

Disposition of Certain U.S. Exports of High Enriched Uranium

David Hanks

**Senior International Safeguards Analyst
U.S. Nuclear Regulatory Commission**

**37th ESARDA Symposium
Manchester, United Kingdom
19 - 21 May, 2015**

Overview

- Background
- Evolution of U.S. Experience and Policies for Exporting HEU
- Report Methodology
- Summary of Report Findings
- Further Data Analysis
- Documentation and Data Unknowns



Background



- Recognition of the global interest to secure and minimize the use of HEU
- U.S. law, American Medical Isotopes Production Act of 2012 (AMIPA), signed on January 2, 2013
- In accordance with AMIPA, Section 3175, the Chairman of the U.S. NRC provided the, “Report to Congress on the Current Disposition of Highly Enriched Uranium Exports Used as Fuel or Targets in Nuclear Research or Test Reactors,” in January 2014
- NRC’s report captures 60 years of the U.S. experience exporting HEU



Evolution of U.S. Experience

Exporting HEU



- President Dwight D. Eisenhower's "Atoms for Peace," United Nations General Assembly, December 1953
- Passage of the Atomic Energy Act of 1954 (AEA)
 - AEA Section 123 - Agreements for Peaceful Nuclear Cooperation first signed during the 1950s, set the preconditions for U.S. nuclear exports
- Separation of regulatory functions and creation of the U.S. NRC through the Energy Reorganization Act of 1974
 - Export licensing involves Executive Branch consultations and requires foreign government assurances
 - Presently, HEU is only exported to a limited number of facilities in Europe and Canada, primarily for medical isotope production

Report Details

- For all previous U.S. exports of HEU used as fuel or targets in a research or test reactor (or RTR), the NRC reported on:
 - Current location
 - Whether irradiated
 - Whether used for purpose stated in export license
 - If used for an alternate purpose, did NRC approve
 - Year of export and re-import
 - Current physical and chemical form
 - Adequacy of physical security
- Utilized best available data from multiple sources



Summary of Report Findings



- HEU exports for RTRs: 22,600 kg to 35 countries and IAEA from 1957 – 2012
- HEU imports back to the U.S.: 7,700 kg
- HEU inventories: 6,100 kg remains in 20 countries
 - 95% of this material is located in Europe and Canada
 - 60% is irradiated
- HEU elimination
 - 4,300 kg down-blended
 - 500 kg lost in waste
 - 2,400 kg burned up in RTRs
- Not precisely reconciled: 1,600 kg



Physical Protection of U.S.- origin HEU at Foreign Facilities



- Consistent with the NRC export licensing process, Physical protection measures are assessed against IAEA INFCIRC/225/Rev. 4
- U.S. interagency bilateral physical protection visits are the basis for making determinations
- Returned U.S.-origin HEU is stored and processed at a small number of DOE and NRC facilities, where the appropriate physical protection measures are in place.



Documentation and Data Unknowns

- HEU transfers between countries.
- Material losses and waste
- HEU consumption in reactors
- HEU down-blending
- Co-mingling of U.S. and non-U.S. HEU
- Co-mingling of RTR and non-RTR HEU
- National classification information laws

In Conclusion



- Ongoing U.S. and international effort
- Link to the NRC, “Report to Congress on the Current Disposition of Highly Enriched Uranium Exports Used as Fuel or Targets in Nuclear Research or Test Reactors,” (January, 2014):
<http://fissilematerials.org/library/nrc14.pdf>
- Additional Contact:
Danielle Emche, Danielle.Emche@nrc.gov

Thank you!

