with the requirements specified in 10 CFR 20.1906 for safely picking up, receiving, and opening labelled packages that contain radioactive material. The Office of Administration (ADM) mail room staff shall notify the NRR RSO if they receive any package that is labeled as containing radioactive material. The NRR RSO shall assist with the proper handling of the package.

E. Instructions to Employees

1. All employees who in the course of employment are likely to receive in a year an occupational dose in excess of 100 mrem (1 mSv) shall be advised and instructed —
 - (a) About the possession, use, storage, transfer, and disposal of radioactive materials, radiation-producing devices, and radiation levels associated with his or her assigned duties;
 - (b) About the risks associated with exposure to radioactive materials and radiation, precautions and procedures to minimize exposure, and the purposes and functions of protective devices employed;
 - (c) To observe, to the extent within the employee's control, the applicable provisions of this handbook for the protection of employees and members of the public from exposure to radiation or radioactive materials associated with his or her assigned duties;
 - (d) About his or her responsibility to promptly report any condition that may lead to or cause a violation of the provisions of this handbook or an unnecessary exposure to radiation or to radioactive material;
 - (e) About the appropriate response to warnings made in the event of any unusual occurrence or malfunction that may involve exposure to radiation or radioactive material; and
 - (f) About the radiation exposure reports which employees may request pursuant to Section V.G.2 of this handbook.
2. The extent of these instructions will be commensurate with the potential radiological health risk.
3. The responsible RSO or immediate supervisor shall ensure that each employee who is required to receive the instructions listed in Section III.E.1 of this handbook has received such instructions before the employee conducts any activities where they may receive occupational exposure.
4. At the discretion of the responsible RSO or immediate supervisor, employees may be exempted from the requirements to receive the instructions listed in Section III.E.1

of this handbook provided that while within a restricted area, they are escorted by personnel who have received this training and are responsible for controlling radiation exposures.

F. Storage and Control of Non-exempt Radioactive Materials in Unrestricted Areas

Radioactive material or sources within NRC control, other than exempt sources, shall be secured from unauthorized removal or access (e.g., lock and key storage, access limited by proximity or keycard or cypher lock) when not in constant surveillance.

IV. WASTE DISPOSAL

- A.** No employee shall dispose of non-exempt radioactive material except:
1. By transfer to an authorized recipient as defined by 10 CFR 20.2001(a)(1);
 2. In accordance with the provisions of 10 CFR 20.2003; or
 3. In accordance with the provisions in 10 CFR 20.2005.
- B.** Any disposal of non-exempt radioactive material by an employee shall comply with applicable State and local regulatory requirements that concern the nonradioactive properties of the radioactive material being disposed.
- C.** An employee shall notify the responsible RSO prior to disposing of non-exempt radioactive material.

V. RECORDS, REPORTS, AND NOTIFICATIONS

A. Survey Radiation Monitoring, and Disposal Records

1. General Provisions
 - (a) The records required by this handbook will contain the units: curie, rad, and rem, including multiples and subdivisions, and the units will be clearly indicated. Units of roentgens per unit time (R/hr) and disintegrations per unit time (dpm) are acceptable on records of radiation and contamination surveys. When applicable, the quantities in the records also will be clearly indicated as the total effective dose equivalent, the shallow dose equivalent, the deep dose equivalent, the lens dose equivalent, and the committed effective dose equivalent. The shallow dose equivalent pertains to both the maximum extremity and the skin of the whole body.
 - (b) The retention requirements of this handbook do not limit or reduce any other NRC record retention requirements.

2. Records of the NRC Radiation Protection Program

- (a) Records required by this handbook or records made as a result of the activities covered by this handbook, including any interpretations or deviations, shall be maintained in accordance with NUREG-0910, "NRC Comprehensive Records Disposition Schedule," Schedule 2, Part 17 (NMSS), Item 19 and Part 25 (Regional Offices), Item 19 (the Schedule, Part and Item numbers are based upon Revision 4 of NUREG-0910, March 2005).
- (b) Audits and other reviews of program content and implementation will be maintained in accordance with standard NRC record retention requirements set forth in NUREG-0910.

3. Records of Employee Monitoring Results

The NRC shall maintain records of doses received by employees for whom monitoring was required and records of doses received during planned special exposures, accidents, and emergency conditions. These records will include the same information required by 10 CFR 20.2106(a). These records will be stored in accordance with the NRC's Privacy Act System of Records, NRC-27, "Radiation Exposure Information Reporting System (REIRS) Records" and NUREG-0910, Schedule 2, Part 19 (RES), Item 16. The NRC shall ensure that personnel data, including social security numbers of employees, provided to contractors for dosimetry processing are protected from public disclosure pursuant to the Privacy Act, as amended. In addition:

- (a) Entries on the records will cover exposure period's not exceeding one calendar year.
- (b) The records required by this section will be in a format similar to that of NRC Form 5, "Occupational Dose Record for a Monitoring Period."
- (c) The NRC shall maintain records of dose to an embryo or a fetus with the records of dose to the declared pregnant woman. The declaration of pregnancy must also be kept on file, but may be maintained separately from the dose records.
- (d) Dosimeter processing reports, abnormal dose investigation results, records of respiratory protection medical examinations, and records of employee monitoring results will be maintained in accordance with see NUREG- 0910, Schedule 2, Part 17 (NMSS), Item 19.

4. Records of Dose to Individual Members of the Public

Each NRC office possessing non-exempt radioactive material shall maintain records sufficient to demonstrate compliance with the dose limit for individual members of the public.

5. Records Retention Requirements

Each record required by this section shall be retained in accordance with the applicable records disposition schedules contained in NUREG-0910. Items that are not maintained in EEDS or the Agencywide Documents Access and Management System (ADAMS) will be archived. These records are to be transferred to the Office of the Chief Information Officer (OCIO) for storage. Any changes in the media used to store these records shall be coordinated with the NRC Records Officer (i.e., Chief of the Records Management Branch, OCIO) to ensure that the records are properly scheduled and that the records are retained accordingly.

B. Reports of Theft or Loss of Radioactive Material

Each NRC office, for radioactive material in its control, shall report the theft or loss of radioactive material as specified by 10 CFR 20.2201, except that written reports shall be submitted to the Director of NMSS and the Deputy Executive Director of Materials, Waste, Research, State, Tribal, Compliance, Administration, and Human Capital Programs (DEDM).

C. Notification of Incidents

Each NRC office shall report any event as specified by 10 CFR 20.2202 to the NRC Operations Center.

D. Reports of Overexposures and Excessive Levels and Concentrations of Radioactive Material Exceeding the Constraints or Limits

Each NRC office shall report overexposures and excessive levels and concentrations of radioactive material as specified by 10 CFR 20.2203, except that written reports shall be submitted to the Director of NMSS and the DEDM.

E. Reports of Employee Workplace Injury or Illness

1. Federal law requires employers to provide their employees with safe and healthful workplaces. Employees should report any safety or health concerns to his or her immediate supervisor and either the applicable collateral duty safety officer or the NRC headquarters Safety and Occupational Health Manager.
2. Employees should refer to MD 10.130, "Safety and Occupational Health Program," for information on reporting workplace injuries or illnesses consistent with NRC Form 436, "Report of Work-Related Injuries and Illnesses."

F. Reports of Planned Special Exposures

Each NRC office shall submit a written report to the Director of NMSS and the DEDM within 30 days of any planned special exposure informing them that a planned special

exposure was conducted, indicating the date the planned special exposure occurred, and providing the information required by 10 CFR 20.2105(a).

G. Notification and Reports to Employees

1. Radiation exposure data for an employee, the results of any measurements and analyses, and calculations of radioactive material deposited or retained in the body of an employee shall be reported to the employee as specified in this section. The information reported shall include data and results obtained pursuant to this handbook. Each notification and any radiation exposure data report shall be in writing; include appropriate identifying data, the name of the employee, and the employee's exposure information. Employees shall be informed that the radiation exposure data report is furnished by the provisions of this management directive and that the radiation exposure data report shall be preserved in the appropriate NRC system of records for future reference (see Section V.A. of this handbook).
2. The NRC shall make dose information available to employees as shown in records maintained by the provisions of this handbook. The responsible RSO shall provide an annual dose report to each employee monitored by the provisions of this handbook of the dose received in the prior monitoring year if—
 - (a) The employee's occupational dose exceeds 100 mrem (1 mSv) TEDE or 100 mrem (1 mSv) to any individual organ or tissue, or
 - (b) The employee requests his or her annual dose report.
3. At the request of a former NRC employee, the NRC shall furnish to the employee a report of the employee's exposure to radiation and/or to radioactive material. This report—
 - (a) Will be furnished within 30 days from the time the request is made or within 30 days after the exposure has been determined, whichever is later; and
 - (b) Will cover, for the period of time specified in the request, each year in which the employee's activities involved exposure to radiation or radioactive material associated with NRC activities.
4. The NRC will notify the employee when a report of an overexposure to radiation or radioactive material is required in Section V.D of this handbook. The NRC shall transmit this notice to the employee before or at the same time as the report.
5. At the request of an employee who is terminating NRC employment that involved exposure to radiation or radioactive materials, the NRC shall provide, at termination, a written report regarding the radiation dose received by the employee during his or her employment with the NRC. If the most recent individual monitoring results for that employee are not available at that time, a written estimate will be provided, together with a clear indication that it is an estimate.

VI. GLOSSARY

The following terms are used in this management directive (MD). For additional definitions pertaining to radiation safety, please see 10 CFR 20.1003.

Administrative Dose Limit

A numerical dose constraint established at a level below the dose limits in this MD to administratively control and maintain doses ALARA.

ALARA (acronym for "as low as is reasonably achievable")

Making every reasonable effort to maintain exposures to radiation as far below the dose limits in this part as is practical consistent with the purpose for which the NRC 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 NRC controlled radioactive materials or radiation-producing devices in the public interest.

Bioassay (radiobioassay)

The determination of kinds, quantities or concentrations, and, in some cases, the locations of radioactive material in the human body, whether by direct measurement (in vivo counting) or by analysis and evaluation of materials excreted or removed from the human body.

Declared Pregnant Woman

A woman who has voluntarily informed the NRC, in writing, of her pregnancy and the estimated date of conception. The declaration remains in effect until the declared pregnant woman withdraws the declaration in writing or is no longer pregnant.

Dosimetry

Monitoring devices used to measure dose equivalent to individuals from external sources of ionizing radiation.

Employee

As used in this MD, shall mean an employee of the NRC.

Employee Exposure Database System (EEDS)

The official NRC record for employees' occupational dose.

High Radiation Area

An area, accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving a dose equivalent in excess of 0.1 rem (1 mSv) in 1 hour at 30 centimeters from the radiation source or 30 centimeters from any surface that the radiation penetrates.

Investigation Level

The point at which the validity of the dose may come into question and should be reviewed. Investigation levels are optional and may be established at doses that would be higher than typically expected for an employee within a particular program and may vary based on the program's history and scope. If no investigation levels are established, the administrative dose limits become the level to conduct a review to assure accuracy of dose records.

KI (abbreviation for potassium iodide)

A salt made of non-radioactive iodine that can be used to block the uptake of radioactive iodine by the thyroid gland.

Member of the Public

Any individual except when that individual is receiving an occupational dose. An NRC employee who is not expected to receive an occupational dose in performance of his or her official duties is considered to be a "member of the public."

Non-exempt

Radioactive material that is not exempt from NRC regulatory requirements (for byproduct exempt concentrations, see 10 CFR 30.14 and 30.70, for byproduct exempt quantities, see 10 CFR 30.18 and 30.71; and for exempt quantities of source material, see 10 CFR 40.13).

Occupational Dose

The dose received by an employee in the course of his or her NRC employment in which the employee's assigned duties involve exposure to radiation or to radioactive material. Occupational dose does not include doses received from background radiation, from any medical administration the individual has received, from exposure to individuals administered radioactive material and released pursuant to 10 CFR 35.75, from voluntary participation in medical research programs, or as a member of the public.

Radiation (ionizing radiation)

Alpha particles, beta particles, gamma rays, x-rays, neutrons, high-speed electrons, high-speed protons, and other particles capable of producing ions. Radiation, as used in

this part, does not include non-ionizing radiation, such as radio or microwaves, or visible, infrared, or ultraviolet light.

Radiation-Producing Devices

Machines that create ionizing radiation (e.g., x-ray machines).

Respiratory Protection

The prevention of deleterious effects from the inhalation of airborne contaminants.

Total Effective Dose Equivalent

The sum of the effective dose equivalent (for external exposures) and the committed effective dose equivalent (for internal exposures).

Very High Radiation Area

An area, accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving an absorbed dose in excess of 500 rads (5 grays) in 1 hour at 1 meter from a radiation source or at 1 meter from any surface that the radiation penetrates. (Note: At very high doses received at high dose rates, units of absorbed dose (e.g., rads and grays) are appropriate, rather than units of dose equivalent (e.g., rems and sieverts)).

Year

The period of time beginning in January used to determine compliance with the provisions of this Directive. The starting date of the year used to determine compliance may be changed provided that the change is made at the beginning of the year and that no day is omitted or duplicated in consecutive years.