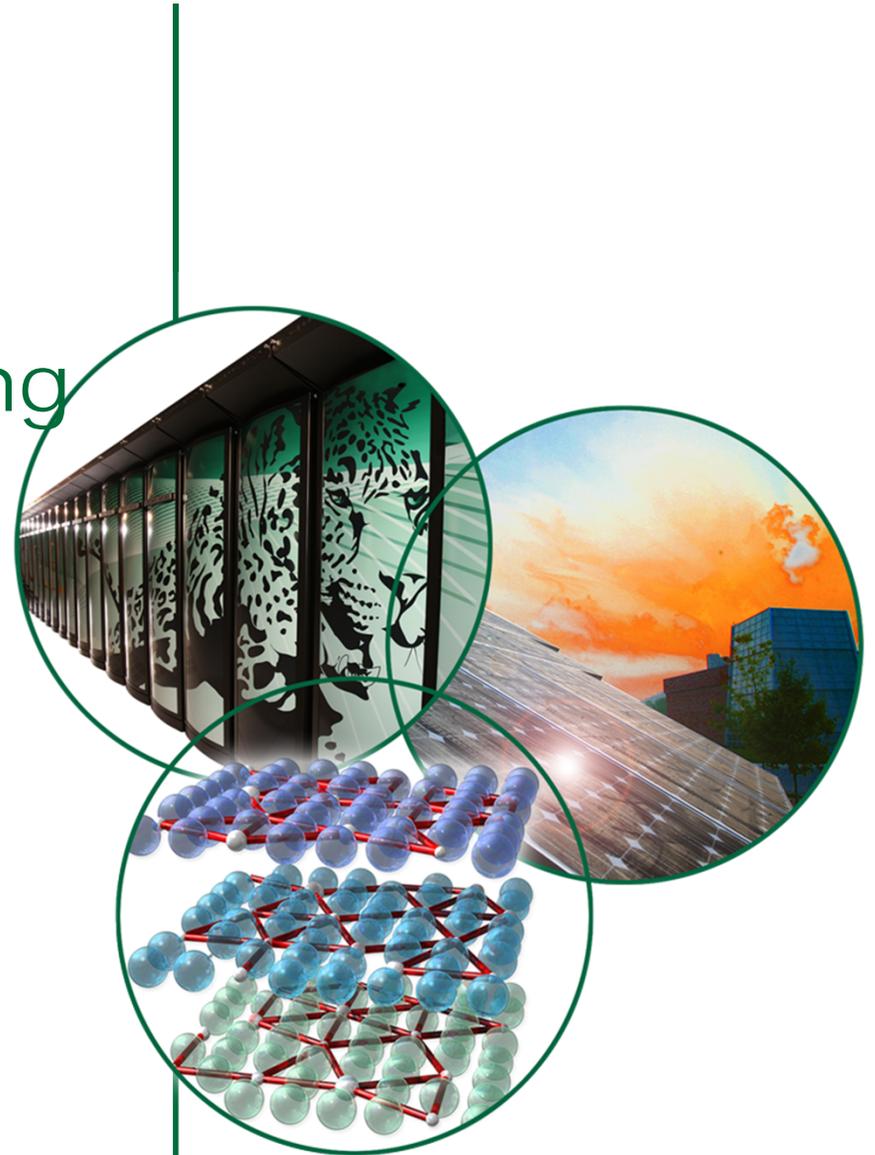


National Isotopes Packaging & Transportation Working Group Update

Presented by
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U.S. DEPARTMENT OF
ENERGY

 **OAK RIDGE NATIONAL LABORATORY**
MANAGED BY UT-BATTELLE FOR THE DEPARTMENT OF ENERGY

NSAC Objective

Increase the robustness and agility of isotope transportation both nationally and internationally.

- Identify and prioritize transportation needs through establishing a transportation working group.
- Initiate a collaborative effort to develop and resolve the priority issues.

Working Group Goals

- Develop an Action Plan
- Perform Site Reviews
- Identify Transportation and Packaging Issues
- Make Recommendations (Final Draft Report under review)
- Issue Final Report (TBD)

Working Group Focus

- Package availability, projected usage, scheduling, operational interfaces, packaging development and certification
- Identification of additional transportation and packaging needs required by IDPRA
- Transportation operations and business policy including shipping terms, freight forwarding, customs and tracking
- Commercial Carrier availability, contracts, regulatory compliance and operational relationships.

Sites Visited and Working Group Participants

- Brookhaven National Laboratory
- Federal Express (FedEx)
- Idaho National Laboratory
- Los Alamos National Laboratory
- Missouri University Research Reactor
- Oak Ridge National Laboratory
- Pacific Northwest National Laboratory
- QSA-Global

Working Group Issues

- Type-B Packaging Availability
 - Need to identify versatile Type-B container designs for IDPRA
- Type-A Packaging Design and Configuration Management
 - Need for a larger capacity non-returnable Type-A package for liquids.
 - Need for a larger capacity reusable Type-A for Cf-252.
- Business Operations related to Transportation
 - Limited control and accountability using a “collect invoicing system” vs. a “pre-pay and add” invoicing system.
- Potential Regulatory Impacts - Transportation Security
 - Proposed NRC security regulations could impact isotope transportation

Recommendation 1: Type-B Packaging

Charter and fund a packaging design and development team to investigate and recommend to IDPRA an optimal suite of Type-B container designs.

- Systematically identify unique content parameters and facility restrictions that apply at the IDPRA sites.
- Identify physical and regulatory restrictions from key IDPRA customers.
- Once the limiting factors are known, the appropriate number and type of container designs will be recommended.
- Considerations will focus primarily on commercially available containers.
- If a commercial container is not available, then a specific conceptual design will be presented to meet IDPRA needs.
- Potential synergies and cost savings opportunities with other DOE programs, including NNSA, will be considered.

Recommendation 2: General Type-A Packaging

Develop and certify a larger capacity, non-returnable Type-A container for reactor and accelerator processed liquids.

- It is recommended that funding be provided to design, test, and certify a Type-A package that is usable by all of the IDPRA sites.
- The initial investment to test and certify a specific design is expected to be in the \$50K to \$100K range.
- Once the design is certified, the actual unit price per package is estimated to be \$1K to \$3K.

Recommendation 3: Cf-252 Type-A Packaging

Develop and certify a returnable Type-A container with sufficient shielding for shipments of up to 5 milligrams of Cf-252 encapsulated as special form.

- It is recommended that authorization be given to initiate the procurement process for obtaining bids from commercial vendors for a container of this type.

Recommendation 4: Business Operations

Discontinue the current business policy of “collect payment” shipments and implement a “prepay and add” invoicing system for transportation charges.

- A “prepay and add” invoicing system will allow advance contracting of commercial carriers and freight-forwarders.
- Implementation of such a system will allow IDPRA to negotiate the terms in advance and require a level of accountability by the commercial carriers and freight-forwarders that is not available with the “collect payment” system.
- The “prepay and add” invoicing system is the accepted method by commercial businesses.

Recommendation 5: Regulatory Impact

Conduct a regulatory impact analysis of current and proposed NRC regulatory guidance on formal tracking and security for transportation of specific quantities and types of nuclides.

- This study will allow the IDPRA to proactively address these requirements as they are expected to eventually be adopted by the DOE.
- If these regulations were in effect today, they could possibly impact shipments like Selenium-75, Americium-241, and Iridium-192.
 - Formalize tracking of shipments
 - Constant communication with carriers
 - Formalize license verification process

Unique Findings

- Limited number of commercial carriers for radioactive materials.
 - FedEx
 - Yellow/Roadway (only LTL carrier)
 - Few foreign and Maritime carriers
- Increased number of shipment denials.
 - Increased sensitivity by pilots to RAM shipments
 - Inexperienced freight forwarders and airport logistics staff
 - Foreign countries/international state restrictions (e.g., Germany, Brazil, etc.)
 - Different interpretations of the applicable RAM regulations
- INL is currently developing a specialized target for Gd-153 that will also meet Special Form requirements.

Discussion and Questions