

**ADMINISTRATIVE CHANGE TO
DOE O 231.1B, ENVIRONMENT, SAFETY AND HEALTH REPORTING**

LOCATION OF CHANGES:

Page	Paragraph	Changed	To
2	3c(4)	DOE M 470.4-1 Chg 2, <i>Safeguards and Security Program Planning and Management</i> , dated 10-20-10	DOE O 470.4B, <i>Safeguards and Security Program</i> , dated 07-26-11
3	3c(5)	DOE M 470.4-1 Chg 2, <i>Safeguards and Security Program Planning and Management</i> , dated 10-20-10	DOE O 470.4B, <i>Safeguards and Security Program</i> , dated 07-26-11
10	6m	1-13-11 (date of admin change vs. date of Order)	4-9-03 (date of Order)
10	former 6o	DOE M 411.1-1C, Safety Management Functions, Responsibilities and Authorities Manual, dated 12-31-03, which defines safety management functions, responsibilities and authorities for DOE senior management with responsibilities for line support, oversight and oversight of environment, safety and health reporting.	Delete (FRAM was cancelled) reorder subsequent references
10	former 6p now 6o	DOE M 470.4-1 Chg 2, <i>Safeguards and Security Program Planning and Management</i> , dated 10-20-10	DOE O 470.4B, <i>Safeguards and Security Program</i> , dated 7-26-11
10	former 6q now 6p	DOE M 470.4-4A Chg 1, Information Security Manual, dated 10-12-10	DOE O 471.6, <i>Information Security</i> , dated 6-20-11
11	former 6u now 6t	http://www-pub.iaea.org/MTCD/publications/PDF/Code_2004_web.pdf	http://www-pub.iaea.org/MTCD/publications/PDF/code-2004_web.pdf
Att 1 pg 1	2a(1)	A small employer subcontractor employs less than 10 employees at a DOE site either directly or through sub-tiered contracts.	A small employer subcontractor employs less than 11 employees at a DOE site either directly or through sub-tiered contracts. (to correct technical inaccuracy)
Att 5 Def. former page 2, now page 8	g	DOE M 470.4-6, Chg 1	DOE O 474.2, Chg. 1
Att 5 Def. former page 2, now page 8	h	DOE M 470.4-6, Chg 1	DOE O 474.2, Chg. 1

SUBJECT: ENVIRONMENT, SAFETY AND HEALTH REPORTING

1. PURPOSE. To ensure the Department of Energy (DOE), including the National Nuclear Security Administration (NNSA), receives timely and accurate information about events that have affected or could adversely affect the health, safety and security of the public or workers, the environment, the operations of DOE facilities, or the credibility of the Department. This will be accomplished through timely collection, reporting, analysis, and dissemination of data pertaining to environment, safety, and health issues as required by law, or regulations, or in support of United States political commitments to the International Atomic Energy Agency (IAEA).
2. CANCELLATION. The following DOE Directives are canceled:
 - a. DOE O 231.1A, Chg 1, *Environment, Safety, and Health Reporting*, dated 6-3-04. Only the provisions that pertain to environment, safety and health reporting are cancelled. Occurrence reporting and processing of operations information provisions remain in effect.
 - b. DOE M 231.1-1A, Chg 2, *Environment, Safety and Health Reporting Manual*, dated 6-12-07.
 - c. DOE N 234.1, *Reporting of Radioactive Sealed Sources*, dated 2-27-08, extended to 5-06-11. Note: The basic requirements for reporting and data submission in DOE N 234.1 have been incorporated into this Directive.

Cancellation of a Directive does not, by itself, modify or otherwise affect any contractual or regulatory obligation to comply with the Directive. Contractor Requirements Documents (CRDs) that have been incorporated into a contract remain in effect throughout the term of the contract unless and until the contract or regulatory commitment is modified to either eliminate requirements that are no longer applicable or substitute a new set of requirements.

3. APPLICABILITY.
 - a. Departmental Applicability. Except for the equivalencies/exemptions in paragraph 3.c, this Directive applies to all Departmental elements.

The Administrator of NNSA will assure that NNSA employees and contractors comply with their respective responsibilities under this Directive. Nothing in this Directive will be construed to interfere with the NNSA Administrator's authority under section 3212(d) of Public Law (P.L.) 106-65 to establish Administration-specific policies, unless disapproved by the Secretary.

- b. DOE Contractors. Except for the equivalencies/exemptions/deviations in paragraph 3.c., the CRD sets forth requirements of this Directive that will apply to contracts that include the CRD.

The CRD must be included in contracts that involve activities that may result in employee or subcontractor injury, illness and radiation exposure, or radiation exposure to special individuals. The CRD must also be included in contracts that involve activities covered by an environmental protection program or that involve maintaining property under the stewardship of DOE.¹ The CRD must also be included in contracts that involve radioactive sealed sources program activities.

- c. Equivalencies/Exemptions/Deviations for DOE O 231.1B.

- (1) Equivalency. In accordance with the responsibilities and authorities assigned by Executive Order (E.O.) 12344, codified at 50 U.S.C. sections 2406 and 2511 and to ensure consistency through the joint Navy/DOE Naval Nuclear Propulsion Program, the Deputy Administrator for Naval Reactors (Director) will implement and oversee requirements and practices pertaining to this Directive for activities under the Director's cognizance, as deemed appropriate.
- (2) Equivalency (Radioactive Sealed Sources). The requirements of this Directive do not apply to radioactive sealed sources that are regulated through a license or certification (under section 1701 of the Atomic Energy Act) by the Nuclear Regulatory Commission (NRC) or a State under an Agreement with the NRC.
- (3) Exemption. Consistent with Secretarial Delegation Order Number 00-033.00B to the Administrator and Chief Executive Office of Bonneville Power Administration (BPA), this Directive does not apply to BPA (except for the requirements relating to the reporting of radioactive sealed sources, for which the requirements of this Directive will apply).
- (4) Exemption (Radioactive Sealed Sources) (National Security Exclusion). The requirements of this Directive do not apply to radioactive sealed sources that are classified, or to data and information regarding a radioactive sealed source that would divulge a classified program. National Security Exclusion exemptions beyond that specified above must be processed in accordance with the deviations process as defined in DOE O 470.4B, *Safeguards and Security Program*, dated 7-26-11.

¹ 10 C.F.R. Part 851, *Worker Safety and Health Program*, may contain other provisions that are applicable to recording and reporting worker injuries and illnesses.

- (5) Deviations (Radioactive Sealed Sources). Deviations (i.e., equivalencies and exemptions) from the requirements in this Directive that apply to the reporting of radioactive sealed sources must be processed in accordance with DOE O 470.4B, *Safeguards and Security Program*, dated 7-26-11.
4. REQUIREMENTS. Reports that potentially contain classified or controlled unclassified information (e.g., Unclassified Controlled Nuclear Information or Official Use Only information) must be reviewed and marked in accordance with appropriate Directives. If a report includes classified information, it must be contained in a separate classified addendum and an unclassified version of the report must be developed and annotated to indicate the existence, identification, and file location of the classified addendum. Reports must be submitted as follows:
 - a. Reporting Annual Site Environmental Information (ASER). Annual site environmental information must be reported in accordance with Attachment 2.
 - b. Reporting Occupational Safety and Health Information.
 - (1) Injury and Illness Recordkeeping and Reporting.
 - (a) Work-related fatalities, injuries, and illnesses occurring to Federal employees must be recorded, reported and maintained in accordance with the requirements contained in the current version of Title 29 C.F.R. Part 1960, Subpart I, and the requirements in Attachment 3, paragraphs 1 and 2.
 - (b) A work-related incident that involves a fatality or hospitalization of three or more Federal employees must be reported to the Chief Health, Safety and Security Officer in accordance with 29 C.F.R. § 1960.70 and 29 C.F.R. § 1904.39. The designated Federal Employees Occupational Safety and Health (FEOSH) Program Manager for each Headquarters Element must report incidents involving their federal employees and Federal employees of DOE Field Elements under their cognizance to the Chief Health, Safety and Security Officer.
 - (2) Annual Submission of Fire Protection Information. Fire protection information must be reported in accordance with Attachment 3, paragraph 3.
 - c. Reporting Ionizing Radiation Exposure Information. Ionizing radiation exposure information must be reported in accordance with Attachment 4.
 - d. Reporting Safety Basis Information. The status of the safety basis of hazard category 1, 2 and 3 nuclear facilities must be maintained up-to-date in the Safety Basis Information System (SBIS) at:
<http://www.hss.doe.gov/nuclearsafety/ns/sbis/>.

e. Reporting of Radioactive Sealed Sources Information.

- (1) The Radiological Source Registry and Tracking (RSRT) database serves as DOE's centralized repository for inventory and transaction data to provide reports and information on radioactive sealed sources in support of the *IAEA Code of Conduct on the Safety and Security of Radioactive Sources* and *IAEA Guidance on the Import and Export of Radioactive Sources*, and the NRC National Source Tracking System (NSTS) established in accordance with 10 C.F.R. Parts 20 and 32.
- (2) Transaction data must be reported from the DOE RSRT database to the NRC National Source Tracking System (NSTS) in a manner consistent with 10 C.F.R. § 20.1003 and 10 C.F.R. § 20.2207 for transactions involving IAEA Category 1 and 2 radioactive sealed sources between DOE and the commercial sector, and DOE imports and exports of radioactive sealed sources.
- (3) IAEA Category 1 and 2 transaction data as described in 4.e. (2) above, must be reconciled annually between the DOE RSRT and the NRC NSTS in a manner consistent with 10 C.F.R. § 20.2207.
- (4) Inventory and transaction information for radioactive sealed sources must be reported to the DOE RSRT in accordance with Attachment 5, Reporting of Radioactive Sealed Sources Information.

5. RESPONSIBILITIES.a. Heads of Headquarters Elements.²

- (1) Identify contracts to which the CRD (Attachment 1) should apply and notify the cognizant contracting officers, as applicable.
- (2) Ensure integrated ASERs that characterize environmental management performance for assigned sites are prepared and submitted to the Chief Health, Safety and Security Officer.
- (3) Provide program direction to ensure DOE and its contractors implement the injury and illness recordkeeping and meet reporting requirements of this Directive, to include the use of common definitions, consistent recording procedures, and timely reporting.
- (4) Report work-related accidents that involve a fatality or the hospitalization of three or more Federal employees to the Chief Health, Safety and

² Whenever the term Heads of Headquarters Elements is used, it includes the heads of all headquarters first-tier organizations, to include Secretarial Officers, Administrator for NNSA, Administrators for the Power Administrations, and Heads of Staff Offices.

Security Officer. (See requirements in 29 C.F.R. § 1960.70 and 29 C.F.R. § 1904.39)

- (5) Notify the Chief Health, Safety and Security Officer of suspected excess illnesses that may require epidemiologic investigations to determine whether the illnesses are work-related.
- (6) Submit annual fire protection information to the Head of the DOE organization if responsible for maintaining property under the stewardship of DOE, including the Administrator, NNSA.
- (7) Ensure that reports of occupational radiation exposures to individuals are prepared and reported in accordance with 10 C.F.R. § 835.801, Reports to Individuals.
- (8) Ensure that new and revised radiation exposure records required by 10 C.F.R. § 835.702, Individual Monitoring Records, are reported to the Radiation Exposure Monitoring System (REMS) repository.
- (9) Ensure that the status of the safety basis for hazard category 1, 2 and 3 nuclear facilities is maintained and up-to-date in the SBIS.
- (10) Ensure that programs for radioactive sealed source inventory and transaction reporting and verification and reconciliation of radioactive sealed sources under their cognizance are established, maintained, evaluated and implemented in accordance with this Directive, Departmental policies and laws.
- (11) Coordinate with the Office of Nonproliferation and International Security on obtaining and recording authorizations for the import and export of Category 1 and 2 radioactive sealed sources in accordance with DOE O 462.1.
- (12) Ensure that classified data or information that would divulge a classified program is not reported to RSRT, which will be maintained as an Official Use Only Information (OUO)/Controlled Unclassified Information (CUI) System.

b. Heads of DOE Field Elements.³

- (1) Identify contracts to which the CRD (Attachment 1) should apply and notify the cognizant contracting officers.

³Whenever the term Heads of DOE Field Elements is used, it includes Operations Offices, Field Offices, Site Offices, Service Centers, Project Offices, Regional Offices and Area Offices.

- (2) Ensure integrated ASERs that characterize environmental management performance for assigned sites are prepared and submitted to the Chief Health, Safety and Security Officer.
- (3) Report total hours worked by DOE employees each quarter to the Computerized Accident/Incident Reporting System (CAIRS) database.
- (4) Submit annual fire protection information to the Head of the DOE organization if responsible for maintaining property under the stewardship of DOE, including the Administrator, NNSA.
- (5) Ensure that reports of occupational radiation exposures to individuals are prepared and reported in accordance with 10 C.F.R. § 835.801, Reports to Individuals.
- (6) Ensure that new and revised radiation exposure records required by 10 C.F.R. § 835.702, Individual Monitoring Records, are reported to the REMS repository.
- (7) Ensure that the status of the safety basis for hazard category 1, 2 and 3 nuclear facilities is maintained and up-to-date in the SBIS.
- (8) Ensure the inventory and inventory verification of all accountable radioactive sealed sources that meet the criteria of 10 C.F.R. Part 835, Subpart M and Appendix E, including sources that meet the criteria of 10 CFR Part 835 Appendix E that have been identified for disposal but not yet disposed, and radioisotope thermoelectric generators (RTGs), that are under their cognizance are reported to the DOE RSRT in a timely and uniform manner.
- (9) Ensure transaction reporting and reconciliation of IAEA Category 1 and 2 radioactive sealed sources identified in Appendix A of Attachment 5 of this Directive under their cognizance are reported to the DOE RSRT in accordance with this Directive including Attachment 5.
- (10) Ensure that performance assurance systems are developed, maintained and evaluated to ensure data integrity and quality assurance in accordance with DOE information technology standards.
- (11) Coordinate with the Office of Nonproliferation and International Security on obtaining and recording authorizations for the import and export of Category 1 and 2 radioactive sealed sources in accordance with DOE O 462.1.

- (12) Ensure that classified data or information that would divulge a classified program is not reported to RSRT, which is maintained as an Official Use Only Information (OUO)/Controlled Unclassified Information (CUI) System.
- c. Heads of Government–Owned/Government-Operated (GOGO) Sites and Sites Not Under the Cognizance of a DOE Field Element. Fulfill the responsibilities of the Heads of DOE Field Elements and Contracting Officers as appropriate.
- d. Office of Management. Submit reports on work-related fatalities, injuries and illnesses of DOE/NNSA Headquarters employees and hours worked in accordance with 29 C.F.R. Part 1960, Subpart I and the requirements in Attachment 3.
- e. Chief Health, Safety and Security Officer.
 - (1) Develops and maintains the following databases for DOE and contractor reporting of environment, safety, health and security information. Develops and maintains online Reporting and Users' guides, and web instructions for each database to support accurate and consistent reporting of information and DOE trending and analysis:
 - (a) Computerized Accident/Incident Reporting System (CAIRS) - to collect and analyze occupational injury and illness information in support of injury and illness recordkeeping and reporting.
 - (b) Fire Protection database - to collect fire protection program information and support DOE analysis.
 - (c) Radiation Exposure Monitoring System (REMS) - to collect, analyze and report ionizing radiation exposure information in support of recordkeeping and reporting.
 - (d) Safety Basis Information System (SBIS) - to report the safety basis status, hazard categorization, and safety basis type of DOE nuclear facilities.
 - (e) Radioactive Sealed Source Registry and Tracking System (RSRT) - to maintain and report inventory and transaction information on radioactive sealed sources, as described in Attachment 5.
 - (2) Provides ASER guidance on an annual basis.
 - (3) Compiles CAIRS data and provides quarterly DOE-wide summary reports of recordable injury and illness cases.

- (4) Conducts periodic quality assurance reviews of DOE and DOE contractor occupational injury and illness recordkeeping and reporting practices, and radioactive sealed source reporting practices.
- (5) Provides clarification of DOE recordkeeping and reporting requirements.
- (6) Reports each work-related accident that results in a fatality or the hospitalization of three or more Federal employees to the Occupational Safety and Health Administration, U.S. Department of Labor. (See requirements in 29 C.F.R. § 1960.70)
- (7) Compiles annual fire protection information and provides a report that evaluates DOE fire protection programs.
- (8) Transmits Defense Nuclear Facilities Safety Board (DNFSB) employee radiation exposure records in electronic format to the DNFSB within 2 business days of receipt of records in REMS.
- (9) Informs the appropriate Head of Headquarters Element when a Headquarters employee's ionizing radiation exposure for a given period approaches 70 percent of an administrative or regulatory limit.
- (10) Approves the use of alternate media for submitting information to the REMS repository.
- (11) Shares occupational radiation exposure information with other Federal and nonfederal agencies, researchers and individuals.
- (12) Prepares an annual DOE Occupational Radiation Exposure Report.
- (13) Develops, coordinates, and clarifies policies and standards for the transaction and inventory reporting and verification and reconciliation of the radioactive sealed sources identified in this Directive.
- (14) Develops procedures and criteria for the submission and transfer of information on IAEA Categories 1 and 2 radioactive sealed source transactions and inventories from the DOE RSRT to the U.S. centralized repository (the NRC NSTS). Ensure that Heads of DOE elements are informed of procedures and criteria developed pursuant to this paragraph.
- (15) Performs the DOE RSRT quality assurance and control checks for transaction and inventory data as submitted from the DOE sites, and communicates RSRT data inconsistencies to the field for reconciliation.
- (16) Reports data from the DOE RSRT to the NRC NSTS as appropriate.
- (17) Maintains national-level liaison and memorandums of agreements with the NRC and other Federal agencies and organizations in support of reporting

and tracking of Categories 1 and 2 radioactive sealed sources, as necessary.

- f. Contracting Officers. Incorporate the CRD into contracts in a timely fashion upon notification of its applicability.

6. REFERENCES.

- a. 10 C.F.R. Parts 20, *Standards for Protection Against Radiation*, Subpart A- General Provisions (20.1003), Subpart M- Reports (20.2207) and Appendix E to Part 20- Nationally Tracked Source Thresholds, and 10 C.F.R. Part 32, *Specific Domestic Licenses to Manufacture or Transfer Certain Items Containing Byproduct Material*, Definitions (32.2) and Serialization of Nationally Tracked Sources (32.201)- (November 8, 2006 Final Rule amending 10 C.F.R. Parts 20 and 32 entitled: National Source Tracking of Sealed Sources) which amends regulations to implement a National Source Tracking System for certain radioactive sealed sources as part of a comprehensive radioactive source control program for radioactive materials of greatest concern. The rule defines the list of isotopes with threshold values reported to the NRC NSTS.
- b. 10 C.F.R. Part 110, *Export and Import of Nuclear Equipment and Material* (July 1, 2005 Final Rule amending 10 C.F.R. Part 110), which amended regulations to provide for enhanced tracking of certain exports and imports of radioactive sealed sources and bulk material for certain radionuclides.
- c. 10 C.F.R. Part 824, *Procedural Rules for the Assessment of Civil Penalties for Classified Information Security Violations*, which contains provisions relating to the safeguarding or security of Restricted Data or other classified information that may result in a civil penalty pursuant to subsection a. section 234B of the Atomic Energy Act of 1954 (42 U.S.C. 2282b).
- d. 10 C.F.R. Part 830, *Nuclear Safety Management*, which contains requirements for contractors to categorize DOE nuclear facilities and prepare a documented safety analysis (safety basis) for each facility.
- e. 10 C.F.R. Part 835, *Occupational Radiation Protection*, which establishes radiation protection standards, limits, and program requirements for protecting individuals from ionizing radiation resulting from the conduct of DOE activities, and for managing radioactive sealed sources. Subpart M and Appendix E provide the list of isotopes with threshold values for baseline (initial) inventory reporting and verification to the DOE RSRT.
- f. 10 C.F.R. Part 851, *Worker Safety and Health Program*, which contains occupational injury and illness recording and reporting standards and requirements for DOE contractors.

- g. 29 C.F.R. Part 1904, *Recording and Reporting Occupational Injuries and Illnesses*, which contains requirements for employers to record and report work-related fatalities, injuries and illnesses.
- h. 29 C.F.R. Part 1960, *Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters*, which contains occupational injury and illness recording and reporting standards and requirements for DOE.
- i. DOE O 458.1, *Radiation Protection of the Public and the Environment*, dated 2-11-11, which establishes requirements to protect the public and the environment against undue risk from radiation associated with radiological activities conducted under the control of DOE.
- j. DOE O 462.1, *Import and Export of Category 1 and 2 Radioactive Sources and Aggregate Quantities*, dated 11-10-08, which provides requirements and responsibilities pertaining to the export and import provisions of the International Atomic Energy Agency (IAEA) CODEOC/2004, Code of Conduct on the Safety and Security of Radioactive Sources.
- k. DOE O 470.3B, *Graded Security Protection (GSP) Policy*, dated 8-12-08, which delineates a security posture that deters, mitigates, and/or defeats an adversary, given the consequence, cost, security effectiveness, and threat/intelligence considerations. Control of radioactive sealed sources is addressed under the GSP policy.
- l. DOE O 471.1B, *Identification and Protection of Unclassified Controlled Nuclear Information*, dated 3-1-10, which establishes DOE's program to identify and protect Unclassified Controlled Nuclear Information (UCNI).
- m. DOE O 471.3 Admin Chg 1, *Identifying and Protecting Official Use Only Information*, dated 4-9-03, which establishes a program to identify certain unclassified controlled information as Official Use Only (OUO) and to identify, mark, and protect documents containing such information.
- n. DOE O 475.2A, *Identifying Classified Information*, dated 2-1-11, which establishes DOE's program to identify Restricted Data (RD), Formerly Restricted Data (FRD) and National Security Information (NSI), so it can be protected against unauthorized dissemination.
- o. DOE O 470.4B, *Safeguards and Security Program*, dated 7-26-11, which establishes program planning and management requirements and responsibilities for the safeguards and security program.
- p. DOE O 471.6, *Information Security*, dated 6-20-11, which contains marking requirements for classified material not covered in DOE O 475.2A.

- q. DOE M 471.3-1 Admin Chg 1, *Manual for Identifying and Protecting Official Use Only Information*, dated 1-13-11, which provides direction for identifying, marking, and protecting OUI information and supplements requirements in DOE O 471.3, *Identifying and Protecting Official Use Only Information*.
- r. DOE G 441.1-1C, *Radiation Protection Programs Guide for Use with Title 10, Code of Federal Regulations, Part 835, Occupational Radiation Protection*, dated 5-19-08, Chapter 15 "Sealed Radioactive Source Accountability and Control", which provides guidance for implementing the provisions of the functional areas contained in 10 C.F.R. Part 835, including the identification, custodial and inventory responsibilities for sealed radioactive sources.
- s. IAEA Safety Guide, No. RS-G-1.9, *Categorization of Radioactive Sources*, dated August 2005, which provides the IAEA technical basis and underlying methodology for identifying and categorizing radioactive sources by activity level. http://www-pub.iaea.org/MTCD/publications/PDF/Pub1227_web.pdf
- t. IAEA/CODEOC/2004, *Code of Conduct on the Safety and Security of Radioactive Sources*, dated January 2004, which provides international guidance on enhancing the safety and security of radioactive sources, including a list of isotopes of greatest concern with threshold values. The Code applies to all radioactive sources that may pose a significant risk to individuals, society and the environment. http://www-pub.iaea.org/MTCD/publications/PDF/code-2004_web.pdf
- u. IAEA/CODEOC/IMP-EXP/2005, *Code of Conduct on the Safety and Security of Radioactive Sources - Guidance on the Import and Export of Radioactive Sources*, dated March 2005, which provides international guidance for the transfers of radioactive sealed sources between IAEA Member States, and was developed to support the export and import provisions of The Code. http://www-pub.iaea.org/MTCD/publications/PDF/Imp-Exp_web.pdf

7. CONTACT.

- a. Questions concerning environment, safety and health reporting should be referred to the Office of Environmental Protection, Sustainability Support and Corporate Safety Analysis at 301-903-8008.
- b. Questions concerning the requirements for reporting of radioactive sealed sources in this Directive should be addressed to the Office of Health, Safety and Security at (301) 903-1566 (for security) or (301) 903-5641 (for safety).

BY ORDER OF THE SECRETARY OF ENERGY:



DANIEL B. PONEMAN
Deputy Secretary

CONTRACTOR REQUIREMENTS DOCUMENT
DOE O 231.1B, ENVIRONMENT, SAFETY AND HEALTH REPORTING

Regardless of the performer of the work, the contractor is responsible for complying with the requirements of this CRD. The contractor is responsible for flowing down the requirements of this CRD to subcontractors at any tier to the extent necessary to ensure the contractor's compliance with the requirements.

In addition to the requirements included in this CRD, contractors are responsible for complying with Attachments 2, 3, 4, and 5 to DOE O 231.1B referenced in and made a part of this CRD as set forth below.

Reports that potentially contain classified or controlled unclassified information (e.g., Unclassified Controlled Nuclear Information or Official Use Only information) must be reviewed and marked in accordance with appropriate Directives. If a report includes classified information, it must be contained in a separate classified addendum and an unclassified version of the report must be developed and annotated to indicate the existence, identification, and file location of the classified addendum.

1. Reporting Annual Site Environmental Information. Contractors must comply with the requirements in Attachment 2 that pertain to reporting annual site environmental information.
2. Reporting Occupational Safety and Health Information.
 - a. Injury and Illness Recordkeeping and Reporting.
 - (1) Contractors must ensure that work-related fatalities, injuries, and illnesses that occur to their employees and subcontractor employees are recorded and reported accurately and in accordance with 29 C.F.R. §§ 1904.4 through 1904.11, 1904.29 through 1904.32 and 1904.46 and Attachment 3, paragraph 1. This requirement excludes transient and small employer subcontractors. A transient subcontractor does not maintain an onsite office, does not receive direction/oversight from DOE or a DOE contractor, and their work is limited to transient activities, e.g., copy machine repair, express mail delivery, bottle water delivery, vending machine repair service. A small employer subcontractor employs less than 11 employees at a DOE site either directly or through sub-tiered contracts.
 - (2) A contractor with an expiring or terminated contract must transfer all occupational safety and health records involving work performed for DOE to the assuming contractor or DOE facilities management. The assuming contractor must accept and maintain these records as part of performing occupational safety and health responsibilities and in accordance with Attachment 3, paragraph 2.

(See record retention requirements in 29 C.F.R. § 1904.33 and DOE Administrative Records Schedule 1: Personnel Records, September 2010, Occupational Injury and Illness Files, N1-434-98-4, item 34)

- (3) Contractors must ensure separate recording and reporting of all recordable injuries and illnesses occurring to subcontractor employees for each subcontractor organization in the same manner as described in Attachment 3, paragraph 1 for contractor employees, unless consolidation of data is approved by the CAIRS Point of Contact (POC) for the Head of the Headquarters Element or their designated CAIRS POC at the DOE Field organization.
- b. Annual Fire Protection Summary Information. Contractors must submit annual fire protection summary information to the Head of the DOE organization in accordance with Attachment 3, paragraph 3 if responsible for maintaining property under the stewardship of DOE, including the Administrator, NNSA.
- 3. Reporting Ionizing Radiation Exposure Information. Contractors must comply with the requirements in Attachment 4, which pertain to reporting ionizing radiation exposure information.
- 4. Reporting of Radioactive Sealed Sources Information.
 - a. Contractors who own, possess, use, or maintain in custody those radioactive sealed sources that meet the criteria of 10 C.F.R. Part 835, *Occupational Radiation Protection*, Subpart M and Appendix E, including sources that meet the criteria of 10 C.F.R. Part 835 Appendix E that have been identified for disposal but not yet disposed and radioisotope thermoelectric generators (RTGs) are responsible for complying with the inventory reporting requirements in Attachment 5 of this Directive.
 - b. Contractors who own, possess, use, or maintain in custody those radioactive sealed sources that meet the criteria for IAEA Categories 1 and 2 radioactive sealed sources as identified in Attachment 5 of this Directive are responsible for complying with the transaction reporting requirements in Attachment 5 of this Directive.
 - c. A violation of the provisions of the CRD relating to the safeguarding or security of Restricted Data (RD) or other classified information may result in a civil penalty pursuant to subsection a. section 234B of the Atomic Energy Act of 1954 (42 U.S.C. § 2282b). The procedures for the assessment of civil penalties are set forth in 10 C.F.R. Part 824, *Procedural Rules for the Assessment of Civil Penalties for Classified Information Security Violations*.

REPORTING ANNUAL SITE ENVIRONMENTAL INFORMATION

This Attachment provides information and/or requirements associated with DOE O 231.1B as well as information and/or requirements applicable to contracts in which the associated CRD (Attachment 1 to DOE O 231.1B) is inserted.

Annual Site Environmental Reporting. The following information must be made available to the public, and submitted to the Chief Health, Safety and Security Officer by October 1 of each year for the preceding calendar year, developed in accordance with the most recent applicable guidance provided by the Chief, Health Safety and Security Officer and as directed by the Head of Headquarters Element or Head of DOE Field Element, and support partial or full preparation of the Annual Site Environmental Report (ASER):

1. Site environmental management performance. Data must include effluent releases, environmental monitoring, and types and quantities of radioactive materials emitted or discharged to the environment, the estimated or calculated total effective dose to a representative person or maximally exposed member(s) of the public and the calculated collective dose to members of the public from exposure to radiation sources identified under DOE O 458.1, and, where it is of concern, releases of radon and its decay products from DOE sources and the resultant individual and collective dose from these radionuclides, which need not be combined with dose estimates from other sources.
2. Environmental occurrences and responses. Information must include a summary of environmental occurrences and responses reported during the calendar year.
3. Environmental compliance. Information must confirm compliance with environmental standards and requirements.
4. Significant programs and efforts. Information must highlight significant environmental performance indicators and/or performance measures that reflect the size and extent of programs at a particular site.
5. Property clearance activities. Information must include a summary of approved Authorized Limits, results of radiological monitoring and surveys of cleared property, types and quantities of property cleared, and independent verification program results in accordance with DOE O 458.1.

REPORTING OCCUPATIONAL SAFETY AND HEALTH INFORMATION

This Attachment provides information and/or requirements associated with DOE O 231.1B as well as information and/or requirements applicable to contracts in which the associated CRD (Attachment 1 to DOE O 231.1B) is inserted.

1. Injury and Illness Recordkeeping and Reporting.
 - a. Occupational safety and health reports must be complete and readily available for authorized dissemination outside the cleared community.
 - b. All recordable, work-related employee fatalities, injuries, and illnesses must be recorded on Occupational Safety and Health Administration (OSHA) Form No. 300, Log of Work-Related Injuries and Illnesses in accordance with 29 C.F.R. § 1904.29. OSHA Form No. 300 must be updated in accordance with 29 C.F.R. § 1904.33.
 - c. An annual summary of the information contained on OSHA Form No. 300 must be compiled, certified, posted and updated using OSHA Form No. 300A, Summary of Work-Related Injuries and Illnesses, in accordance with 29 C.F.R. § 1904.29 and 29 C.F.R. §§ 1904.32 through 1904.33.
 - d. Injury and illness incident reports must be recorded in accordance with 29 C.F.R. § 1904.29. Injury and illness incident reports must also be submitted electronically using the Computerized Accident/Incident Reporting System (CAIRS) Individual Accident/Incident Report format to the CAIRS database by using either CAIRS Bulk Upload Processing or CAIRS Direct Data Entry. Each data field on the report must be complete when the report is submitted electronically (See CAIRS Injury and Illness Reporting Guide for a list of data elements included in the form). New reports must be submitted for receipt on or before the 15th and the last working day of the month. Initial reports must include the actual number of days away, restricted or transferred (DART) as of the date of the report. Updates to the number of DART or other information previously reported for each case must be submitted quarterly until the case is closed or until the number of DART exceeds 180 days. Quarterly revisions to DART or revisions to other previously-reported information must be submitted for receipt by the 10th of the month following the end of the calendar quarter (i.e., April 10th, July 10th, October 10th, and January 10th).
 - e. DOE Form 5484.4, Tabulation of Work Hours, must be used to report total work-hours for all employees. Total work-hours must be submitted electronically on a quarterly basis to CAIRS using CAIRS Direct Data Entry by the 10th of the month following the end of each quarter, i.e., April 10th, July 10th, October 10th, and January 10th. See CAIRS Injury and Illness Reporting Guide at: http://www.hss.doe.gov/csa/analysis/cairs/CAIRS_Reporting_Guide.pdf.

- f. Documented quality checks of injury and illness information reported to DOE through CAIRS must be conducted at least quarterly to ensure information is thorough, accurate, and consistent with information contained in local records.
 - g. Occupational injury and illness information must be analyzed to identify adverse trends and lessons learned and develop corrective actions that prevent recurrence.
 - h. Discrepancies identified by DOE during periodic assessments or by other reviews of work-related injury and illness records must be corrected as directed by the DOE reviewing organization.
 - i. Individuals assigned occupational injury and illness recording and reporting responsibilities must be trained to accomplish assigned recording and reporting responsibilities.
 - j. Clarifications of DOE occupational injury and illness recordkeeping and reporting requirements must be issued only by the Office of Environmental Protection, Sustainability Support and Corporate Safety Analysis.
2. Injury and Illness Records Retention and Accessibility.
- a. Injury and illness records must be retained pursuant to DOE O 243.1, *Records Management Program*, dated 2-3-06 and DOE Administrative Records Schedule 1: Personnel Records, September 2010, Occupational Injury and Illness Files, N1-434-98-4, item 34.
 - b. Access to personal injury/illness records is subject to the Privacy Act, Title 5 U.S.C. Section 552a and the Freedom of Information Act (FOIA) requirements and restrictions. [See Title 5 U.S.C. Section 552(b)(6).] Access to information on any OSHA Form No. 300 must be restricted to information that does not constitute an unwarranted invasion of personal privacy. An employee whose name does not appear on a OSHA Form No. 300 must be limited to accessing information that does not identify any injured or ill employees, and must not be provided access to the names of the injured or ill employees.
 - c. Employees, former employees, and/or their representatives must be provided limited access to the OSHA Form No. 300 or a copy of the Individual Accident Incident Report that contains the employee's name.
 - d. Records listed in 29 C.F.R. §§ 1904.4 and 1904.5 (or the DOE equivalent of these records) must be made available for inspection and copying by any DOE representative for the purpose of conducting oversight assessments or for statistical compilation.
3. Annual Fire Protection Summary Information. A summary of fire protection information for the preceding year must be submitted to the fire protection database by April 30 in

accordance with the Annual Fire Protection Summary Information Reporting Guide
located at:

http://www.hss.doe.gov/CSA/CSP/qaps/Annual_Fire_Protection_Summary_Information_Reporting_Guide.pdf.

REPORTING IONIZING RADIATION EXPOSURE INFORMATION

This Attachment provides information and/or requirements associated with DOE O 231.1B as well as information and/or requirements applicable to contracts in which the associated CRD (Attachment 1 to DOE O 231.1B) is inserted.

1. Annual Individual Radiation Exposure Records.
 - a. Annual radiation exposure records for the preceding monitoring year, required to be collected by 10 C.F.R. § 835.702, must be reported to the REMS repository by March 31. The records must include exposure records for special individuals as defined in Attachment 4, paragraph 2a.
 - b. Revisions to radiation exposure records for monitoring periods beginning on or after January 1, 1989, must be reported to the REMS repository. Revised records for prior monitoring years must be submitted annually by March 31. However, if the revised dose record results in a dose exceeding regulatory dose limits defined in 10 C.F.R. § 835.202, revised records must be submitted within 30 days of the revision to the dose record. Revised records must be submitted to the REMS repository in a separate file in the same format as annual records. The transmittal documentation must identify the enclosed records as revised records.
2. Radiation Exposure Records for Special Individuals.
 - a. Radiation exposure data pertaining to special individuals, which includes individuals employed by DOE Headquarters, a contractor supporting DOE Headquarters or Field Office activities, a Defense Nuclear Facilities Safety Board employee or contractor, or an International Atomic Energy Agency inspector who visits a DOE or DOE contractor site or facility to conduct Department-related business, must be reported to the REMS repository simultaneous with dispatch of reports to individuals, within 30 days after the assessment of the radiation exposure.
 - b. Each employee or special individual who is acting in an official capacity at a non-DOE facility and is monitored for occupational radiation exposure must provide the monitoring results to their employer within 30 days of receipt. Employers must instruct individuals of this responsibility prior to directing individuals to conduct such activities at a non-DOE facility.
 - c. Procedures to effectively support the collection of dosimetry records in support of this requirement must be verified on a regular basis.
3. Report Format. All occupational radiation exposure reports of records collected and sent to the REMS repository as noted in Attachment 4, paragraphs 1 and 2 must be prepared in accordance with the REMS Reporting Guide located at http://www.hss.doe.gov/csa/analysis/remes/REMS_Reporting_Guide.pdf and submitted in electronic format in accordance with the current HSS policy for submitting personally

identifiable information (PII) to the REMS repository as posted on the REMS web page at http://www.hss.doe.gov/csa/analysis/remes/PII_reporting_requirements_F-5-13-09_FNL.pdf.

4. Exposure Reports to Individuals. Reports to individuals must be prepared in accordance with 10 C.F.R. § 835.801.

REPORTING RADIOACTIVE SEALED SOURCE INFORMATION

This Attachment provides information and/or requirements associated with DOE O 231.1B as well as information and/or requirements applicable to contracts in which the associated CRD (Attachment 1 to DOE O 231.1B) is inserted. This attachment applies to federal and contractor elements.

1. Planning and Administration.

- a. DOE will maintain a centralized reporting capability, the Radiological Source Registry and Tracking (RSRT) database, which serves as DOE's centralized repository for inventory and transaction data on radioactive sealed sources and is used by DOE to provide appropriate data on IAEA Category 1 and 2 radioactive sealed sources to the NRC National Source Tracking System (NSTS).
- b. Accountable radioactive sealed sources that meet the criteria of 10 C.F.R. Part 835, Subpart M and Appendix E, including sources that meet the criteria of 10 C.F.R. Part 835 Appendix that have been identified for disposal but not yet disposed and radioisotope thermoelectric generators (RTGs), must be reported as inventory to the DOE RSRT database per the requirements of this Directive. See also Definitions and Abbreviations.
- c. In addition, radioactive sealed sources that meet the criteria of IAEA Category 1 or 2 radioactive sealed sources (as identified in Appendix A⁴) must be reported as transactions to the RSRT.
- d. All site/facility operators using or storing radioactive sealed sources as referenced above must—
 - (1) Maintain radioactive materials programs that ensure the accountability of radioactive sealed sources identified in this Directive.
 - (2) Ensure that site and facility radioactive sealed source accounting systems are established to provide accurate radioactive sealed source transaction information relating to the manufacture, transfer (shipment), receipt, inventory, disassembly, and disposal of Category 1 and 2 radioactive sealed sources as listed in Appendix A.
 - (3) Ensure that aggregation of individual radioactive sealed sources is taken into account in the protection during transfer (shipment).
 - (4) Ensure that classified data or information that would divulge a classified program is not reported to DOE RSRT, which is maintained as Official Use Only (OUO/Controlled Unclassified Information (CUI)).

⁴ (NOTE: Category 3 radioactive sealed sources are presented in Appendix A for informational purposes only.)

2. General Requirements.

- a. Information regarding specific radioactive sealed sources will remain on the active DOE RSRT inventory until transferred (shipped), disassembled or disposed of from the DOE site.
- b. Radioisotope decay will be taken into account in the transaction reporting of Category 1 and 2 radioactive sealed sources.
- c. For Category 1 and 2 radioactive sealed sources, any missed transaction or errors found in previously filed inventory or transaction reports will be corrected or a new report will be filed within five business days of the discovery of the error or missed transaction.

3. Serialization of IAEA Category 1 and 2 Radioactive Sealed Sources (See Appendix A).
After the effective date of this Directive:

- a. A unique alpha-numeric serial number must be assigned to each Category 1 or 2 radioactive sealed source upon manufacture.
- b. If a unique serial number is not available for existing Category 1 or 2 sealed sources, other information to uniquely identify the source must be used.

4. Baseline (Initial) Inventory of Accountable Radioactive Sealed Sources.

- a. Each DOE site/facility operator that possesses accountable radioactive sealed sources that meet the criteria of 10 C.F.R. Part 835 Subpart M and Appendix E, including sources that meet the criteria of 10 C.F.R. Part 835 Appendix E that have been identified for disposal but not yet disposed and radioisotope thermoelectric generators (RTGs), must report its initial inventory, if initial inventory was not already reported with baseline inventory in 2008, or verify previously reported inventory to the RSRT.
- b. The information may be submitted by using any of the methods identified in paragraph 6(e.) of this Directive.
- c. If multiple isotopes are in an individual source, a record for each isotope must be submitted. (See also Appendix B, *Required Fields for Inventory and Transaction Reporting*).
- d. The Baseline (initial) inventory must include the data fields as identified in Appendix B, *Required Fields for Inventory and Transaction Reporting*, under "Inventory Reporting."

5. Verification of Book Inventory Records.

- a. The book inventory of radioactive sealed sources must be verified annually against the site/facility operator's listing in the RSRT.

- b. The book inventory verification may be satisfied at each DOE site in conjunction with existing inventory requirements under 10 CFR Part 835, *Occupational Radiation Protection*.
6. Transaction Reporting to the RSRT of IAEA Category 1 and 2 Radioactive Sealed Sources.
- a. A Sealed Source Transaction Report must be completed and submitted to the RSRT database for IAEA Categories 1 and 2 solid radioactive sealed sources as identified in Appendix A for each of the following types of transactions⁵:
 - (1) manufacture (a new or initially identified source),
 - (2) transfer (shipment),
 - (3) receipt,
 - (4) disassembly and
 - (5) disposal (e.g. final end-of-life action)
 - b. For shipments, disassembly and disposal, it is assumed that the baseline (initial) information for the sources has already been reported to the RSRT database.
 - c. For each DOE site/facility operator that manufactures (or initially identifies), ships, receives, disassembles, or disposes of a Category 1 or 2 radioactive sealed sources, the transaction report must include the data fields as specified in Appendix B, *Required Fields for Inventory and Transaction Reporting*.
 - d. The transaction reports discussed in paragraphs 6 a-c must be submitted to the RSRT within five business days after the transaction.
 - e. The reports must be submitted to the RSRT by using one of the following modes, in accordance with site and DOE data transmission requirements for the protection of the information:
 - (1) the on-line system at such time as established and available to the DOE sites; or
 - (2) electronic format, pre-defined, computer-readable format; or
 - (3) facsimile or e-mail using a pre-defined format.

⁵ See also "Regenerated (Radioactive Sealed Source)" under the Definitions and Abbreviations section.

7. Annual Reconciliation of Category 1 and 2 Radioactive Sealed Source Information.

- a. Each DOE site/facility operator must reconcile and verify Categories 1 and 2 radioactive sealed source physical inventories annually against the site/facility operator's data in the DOE RSRT.
- b. Modifications made to the RSRT inventory must be submitted as transactions via the reports identified in paragraphs 6 a-c or as inventory correction as defined below.
 - (1) Inventory corrections for Category 1 or 2 radioactive sealed sources will be made within five business days of the discovery of the error or missed inventory.
 - (2) Reconciliation and verification must be based upon December 31 inventories and submitted to the RSRT within 3 weeks after the end of the calendar year.

8. Verification of Authorities for Receipt of Accountable Radioactive Sealed Sources.

- a. Accountable radioactive sealed sources must not be transferred from a DOE organization or from a DOE contractor except as authorized.
- b. Except as otherwise provided in this section and subject to the provisions of paragraphs 8(c) of this section, an accountable radioactive sealed source may be transferred—
 - (1) to another authorized DOE organization or DOE contractor;
 - (2) to the agency in any NRC agreement state, which regulates radioactive material pursuant to an agreement under section 274(b) of the Atomic Energy Act of 1954 (as amended);
 - (3) to any person authorized to receive such radioactive material under terms of a specific license or a general license or their equivalents issued by the NRC or an Agreement State;
 - (4) to a person abroad pursuant to an export license issued under Departmental requirements or NRC regulations as applicable; or
 - (5) as otherwise authorized by the Department in writing.
- c. Before transferring an accountable radioactive sealed source to a DOE organization or contractor, a specific licensee of the NRC or an agreement state, or a general licensee who is required to register with the NRC or with an agreement state prior to receipt of the material, the transferor of the material will obtain written verification that the transferee's DOE approved radiation protection

program or license encompasses or authorizes the receipt of the type, form, and quantity of material to be transferred. Verification methods include:

- (1) Current copy of the transferee's specific license or registration certificate, or DOE authorization;
- (2) The transferor may obtain other sources of information compiled by a reporting service from official records of the NRC, the licensing agency of an Agreement State, or the Department.

9. Records.

- a. Inventory and accountability reporting procedures must be documented for all accountable radioactive sealed sources as defined by this Directive.
- b. See 10 CFR Part 835 for additional documentation and record keeping requirements for accountable radioactive sealed sources (<http://www.hss.energy.gov/healthsafety/wshp/radiation/>).
- c. See DOE Record Retention Scheduling for information about DOE records retention and disposition requirements (<http://www.cio.energy.gov/records-management.htm>).

DEFINITIONS AND ABBREVIATIONS.

- a. Accountable Sealed Radioactive Source. As defined in 10 C.F.R. Part 835, a sealed radioactive source having a half-life equal to or greater than 30 days and an isotopic activity equal to or greater than the corresponding value provided in Appendix E of 10 C.F.R. Part 835. Also referred to as an accountable radioactive sealed source.
- b. Book Inventory. The number of radioactive sealed sources and their activity present at a given time as reflected by accounting records.
- c. Categorization of Radioactive Sealed Sources. A designation of radioactive sealed sources determined by the quantity and type of radioactive source, as well as any deterministic health effects. The IAEA Basic Safety Guide RS-G-1.9 establishes this categorization and it is used in the IAEA Code of Conduct.
 - (1) Category 1. As defined by the IAEA, an amount of radioactive material which, if not safely managed or securely protected, would be likely to cause permanent injury to a person who handled or were otherwise in contact with it, for more than a few minutes. It would probably be fatal to be close to this amount of unshielded material for a period of a few minutes to an hour.
 - (2) Category 2. As defined by the IAEA, an amount of radioactive material which, if not safely managed or securely protected, could cause permanent injury to a person who handled it, or were otherwise in contact with it for a short time (minutes or hours). It could possibly be fatal to be close to this amount of unshielded radioactive material for a period of hours to days.
 - (3) Category 3. As defined by the IAEA, an amount of radioactive material which, if not safely managed or securely protected, could cause permanent injury to a person who handled it, or were otherwise in contact with it for some hours. It could possibly, although it is unlikely, be fatal to be close to this amount of unshielded radioactive material for a period of days to weeks.
- d. Disassembly (of a radioactive sealed source). As defined by the NRC, the source is taken apart, the radioactive material is removed, and the material may be used for manufacture of new sources or sent for disposal. The unique serial number of the source is destroyed. This is a permanent endpoint. Endpoints for a source include export, disassembly, disposal, decay, loss, theft, and destruction of the source. (NSTS Final Rule, Section I.)
- e. Radioactive Sealed Source. A radioactive material that is permanently sealed in a capsule or closely bonded to a non-radioactive substrate designed to prevent leakage or escape of the radioactive material. It is a solid form of radioactive material which is not exempt from regulatory control and may be subject to

transaction reporting, depending on the activity level of the source. For the purpose of this Directive, the term radioactive sealed source includes RTG's but does not include material encapsulated solely for disposal; or nuclear material contained in a nuclear weapon; or in any nuclear reactor fuel assembly, subassembly, fuel rod, or fuel pellet.

- f. Regenerated (Radioactive Sealed Source). The activity of the radioactive sealed source in the sealed source device is increased by neutron activation in a nuclear reactor or by other means to restore the desired radioactivity level. The identity and unique serial number of the sealed source may or may not remain with the original source throughout regeneration. Regeneration is treated as a shipment or receipt when the identity and serial number are retained.
- g. Reporting Identification Symbol (RIS). A unique combination of three or four letters assigned to each reporting organization by DOE for the purpose of identification in the Nuclear Materials Management and Safeguards System database. Each contractor and facility RIS is associated with a specific DOE element. RIS codes can be obtained through the RSRT database administrator (DOE O 474.2, Chg 1).
- h. Site/Facility Operator. The corporate or governmental entity responsible for the day-to-day operations involving storage, processing, or use of nuclear materials at the site/facility. For contractor-operated facilities, this refers to the site/facility contractor. For the DOE-operated facilities, this refers to the DOE organization operating the facility. (DOE O 474.2, Chg 1)
- i. Transactions⁶. Category 1 or 2 radioactive sealed sources as identified in Appendix A that are:
 - (1) transferred (shipped) or received
 - (a) between DOE RISs or
 - (b) from a DOE RIS to an NRC or Agreement State licensee or
 - (c) exported from or imported to a DOE RIS;
 - (2) manufactured (new or initially identified source);
 - (3) disassembled or
 - (4) sent for disposal (e.g. final end-of-life action)

⁶ See also "Regenerated (Radioactive Sealed Source)" under the Definitions and Abbreviations section.

TABLE OF RADIOACTIVE SEALED SOURCES*

Radionuclide	Category 1 ¹ [1000 x D] ²		Category 2 [10 x D]		Category 3 [1 x D]	
	(TBq) ³	(Ci) ⁴	(TBq)	(Ci)	(TBq)	(Ci)
Ac-227	2.E+01	5.4E+02	2.E-01	5.4E+00	2.E-02	5.4E-01
Am-241	6.E+01	1.6E+03	6.E-01	1.6E+01	6.E-02	1.6E+00
Am-241/Be	6.E+01	1.6E+03	6.E-01	1.6E+01	6.E-02	1.6E+00
Cf-252	2.E+01	5.4E+02	2.E-01	5.4E+00	2.E-02	5.4E-01
Cm-244	5.E+01	1.4E+03	5.E-01	1.4E+01	5.E-02	1.4E+00
Co-60	3.E+01	8.1E+02	3.E-01	8.1E+00	3.E-02	8.1E-01
Cs-137	1.E+02	2.7E+03	1.E+00	2.7E+01	1.E-01	2.7E+00
Gd-153	1.E+03	2.7E+04	1.E+01	2.7E+02	1.E+00	2.7E+01
Ir-192	8.E+01	2.2E+03	8.E-01	2.2E+01	8.E-02	2.2E+00
Pm-147	4.E+04	1.1E+06	4.E+02	1.1E+04	4.E+01	1.1E+03
Po-210	6.E+01	1.6E+03	6.E-01	1.6E+01	6.E-02	1.6E+00
Pu-236 ⁵	6.E+01	1.6E+03	6.E-01	1.6E+01	6.E-02	1.6E+00
Pu-238	6.E+01	1.6E+03	6.E-01	1.6E+01	6.E-02	1.6E+00
Pu-239	6.E+01	1.6E+03	6.E-01	1.6E+01	6.E-02	1.6E+00
Pu-239/Be	6.E+01	1.6E+03	6.E-01	1.6E+01	6.E-02	1.6E+00
Pu-240 ⁵	6.E+01	1.6E+03	6.E-01	1.6E+01	6.E-02	1.6E+00
Ra-226	4.E+01	1.1E+03	4.E-01	1.1E+01	4.E-02	1.1E+00
Se-75	2.E+02	5.4E+03	2.E+00	5.4E+01	2.E-01	5.4E+00
Sr-90 (Y-90)	1.E+03	2.7E+04	1.E+01	2.7E+02	1.E+00	2.7E+01
Th-228	2.E+01	5.4E+02	2.E-01	5.4E+00	2.E-02	5.4E-01
Th-229	2.E+01	5.4E+02	2.E-01	5.4E+00	2.E-02	5.4E-01
Tm-170	2.E+04	5.4E+05	2.E+02	5.4E+03	2.E+01	5.4E+02
Yb-169	3.E+02	8.1E+03	3.E+00	8.1E+01	3.E-01	8.1E+00

(*Ac-227, Th-228, and Th-229 are not in the *IAEA Code of Conduct on the Safety and Security of Radioactive Sources*, IAEA, January 2004. DOE and NRC have determined they will be included in the National System.)

¹ Designates IAEA Category 1, 2, and 3 radioactive sealed sources [IAEA Basic Safety Guide RS-G-1.9]

² “D” designates a dangerous source as defined in the NRC Final Rule for National Source Tracking of Sealed Sources and the IAEA Code of Conduct.

³ “TBq” designates Terabecquerel, a unit of radioactivity.

⁴ “Ci” designates Curie, a unit of radioactivity.

⁵ Inventory and transaction data on Pu-236 and Pu-240 will not be reported in the NSTS and are included for DOE purposes only.

Required Fields for Inventory and Transaction Reporting						
Data Field	Inventory Reporting	Transaction Reporting for Category 1 and 2 Sources				
		Manufacture	Shipment	Receipt	Disassemble	Dispose
Site Source ID(unique source identification)	√	√	√	√	√	√
Radionuclide(s) in the source (single or multiple)	√	√	√	√	√	√
Initial, if known, or current source strength (activity) in Terabecquerels (TBq) or Curies (Ci).	√	√	√	√	√	√
Activity Date (the date for which the source strength is reported)	√	√	√	√	√	√
Neutron component (Yes/No)	√	√	√	√	√	√
Manufacturer date of source (if known)	√	√	√	√	√	√
The Reporting Identification Symbol (RIS Code)	√	√	√	√	√	√
Facility/building name ¹	√	√	√	√	√	√
Description of the source	√	√	√	√	√	√
Physical Form (solid/liquid)	√	√	√	√	N/A	√
Manufacturer, model, serial number or other unique identifier ²	√	√	√	√	√	√
Name and phone number for Individual preparing the report	√	√	√	√	√	√
Name/address of shipping and/or recipient facilities and NRC License number (if appropriate)			√	√	N/A	N/A
Date of shipment or receipt			√	√	N/A	N/A
Estimated arrival date			√	N/A	N/A	N/A
Waste manifest number (if applicable)			√	√	N/A	√
Container ID			√	√	N/A	√
Import/Export License number, or DOE authorization, as appropriate			√	√	N/A	√
Disposal / disassembly date					√	√
Method of Disposal					N/A	√
Container ID for final disposition					N/A	√

¹ Information in this field is for DOE purposes only and will not be reported to the NSTS.² Other information to uniquely identify the source may be utilized if the manufacturer, model or serial number(s) are not available.