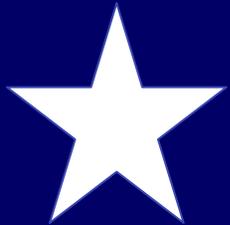


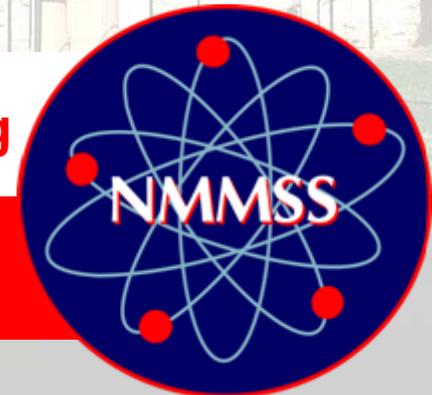
**Department of Energy**  
**Reporting of Radioactive Sealed Sources**  
**DOE N 234.1**

**Len Myers**  
**SAIC**



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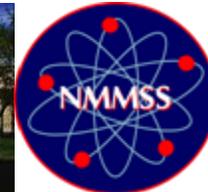
# DOE Reporting of Radioactive Sealed Sources Topics

- Background
- Office of Health, Safety and Security (HSS) Responsibilities
- DOE N 234.1 Summary
- Next Steps



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# DOE Reporting of Radioactive Sealed Sources

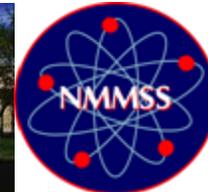
## Background: General

- Initiated as a post-9/11 threat response
- Included in international, legislative and executive agency initiatives
- Has been a topic at three previous NMMSS Users Annual Training Meeting
- Rapidly moving into the implementation phase with February 27, 2008 approval of DOE N 234.1



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# DOE Reporting of Radioactive Sealed Sources

## Background: Policy Drivers

- International

- IAEA *Code of Conduct on the Safety and Security of Radioactive Sources* [The Code], 2004
- IAEA *Guidance on the Import and Export of Radioactive Sources*

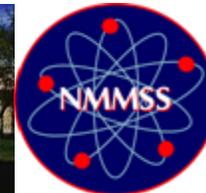
- Domestic

- Joint DOE/NRC Radiological Dispersal Device (RDD) and Sealed Source Working Group, 2002
- Energy Policy Act of 2005
- NRC Final Rules:
  - *Export and Import of Radioactive Materials: Security Policies*, July 1, 2005
  - *National Source Tracking of Sealed Sources*, November 8, 2006



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# DOE Reporting of Radioactive Sealed Sources

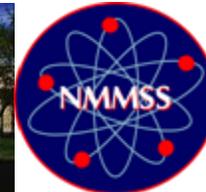
## Background: Post-9/11 Interim Actions

- November 2003 Interim database established
  - Based on data from existing Non-actinide Isotopes and Sealed Source (NISS) data base
  - Addressed inventory reporting
- March 2004 DOE wide data call issued
  - Based on 10 CFR 835 health and safety requirements
  - Resulted in June 2004 updated baseline
  - Baseline last updated in 2005
- Interim transaction reporting was not established



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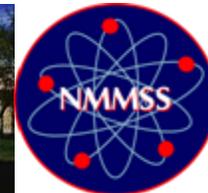
# DOE Reporting of Radioactive Sealed Sources HSS Responsibilities

- Develop, coordinate, and clarify policies and standards for the transaction and inventory reporting, and verification and reconciliation of the radioactive sealed sources
- Operate and maintain the DOE RSRT database for radioactive sealed sources
- Develop procedures and criteria for the submission of information on Categories 1 and 2 radioactive sealed source transactions and inventories from the RSRT to the Nuclear Regulatory Commission (NRC) National Source Tracking System (NSTS)
- Report data from the DOE RSRT to the NRC NSTS



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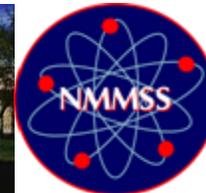


# DOE Reporting of Radioactive Sealed Sources DOE N 234.1 Summary

- February 27, 2008 approved version available at <http://www.directives.doe.gov/>
- Objectives
  - Establish DOE inventory reporting requirements for radioactive sealed sources in support of IAEA Code of Conduct and guidance
  - Establish DOE transaction reporting requirements for select sealed sources in support of the NSTS
  - Integrate these security requirements with existing safety accountability and control functions for radioactive sealed sources
  - Establish and assign responsibilities for required reporting

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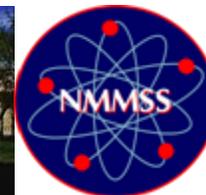
# DOE Reporting of Radioactive Sealed Sources

## DOE N 234.1 Summary

- Applies to all DOE elements with some exclusions for national security concerns and overlap with NRC regulated activities
- For inventory reporting, sources to report are those that meet the criteria of 10 CFR 835, Appendix E
- A select set of sources that meet the DOE N 234.1 criteria of Category 1 or 2 require transaction reporting

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# DOE Reporting of Radioactive Sealed Sources DOE N 234.1 Summary Continued

Table of Select Radioactive Sealed Sources and Category Values

Radionuclides	Category 1		Category 2	
	TBq	Ci	TBq	Ci
Ac-227	2.E+01	5.4E+02	2.E-01	5.4E+00
Am-241	6.E+01	1.6E+03	6.E-01	1.6E+01
Am-241/Be	6.E+01	1.6E+03	6.E-1	1.6E+01
Cf-252	2.E+01	5.4E+02	2.E-01	5.4E+00
Cm-244	5.E+01	1.4E+03	5.E-01	1.4E+01
Co-60	3.E+01	8.1E+02	3.E-01	8.1E+00
Cs-137	1.E+02	2.7E+03	1.E+00	2.7E+01
Gd-153	1.E+03	2.7E+04	1.E+01	2.7E+02
Ir-192	8.E+01	2.2E+03	8.E-01	2.2E+01
Pm-147	4.E+04	1.1E+06	4.E+02	1.1E+04
Po-210	6.E+01	1.6E+03	6.E-01	1.6E+01
Pu-236	6.E+01	1.6E+03	6.E-01	1.6E+01

Radionuclides	Category 1		Category 2	
	TBq	Ci	TBq	Ci
Pu-238	6.E+01	1.6E+03	6.E-01	1.6E+01
Pu-239	6.E+01	1.6E+03	6.E-01	1.6E+01
Pu-239/Be	6.E+01	1.6E+03	6.E-01	1.6E+01
Pu-240	6.E+01	1.6E+03	6.E-01	1.6E+01
Ra-226	4.E+01	1.1E+03	4.E-01	1.1E+01
Se-75	2.E+02	5.4E+03	2.E+00	5.4E+01
Sr-90 (Y-90)	1.E+03	2.7E+04	1.E+01	2.7E+02
Th-228	2.E+1	5.4E+02	2.E-01	5.4E+00
Th-229	2.E+01	5.4E+02	2.E-01	5.4E+00
Tm-170	2.E+04	5.4E+05	2.E+02	5.4E+03
Yb-169	3.E+02	8.1E+03	3.E+00	8.1E+01



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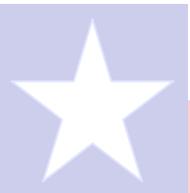
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# DOE Reporting of Radioactive Sealed Sources

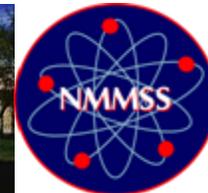
## DOE N 234.1 Summary Continued

- Three of the select radionuclides (Ac-227, Th-228, Th-229) are not in the IAEA Code of Conduct
- DOE and NRC have determined they will be included in the NSTS
- Inventory and transaction data on Pu-236 and Pu-240 will not be reported in the NSTS and are included for DOE purposes only
- Category values are based on IAEA 'categorization' system for radioactive materials



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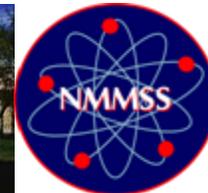
# DOE Reporting of Radioactive Sealed Sources DOE N 234.1 Summary Continued

- Sources must be uniquely identified
- Each DOE site/facility with sources must report its initial inventory or verify previously reported inventory
- If multiple isotopes are in an individual source, a record for each isotope must be submitted
- Transaction reporting to the RSRT of select category 1 and 2 radioactive sealed sources
- Annual verification of inventories is required



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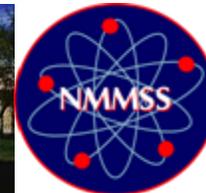
# DOE Reporting of Radioactive Sealed Sources

## DOE N 234.1 Summary Continued

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)	x	x	x	x	x	x
Radionuclide(s) in the source (single or multiple)	x	x	x	x	x	x
Initial or current source strength (activity) in Terabecquerels (TBq). (Curies are provided for information only)	x	x	x	x	x	x
Activity Date (the date for which the source strength is reported)	x	x	x	x	x	x
Neutron component (Yes/No)	x	x	x	x	x	x
Manufacturer data of source (if known)	x	x	x	x	x	x
The Reporting Identification Symbol (RIS Code)	x	x	x	x	x	x
Facility/building name	x	x	x	x	x	x
Description of source	x	x	x	x	x	x
Physical Form (solid/liquid)	x	x	N/A	If Import	N/A	N/A
Manufacturer, model, serial number or other unique identifier	x	x	x	x	x	x
Name and phone number for individual preparing the report	x	x	x	x	x	x
Name/address of shipping and/or recipient facilities and license number (if appropriate)			x	x	N/A	N/A
Date of shipment or receipt			x	x	N/A	N/A
Estimated arrival date			x	N/A	N/A	N/A
Waste manifest number (if applicable)			x	x	N/A	x
Container ID			x	x	N/A	x
Import/Export license number (if appropriate)			x	x	N/A	x
Disposal/disassembly date					N/A	x
Method of disposal					N/A	x
Container ID for final disposition					N/A	x

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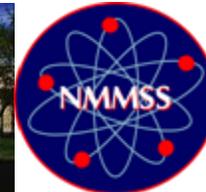


# DOE Reporting of Radioactive Sealed Sources DOE N 234.1 Summary Continued

- Transactions are defined as:  
Category 1 or 2 radioactive sealed sources as identified in Attachment 1 (DOE N 234.1) that are:
  1. Transferred (shipped) or received  
Between DOE Reporting Identification Symbols (RIS) or  
Between a DOE RIS and an NRC licensee or Agreement State licensee, or  
Exported from or imported to a DOE RIS;
  2. Manufactured;
  3. Disassembled; or
  4. Sent for disposal

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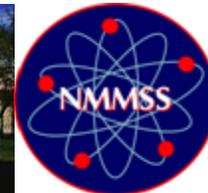


# DOE Reporting of Radioactive Sealed Sources DOE N 234.1 Summary Continued

- At the end of the calendar year each DOE site/facility operator must reconcile and verify Categories 1 and 2 radioactive sealed source physical inventories against the site/facility operator's data in the DOE RSRT
- No accountable radioactive sealed source will be transferred from a DOE organization or from a DOE contractor except as authorized
- Records will be maintained according to DOE policies

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# DOE Reporting of Radioactive Sealed Sources

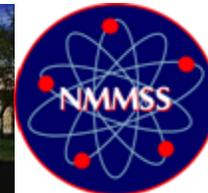
## DOE N 234.1 Summary Continued

- Heads of DOE/NNSA elements must;
  - Ensure that programs for inventory and transaction reporting and verification and reconciliation of radioactive sealed sources under their cognizance are implemented in conformance with N 234.1, Departmental policies and applicable laws
- Heads of DOE Field Elements must;
  - Develop and implement programs to conform to N 234.1



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# DOE Reporting of Radioactive Sealed Sources

## Next Steps

- HSS-1.22
  - Issue inventory data call
  - Develop formal N 234.1 guidance document
  - Modify RSRT to meet N 234.1 requirements
  - Continue work with NRC to report Category 1 and Category 2 data to the NSTS
- Heads of DOE elements and DOE field elements
  - Determine actions necessary to be in compliance with N 234.1
  - Implement actions to be in compliance with N 234.1



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