

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

MD 10.131 PROTECTION OF NRC EMPLOYEES DT-XX-XX
AGAINST IONIZING RADIATION

Volume 10 Personnel Management

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 Executive Director for Operations

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Issuing Office: Office of Nuclear Material Safety and Safeguards
 Division of Material Safety, State, Tribal, and Rulemaking Programs

Contact Name: Kathy Modes
 301-415-6234

EXECUTIVE SUMMARY

Management Directive 10.131, is revised to—

- Establish responsibilities for the Office of Nuclear Material Safety and Safeguards to be the lead organization for the Radiation Safety Officers (RSO) functions by providing technical oversight of the radiation safety program.
- Change the reporting requirement for new employees and those requesting a dosimeter from reporting a lifetime dose to reporting only occupational radiation dose received during the current year.
- Identify the Office of Nuclear Security and Incident Response (NSIR) as an additional program office that must appoint an RSO and establish a radiation safety program.
- Delineate requirements for program offices without radiation safety programs.
- Clarify the requirement for the Director of NSIR to maintain guidance checklists to address the following protective measures: potassium iodide, respiratory protection, bioassay, and dosimetry.
- Delete the requirement to maintain local databases for personnel exposure and centralize recordkeeping in the U.S. Nuclear Regulatory Commission's (NRC) employee exposure database system (EEDS).
- Change the requirement for Radiation Safety Program audits to every 2 years.

EXECUTIVE SUMMARY

- Eliminate duplicate information available at Title 10 of the *Code of Federal Regulations* (10 CFR) Part 20, “Standards for Protection Against Radiation,” which is now incorporated by reference.
- Relocate the occupational safety and health program and duties from the Chief Human Capital Officer and assign the program duties to the Director, Office of Administration.

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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 from the conduct of NRC business. The NRC must provide dosimeters to employees in accordance with the provisions of this MD. The NRC must also provide 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, NRC will rely on that program to protect NRC

employees assigned to the site (e.g., resident inspectors) or visiting the site. 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 that are—

- 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 or by the Environmental Protection Agency.
- Consistent with 10 CFR Part 19, “Notices, Instructions and Reports to Workers: Inspection and Investigations” adopted by NRC for application to NRC-licensed operations.
- Consistent with 10 CFR Part 20, “Standards for Protection Against Radiation,” adopted by NRC for application to NRC-licensed operations.

III. ORGANIZATIONAL RESPONSIBILITIES AND DELEGATIONS OF AUTHORITY

A. Executive Director for Operations

Responsible for overall development and implementation of standards for protection against ionizing radiation for NRC operations.

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

1. Establishes standards for protection against ionizing radiation and provides technical oversight of the radiation safety programs to the NRC offices (i.e., NRC headquarters, regions, and the Technical Training Center).
2. Maintains this MD and reviews and approves, or disapproves, any proposed deviation (other than emergency actions) from the provisions of this MD.
3. Develops and implements a written radiation safety program. 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 its employees have an understanding of the use and storage of non-exempt radioactive materials as well as radiation-producing devices (e.g., package or parcel x-ray).

4. Appoints an RSO to establish a radiation safety program. The minimum qualification for an RSO is a working knowledge of basic health physics and radiological controls.
5. Provides the Contracting Officer Representative (COR) for the personnel dosimetry contract that provides personnel monitoring equipment and services for NRC employees.
6. Provides interpretations of the provisions of this MD in consultation with the Office of the General Counsel.
7. Ensures that NRC staff implements and maintains the standards for protection against ionizing radiation under the provisions established by this MD.
8. Provides implementation guidance and technical oversight, as necessary, to ensure consistency of radiation safety programs in accordance with this Directive and Handbook.
9. Coordinates an annual counterpart meeting for the Office of Nuclear Reactor Regulation (NRR) 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, program office directors, and regional administrators as an annual report for the NRC radiation safety program.
10. 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."
11. Informs employees of the provisions of this MD and ensures they comply with these provisions.
12. Provides employees with radiological equipment as necessary for their assigned duties.
13. Ensures that any employees under their jurisdiction are notified promptly if the employees have been exposed to radiation that exceeds the limits specified in Section II.A of the handbook attached to this MD.
14. Conducts an audit of the NMSS radiation safety program every 2 years.
15. Maintains records required by this MD and Section V of the Handbook.

C. Director, Office of New Reactors (NRO)

1. Develops and implements a written radiation safety program. 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 its employees have an understanding of the use and

storage of non-exempt radioactive materials as well as radiation-producing devices (e.g., package or parcel x-ray).

2. Appoints an RSO to establish a radiation safety program. The minimum qualification for an RSO is a working knowledge of basic health physics and radiological controls.
3. Informs employees of the provisions of this MD and ensures they comply with these provisions.
4. Provides employees with radiological equipment as necessary for their assigned duties.
5. Ensures that any employees under their jurisdiction are notified promptly if the employees have been exposed to radiation that exceeds the limits specified in Section II.A of the handbook attached to this MD.
6. Ensures that a representative participates in the annual RSO meeting.
7. Conducts an audit of the NRO radiation safety program every 2 years.
8. Promptly informs the Director of NMSS of any action that result in a substantial deviation to this MD.
9. Maintains records required by this MD and Section V of the Handbook.

D. Director, NRR

1. Develops and implements a written radiation safety program. 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 its employees have an understanding of the use and storage of non-exempt radioactive materials as well as radiation-producing devices (e.g., package or parcel x-ray).
2. Appoints an RSO to establish a radiation safety program. The minimum qualification for an RSO is a working knowledge of basic health physics and radiological controls.
3. Ensures equipment is operable and coordinate with NRC headquarters offices, as applicable.
4. Provides radiation safety support to all other NRC headquarters Office Directors that do not have a designated RSO.
5. Provides assistance to NRC ADM mailroom for all radioactive material packages to ensure the proper handling.

6. Informs employees of the provisions of this MD and ensures they comply with these provisions.
7. Provides employees with radiological equipment as necessary for their assigned duties.
8. Ensures that any employees under their jurisdiction are notified promptly if the employees have been exposed to radiation that exceeds the limits specified in Section II.A of the handbook attached to this MD.
9. Ensures that a representative participates in the annual RSO meeting.
10. Conducts an audit of the NRR radiation safety program every 2 years.
11. Promptly informs the Director of the Office of NMSS of any action that result in a substantial deviation to this MD.
12. Maintains records required by this MD and Section V of the Handbook.

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

1. Develops and implements a written radiation safety program. 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 its employees have an understanding of the use and storage of non-exempt radioactive materials as well as radiation-producing devices (e.g., package or parcel x-ray).
2. Appoints an RSO to establish a radiation safety program. The minimum qualification for an RSO is a working knowledge of basic health physics and radiological controls.
3. Provides the COR and technical monitor for the employee radiation exposure database. This centralized database provides the official NRC record on employee radiation exposure.
4. Informs employees of the provisions of this MD and ensures they comply with these provisions.
5. Provides employees with radiological equipment as necessary for their assigned duties.
6. Ensures that any employees under their jurisdiction are notified promptly if the employees have been exposed to radiation that exceeds the limits specified in Section II.A of the handbook attached to this MD.
7. Ensures that a representative participates in the annual RSO meeting.

8. Conducts an audit of the RES radiation safety program every 2 years.
9. Promptly informs the Director of the Office of NMSS of any action that result in a substantial deviation to this MD.
10. Maintains records required by this MD and Section V of the Handbook.

F. Director, NSIR

1. Develops and implements a written radiation safety program. 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 its employees have an understanding of the use and storage of non-exempt radioactive materials as well as radiation-producing devices (e.g., package or parcel x-ray).
2. Appoints an RSO to establish a radiation safety program. The minimum qualification for an RSO is a working knowledge of basic health physics and radiological controls.
3. Ensures NRC Incident Response plans address radiation safety protective equipment and services for deployed NRC personnel, including KI, respiratory protection, bioassays and dosimetry.
4. Informs employees of the provisions of this MD and ensures they comply with these provisions.
5. Provides employees with radiological equipment as necessary for their assigned duties.
6. Ensures that any employees under their jurisdiction are notified promptly if the employees have been exposed to radiation that exceeds the limits specified in Section II.A of the handbook attached to this MD.
7. Ensures that a representative participates in the annual RSO meeting.
8. Conducts an audit of the NSIR radiation safety program every 2 years.
9. Promptly informs the Director of NMSS of any action that result in a substantial deviation to this MD.
10. Maintains records required by this MD and Section V of the Handbook.

G. Regional Administrators

1. Develops and implements a written radiation safety program. 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

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- if applicable, ensure its employees have an understanding of the use and storage of non-exempt radioactive materials as well as radiation-producing devices (e.g., package or parcel x-ray).
2. Appoints an RSO to establish a radiation safety program. The minimum qualification for an RSO is a working knowledge of basic health physics and radiological controls.
 3. Informs employees of the provisions of this MD and ensures they comply with these provisions.
 4. Provides employees with radiological equipment as necessary for their assigned duties.
 5. Ensures that any employees under their jurisdiction are notified promptly if the employees have been exposed to radiation that exceeds the limits specified in Section II.A of the handbook attached to this MD.
 6. Ensures that a representative participates in the annual RSO meeting.
 7. Conducts an audit of the regional radiation safety program every 2 years.
 8. Promptly informs the Director of NMSS of any action that result in a substantial deviation to this MD.
 9. Maintains records specified in Section V of the handbook attached to this MD.
 10. Ensure that provisions for personal protective equipment and radiation monitoring devices are adequate to support regional inspections and emergency response duties.
 11. Ensures NRC Incident Response plans address radiation safety protective equipment and services for deployed NRC personnel, including KI, respiratory protection, bioassays and dosimetry.
 12. Ensures equipment (e.g. x-ray producing equipment) is operable.

H. Director, 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 program 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 labelled to contain radioactive material to ensure proper receipt and handling.

I. Office of the Chief Human Capital Officer (OCHCO)

1. Develops and implements a written radiation safety program for activities at the Technical Training Center (TTC), which is a part of the OCHCO organization even though it is physically located in Chattanooga, Tennessee. 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 its employees have an understanding of the use and storage of non-exempt radioactive materials as well as radiation-producing devices (e.g., package or parcel x-ray).
2. Appoints an RSO to establish a radiation safety program. The minimum qualification for an RSO is a working knowledge of basic health physics and radiological controls.
3. Ensures that new employees complete NRC Form 4, "Cumulative Occupational Dose History," that completed forms are submitted to OCHCO, and that OCHCO forwards this form to RES for entry in the employee database.
4. Establishes and offers Site Access and Site Access Refresher training courses to NRC employees and maintains training records of NRC employees who have successfully completed this training.
5. Ensures that employees under their jurisdiction are informed of the provisions of this MD and ensures they comply with these provisions.
6. Provides employees with radiological equipment as necessary for their assigned duties.
7. Ensures that any employees under their jurisdiction are notified promptly if the employees have been exposed to radiation that exceeds the limits specified in Section II.A of the handbook attached to this MD.
8. Ensure that a representative participates in the annual RSO meeting.
9. Conducts an audit of the TTC radiation safety program every 2 years.
10. Promptly informs the Director of NMSS of any action that result in a substantial deviation to this MD.

11. Ensures that provisions for personal protective equipment and radiation monitoring devices are adequate to support training courses.
12. Ensures equipment (e.g., x-ray producing equipment) is operable.
13. Maintains records required by this MD and Section V of the Handbook.

IV. APPLICABILITY

The provisions of this directive and handbook apply to all NRC employees, with an emphasis on those employees who may receive an occupational dose in performance of their official duties. The policy and guidance in the MD also apply to members of the public when those members are present in NRC offices that may possess non-exempt radioactive material 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 their 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.”

Executive Order

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

U.S. Nuclear Regulatory Commission Documents

NRC Management Directive 10.130, “Safety and Occupational Health Program.”

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

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

NRC Form 4, "Cumulative Occupational Dose History."

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; Approval of Environmental Protection Agency
Recommendations," Administrative Order (52 FR 2822), January 27, 1987.

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<i>Contact Name:</i>	Kathy Modes 301-415-6234

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- Establish responsibilities for the Office of Nuclear Material Safety and Safeguards to be the lead organization for the Radiation Safety Officers (RSO) functions by providing technical oversight of the radiation safety program.
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- Identify the Office of Nuclear Security and Incident Response (NSIR) as an additional program office that must appoint an RSO and establish a radiation safety program.
- Delineate requirements for program offices without radiation safety programs.
- Clarify the requirement for the Director of NSIR to maintain guidance checklists to address the following protective measures: potassium iodide, respiratory protection, bioassay, and dosimetry.
- Delete the requirement to maintain local databases for personnel exposure and centralize recordkeeping in the U.S. Nuclear Regulatory Commission’s (NRC) employee exposure database system (EEDS).
- Change the requirement for Radiation Safety Program audits to every 2 years.
- Eliminate duplicate information available at Title 10 of the *Code of Federal Regulations* (10 CFR) Part 20, “Standards for Protection Against Radiation,” which is now incorporated by reference.

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- Relocate the occupational safety and health program and duties from the Office of the Chief Human Capital Officer (OCHCO) and assign the program duties to the Director, Office of Administration (ADM).

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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 the public so that radiation doses do not exceed the standards of radiation protection prescribed herein and is maintained As Low As Is Reasonably Achievable (ALARA) from the conduct of NRC business. This handbook describes appropriate controls for the possession, use, storage, transfer, and disposal of sources of radiation, including radiation-generating devices, and includes standards to protect those employees who are expected to receive an occupational dose in performance of their official duties. This handbook also provides procedures to protect members of the public. The term “members of the public” includes those NRC employees who are not expected to receive an occupational dose in performance of their official duties.

B. Training

The NRC offices (e.g., OCHCO, Office of New Reactors (NRO), NSIR, Office of Nuclear Reactor Regulation (NRR), Office of Nuclear Material Safety and Safeguards (NMSS), Office of Nuclear Regulatory Research, and the regions) must establish provisions for radiation safety training commensurate with the duties of their employees.

C. RSOs

1. Ensure that the radiation safety programs of the applicable NRC office implement the provisions of this handbook.
2. Authorize the issuance of dosimeters to employees.
3. Ensure that the radioactive material controls are in accordance with this handbook and NRC office or regional programs.

4. Review radiation exposure information on monitored employees. Ensure exposure records for monitored employees are accurately recorded.
5. Distribute information to monitored employees and managers, as appropriate, to allow them to maintain doses to their staff 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, 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 Federal Privacy Act of 1974, as amended (5 U.S.C. 552a).
6. Coordinate audits of the radiation safety program every 2 years. At a minimum, audits 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.
7. Participate in the annual RSO counterpart meeting, and share the results of the program audits conducted as required in Section I.C.6 of this handbook.
8. 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 assessment, as appropriate.
9. Coordinate with the NRC incident response organization during agency response to incidents.
10. Determine and assign appropriate radiation dose to employees who have incomplete dose records (e.g., resulting from loss of or damage to their dosimeters).
11. 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.
12. Furnish radiation exposure data to current and former employees as required by this handbook.
13. Prepare records for each planned special exposure in accordance with 10 CFR 20.2105(a).

D. NRC Employees

1. Comply with this handbook and the office or regional procedures established by the NRC that are applicable to their own actions and conduct.
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. Report any unexpected radiation hazards to the employee's supervisor or appropriate licensee staff, as soon as possible.
6. Coordinate with the appropriate RSO before the receipt of any non-exempt radioactive material.
7. Use any radioactive material in accordance with this handbook and office or regional procedures.
8. Inform the appropriate RSO of any occupational exposure history in accordance with this handbook and applicable office procedures.
9. Inform the appropriate RSO before wearing dosimetry if the employee has undergone a medical procedure involving radioactive material.
10. Request dosimeter results from the licensee when monitored by a licensee's dosimeter, instead of an NRC required dosimeter, and notify the appropriate RSO. NRC Form 525, "Request for and Authorization of Release of Dosimetry Records," may be used to request this information from the licensee.
11. Ensure that dosimeters provided by the NRC are handled in accordance with office and regional procedures. Report lost, damaged or unintentionally exposed dosimeters in a timely manner to the appropriate RSO.
12. 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.
13. Discuss their radiological safety concerns with their immediate supervisor and the appropriate RSO.

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, as defined in 10 CFR 20.1003, are listed in 10 CFR 20.1201, 20.1206, 20.1207 and 20.1208.

Otherwise, NRC employees will be considered members of the public, as defined in 10 CFR 20.1003, and the applicable dose limits are set forth in 10 CFR 20.1301.

B. Determination of Prior Dose

1. The responsible headquarters office director or regional administrator 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 of this handbook. 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.
2. The responsible NRC office must obtain the employee's signed certificate, NRC Form 4, "Cumulative Occupational Dose History," showing each period the employee was monitored for occupational exposure to radiation and the results of that monitoring, before allowing an employee to participate in a planned special exposure.

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.

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

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.

F. Compliance with Dose Limits for Members of the Public

The NRC offices possessing non-exempt radioactive material must measure, as appropriate, radiation levels 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., 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 will wear dosimetry 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, shall also include such other facilities, buildings, structures, and sites that are not licensed by the NRC or under NRC control, but to which employees may enter or deploy in furtherance of their official duties.
2. The NRC office directors and regional administrators may issue NRC dosimetry to employees who may receive occupational dose while performing their official duties. 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 office directors and regional administrators shall ensure that personnel monitoring equipment, supplied by NRC or the licensee, is issued to employees and used during visits to 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. 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.
 5. 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. Employees may use NRC Form 525, "Request for and Authorization of Release of Dosimetry Records," to request their dose record from the licensee. Upon receipt of the dose record, the employee shall provide the information to the appropriate RSO for review. If the results are acceptable, the RSO shall ensure the results are entered into the EEDS.
 6. In the performance of their official duties, employees who visit licensee facilities where they may be exposed to radioactive materials may accept the measurements made by the licensee's personnel and rely on the radiation safety programs established at the licensee's facility.
 7. 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 Controls

1. Unless a deviation is authorized by the Director of NMSS, caution signs, labels, and controls 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 operating procedures applicable to employees whose duties involve exposure to radiation or non-exempt radioactive material will be posted in conspicuous locations of NRC offices.

D. Picking Up, Receiving, and Opening Packages

Each 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 ADM mail room staff shall notify

the NRR RSO if they receive any packages that are labeled “contains 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 1 mSv (100 mrem) shall be advised and instructed —
 - (a) About the possession, use, storage, transfer, and disposal of radioactive materials and radiation levels associated with their 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 personnel from exposure to radiation or radioactive materials associated with their assigned duties.
 - (d) About their responsibility to promptly report any condition that may lead to or cause a violation of the provisions of this handbook or 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.
 - (f) About the results of monitoring for exposure to radiation or radioactive material on an annual basis.
2. The extent of these instructions will be commensurate with the potential radiological health risk.
3. Each employee who is required to receive the instructions listed in Section III.E.1 shall do so before receiving an occupational dose.
4. Employees may be exempted from the requirements to receive the instructions listed in Section III.E.1 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 under NRC control, other than exempt sources, shall be secured from unauthorized removal or access (e.g., stored under lock and key, access limited by proximity or keycard or cypher lock) when not under constant surveillance.

IV. WASTE DISPOSAL

A. General Requirement

1. No employee shall dispose of non-exempt radioactive material except:
 - (a) By transfer to an authorized recipient as defined by 10 CFR 20.2001(a)(1);
 - (b) In accordance with the provisions of 10 CFR 20.2003; or
 - (c) In accordance with the provisions in 10 CFR 20.2005.
2. 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.
3. Employees shall notify the appropriate RSO prior to disposing of non-exempt radioactive material.

V. RECORDS, REPORTS, AND NOTIFICATIONS

A. Surveys, 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 or mrem/hr) and disintegrations per unit time 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) Historical records of this handbook, including any interpretations or deviations, shall be maintained by NMSS for 75 years in accordance with NUREG-0910, "NRC Comprehensive Records Disposition Schedule," Schedule 1-2.2.b.
 - (b) Audits and other reviews of program content and implementation will be maintained in accordance with standard NRC record retention requirements.

3. Records of Surveys

- (a) Records showing the results of surveys and calibrations required by Section III.A of this handbook will be retained for 75 years in accordance with the National Archives and Records Administration (NARA) approved records schedule N1-431-00-13, item 16.
- (b) The following records, when applicable to an employee, will be retained for 75 years from the date of the creation of the record (see NUREG-0910, "NRC Comprehensive Records Disposition Schedule," Schedule 2-22.4.a).
 - (i) Records of the results of surveys to determine the dose from external sources and used in the absence of or in combination with individual monitoring data in the assessment of individual dose equivalent.
 - (ii) Records of the results of measurements and calculations used to determine individual intakes of radioactive material and used in the assessment of internal dose.

4. Records of Prior Dose

- (a) Records of prior dose will be prepared pursuant to Section II.B of this handbook.
- (b) Records of prior dose will be maintained for 75 years from the date of the creation of the record (see NUREG-0910, Schedule 2-22.4.a).

5. Records of Planned Special Exposures

- (a) For each planned special exposure of an employee, the RSO responsible for that employee shall ensure that the records specified in 10 CFR 20.2105(a) are prepared.
- (b) Records of planned special exposures will be maintained for 75 years from the date of the creation of the record (see NUREG-0910, Schedule 2-22.4.a).

6. 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] Files"). 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.

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- (a) Entries on the records will cover exposure period's not exceeding 1 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 for 75 years from the date of the report (see NUREG-0910, Schedule 2-22.4.a).

7. Records of Dose to Individual Members of the Public

- (a) Each NRC office possessing radioactive material, other than quantities that are exempt from NRC regulations, shall maintain records sufficient to demonstrate compliance with the dose limit for individual members of the public.
- (b) The records required by Section V.A.7(a) above will be retained for 75 years in accordance with NARA-approved records schedule N1-431-00-13, item 16.

8. Records of Waste Disposal

Radioactive waste disposal records made pursuant to Section IV of this handbook will be retained for 75 years in accordance with NARA-approved records schedule N1-431-00-13, item 16.

9. Records Retention Requirements

Each record required by this section shall be retained in accordance with the applicable NARA-approved records disposition schedules contained in NUREG-0910, "NRC Comprehensive Records Disposition Schedule." Items that are not maintained in EEDS or the Agencywide Documents Access and Management System 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 shall report by telephone to the NRC Operations Center under the following circumstances:

1. Immediately after discovering that any radioactive material in a quantity greater than 1000 times the quantity specified in 10 CFR Part 20, Appendix C (per 10 CFR 20.2201(a)(i)), is lost, stolen, or missing under circumstances that an exposure could result to persons in unrestricted areas.
2. Within 30 days after discovering that any lost, stolen, or missing radioactive material in a quantity greater than 10 times the quantity specified in 10 CFR Part 20, Appendix C (per 10 CFR 20.2201(a)(ii)), is still missing.

In addition, the NRC reporting office shall do the following:

3. Within 30 days of reporting the lost, stolen, or missing radioactive material, the reporting office shall submit to the Director of NMSS and the appropriate DEDM, a written report containing the following information:
 - (a) A description of the radioactive material involved, including kind, quantity, chemical form, and physical form.
 - (b) A description of the circumstances under which the loss or theft occurred.
 - (c) A statement of disposition or probable disposition of the radioactive material involved.
 - (d) A report of the radiation exposures to employees and individual members of the public, circumstances under which the exposures occurred, and the possible total effective dose equivalent (TEDE) to individual members of the public in unrestricted areas.
 - (e) The report shall identify:
 - (i) Contributing causes and/or mitigating factors,
 - (ii) Actions that were taken or will be taken to recover the material, and
 - (iii) Procedures or measures that were adopted or will be adopted to prevent a recurrence of the loss or theft of radioactive material.
4. Subsequent to filing the written report, the reporting office also shall report to the Director of NMSS and the appropriate DEDM any substantive additional information on the loss or theft that becomes available within 30 days of learning this information.

C. Notification of Incidents

1. Immediate Notification

Immediately notify the NRC Operations Center in person or by telephone after discovering an incident involving radioactive material under NRC control that may have caused—

(a) An employee or individual member of the public to receive any of the following:

- (i) A TEDE of 250 mSv (25 rem) or more,
- (ii) A lens dose equivalent of 750 mSv (75 rem) or more, or
- (iii) A shallow dose equivalent to the skin or extremities of 2.5 Gy (250 rads) or more.

(b) The release of radioactive material inside or outside a restricted area that could cause an employee or individual member of the public who is present in that area for 24 hours to receive an intake five times the annual limit on intake (ALI). The provisions of this section do not apply to locations in which employees are not normally stationed during routine operations.

2. 24 Hour Notification

Notify the NRC Operation Center in person or by telephone within 24 hours of discovering any of the following events involving radioactive material under NRC control:

(a) An event that may have caused an employee or individual member of the public to receive any of the following in a period of 24 hours:

- (i) A TEDE 50 mSv (5 rem),
- (ii) A lens dose equivalent 150 mSv (15 rem), or
- (iii) A shallow dose equivalent to the skin or extremities 500 mSv (50 rem).

(b) An event that may have caused a release of radioactive material inside or outside a restricted area that could cause an employee or individual member of the public who is present in that area for 24 hours to receive an intake in excess of one ALI. The provisions of this section do not apply to locations in which employees are not normally stationed during routine operations.

(c) An unplanned contamination event that requires access to the contaminated area, by workers or the public, to be restricted for more than 24 hours by imposing additional radiological controls or prohibiting entry into the area.

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- (d) An event that requires unplanned medical treatment at a medical facility of an employee or individual member of the public with spreadable radioactive contamination on the individual's clothing or body.
 - (e) An unplanned fire or explosion that damages radioactive material, or a device, container, or equipment containing radioactive material when—
 - (i) The quantity of material involved is greater than five times the lowest ALI specified for the material in 10 CFR Part 20, Appendix B; or
 - (ii) The damage affects the integrity of the radioactive material or its container.

D. Reports of Overexposures and Excessive Levels and Concentrations of Radioactivity

1. In addition to any notification required by Section V.C of this handbook, each NRC office shall submit a written report to the Director of NMSS and the appropriate DEDM within 30 days of discovering any of the following events:
 - (a) Each exposure of an employee or individual member of the public to radiation or radioactive material in excess of the applicable limits specified in Section II of this handbook.
 - (b) Any incident for which notification is required by Section V.C of this handbook.
 - (c) Levels of radiation or concentrations of radioactive material in—
 - (i) A restricted area in excess of any applicable limit specified in 10 CFR Part 20, or
 - (ii) An unrestricted area in excess of 10 times any applicable limit specified in 10 CFR Part 20, whether or not these levels cause an overexposure.
2. Each written report required by this section must describe the extent of exposure of individuals to radiation or to radioactive material, including, as appropriate—
 - (a) Estimates of each individual's dose,
 - (b) The levels of radiation and concentrations of radioactive material involved,
 - (c) The cause of the event, and
 - (d) The corrective steps taken or planned.
3. Each written report required by this section shall include, in a separate and detachable part, the name, social security number, and date of birth for each individual exposed. If an embryo or a fetus is involved, the identifiers should be those of the declared pregnant woman.

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 their immediate supervisor and either the regional collateral duty safety officer or the NRC headquarters Safety and Occupational Health Manager.
2. Employees should refer to Management Directive (MD) 10.130, "Safety and Occupational Health Program" for information on reporting workplace injuries or illnesses consistent with NRC Form 436, "Employee Report of Workplace Injuries or Illnesses."

F. Reports of Planned Special Exposures

Each NRC office shall submit a written report to the Director of NMSS and the appropriate 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 Section V.A.5(a) of this handbook.

G. Notifications 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 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 report is furnished under the provisions of MD and Directive Handbook 10.131 and that the report should be preserved in their records for future reference.
2. The NRC shall make dose information available to employees as shown in records maintained under the provisions of this handbook. The appropriate RSO shall provide an annual report to each employee monitored under the provisions of this handbook of the dose received in the prior monitoring year if—
 - (a) The employee's occupational dose exceeds 1 mSv (100 mrem) TEDE or 1 mSv (100 mrem) to any individual organ or tissue, or
 - (b) The employee requests his or her annual dose report.

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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.
 - (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 under Section V.D of this handbook. The NRC shall transmit this notice 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.
 6. At the employee's request, the NRC shall advise the employee of any exposure to radiation or intake of radioactive material as shown in records maintained pursuant to this handbook.

VI. GLOSSARY

Employee

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

Occupational dose

The dose received by an individual in the course of employment in which the individual's assigned duties involve exposure to radiation or to radioactive material (10 CFR 20.1003, definition of "occupational dose"). 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 under 10 CFR 35.75, from voluntary participation in medical research programs, or as a member of the public.

Member of the public

Any individual except when that individual is receiving an occupational dose. (10 CFR 20.1003, definition of "member of the public").

ALARA

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 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.

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 licensee, 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.

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.

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.

Non-exempt

Radioactive material that is not exempt from NRC regulatory requirements (e.g., 10 CFR Parts 30, 40 and 70).

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 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)).