

Priorities for Technology Development and Policy To Reduce the Risk from Radioactive Materials

**51st INMM Annual Meeting
Baltimore, MD**

11-15 July 2010

**Ruth Duggan, Chair
Standing Committee on
International Security of Radioactive and Nuclear Materials
Nonproliferation & Arms Control Technical Division**



What to Expect

- **A Brief History**
- **The Workshop Agenda**
- **Workshop Results**
- **Next Steps**
- **Sponsors & Committee**



Brief History

- **International Security Of Radioactive and Nuclear Materials Standing Committee formed during 47th INMM Annual Meeting**
- **“Reducing the Risk from Radioactive Materials”**
 - **1st Workshop in March 2007, Santa Fe, NM**
 - **2nd Workshop in February 2008, Washington DC**
 - **3rd Workshop in March 2009, Albuquerque, NM**
 - **4th Workshop in February 2010, Washington DC**



4th Annual Workshop Participants

89 participants including:

- **Government** – DOS, DoD, DOE, DHS/DNDO, DTRA, NRC
- **NGOs**
- **Industry**
- **National Laboratories**
- **Universities**
- **International** – IAEA, United Nations
 - *Austria, Canada, Finland, Egypt, Russia, United States*



Workshop Program

- **Four Sessions:**

- Transportation Security
 - New Risks and Policy Issues
 - New Technologies in Real-Time Tracking of Radioactive Materials
- Best Practices and Challenges in Addressing Nuclear Trafficking
- Industry Leadership in Reducing Proliferation Risk, and UN Security Council Resolution 1540
- Verification of NPT, Article VI

Two Guest Speakers

- Laura Holgate, Global Nuclear Security Summit
- Thomas D’Agostino, FY2011 Budget: A “Direct and Tangible Display” of Commitment to Nonproliferation



Laura Holgate

Global Nuclear Security Summit



*Senior Director
for Weapons of
Mass Destruction
Terrorism and
Threat
Reduction,
National Security
Council*

- Over 40 heads of state diverse by region, nuclear weapon status, and nuclear energy activities/plans
- Key Summit Goals
 - Agreement on the urgency of the threat to international security
 - Confirmation that strong nuclear security is the most effective way to protect nuclear materials and prevent nuclear smuggling
 - Recognition of the fundamental responsibility of nations to maintain effective security of nuclear materials and facilities under their control
- Commitment from participants to improve their own nuclear security posture



Thomas D'Agostino

FY2011 Budget: A “Direct and Tangible Display” of Commitment to Nonproliferation



*Under Secretary
for Nuclear
Security &
Administrator,
National Nuclear
Security
Administration*

- Emerging bipartisan consensus on a path forward for US nuclear Security strategy
- Investing in our nuclear security infrastructure and strengthening the NPT are intertwined
- Increasing NNSA nonproliferation budget nearly 26% over FY2010
- Accelerating the US effort for the removal and disposition of high-priority vulnerable nuclear material overseas, conversion of HEU research reactors, and enhancing efforts in safeguards, export control, and second line of defense
- Demonstrating concrete progress to the goal of world without nuclear weapons while continuing to emphasize the importance of a strong nonproliferation regime to further disarmament

Transportation Security

New Risks and Policy Issues

The SAFE Port Act of 2006 requires that containers entering the United States shall be scanned for radiation.

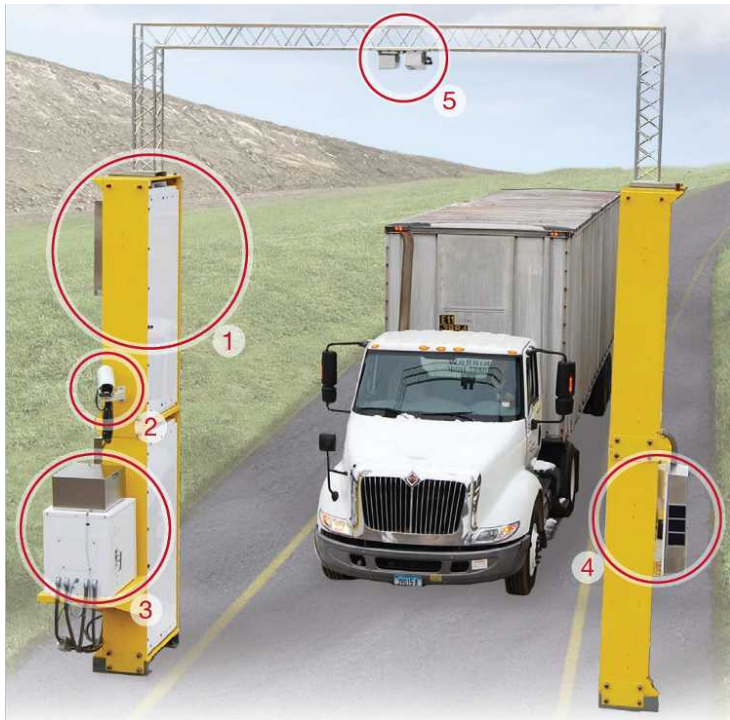
- **Challenges**

- **Cost-effective technologies to support secondary inspections with minimal impact to the commerce stream**
- **Standardized performance testing and cost benefit analysis methodologies**
- **Building good simulation models**
- **Making 100% cargo scanning more cost effective**



Transportation Security

New Technologies in Real-Time Tracking of Radioactive Materials



*Implementation of a
Germanium Spectroscopy Portal Monitor
at the Port of Antwerp*



*Advanced Spectroscopic Portal
(ASP) Detectors*



Best Practices and Challenges in Addressing Nuclear Trafficking

- **Challenges**

- Many and diverse targets
- Many types of dispersion and delivery
- Differing levels of background radiation

- **Call to action**

- A systematic, comprehensive regulatory framework
- New recommendations for “self-protecting” qualification
- Reachback and training programs

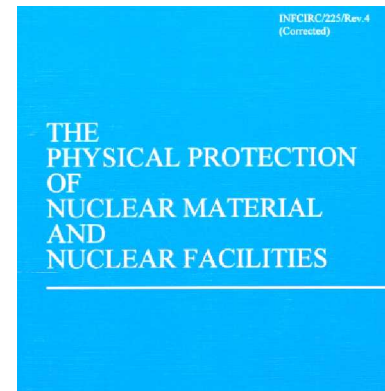
Industry Leadership in Reducing Proliferation Risk, and UN Security Council Resolution 1540



***NNSA Global
Threat Reduction
Initiative
addressing
Americium-241 and
Cesium-137 used in
drilling operations***



**International guidance, models, and
recommendations on the
transport of radioactive materials**





Verification of NPT, Article VI

The goal as stated in the treaty is

“... the cessation of the manufacture of nuclear weapons, the liquidation of all their existing stockpiles, and the elimination from national arsenals for nuclear weapons and the means of the delivery pursuant to a treaty on general and complete disarmament under strict and effective international control...”.

First challenge is to answer questions such as:

- What elements should be covered?
- How will dismantlement be verified?
- Who will be involved?



Verification of NPT, Article VI

Focus of Reductions

- Warhead Fissile Materials
- Total Warhead Stockpile
- Operationally Available Warheads
- Non-Strategic Delivery Vehicles
 - Associated warheads
- All Strategic Launchers
- All Strategic Delivery Vehicles
- Deployed Strategic Delivery Vehicles
 - Associated warheads

Participants

- All states
- Suspected Nuclear Weapons States
- Declared Nuclear Weapons States
- P-5
- China
- Russia
- United States

Complexity

Facilities Affected

- Deployed Launcher Facility
- Operational Deployment / Storage Area
- Delivery Vehicle Storage
- Warhead Storage
- Retired Warheads Awaiting Dismantlement
- Warhead Dismantlement
- Long-term Component Storage
- Fissile Material Disposition

Means of Verification

- Data Declarations
- National Technical Means
- Site Visits / Inspections
- Perimeter Portal Monitoring
- Unique Identifiers
- Tamper Indicating Devices
- Nondestructive Analysis
 - Information Barriers
- Interior / Continuous Monitoring



Final Recommendations

- **A systematic, comprehensive regulatory framework guide for the protection of nuclear and radioactive materials**
- **Effective tools to support cost effective secondary inspections with minimal impact to the commerce stream**
- **New standards for self-protection of radioactive waste**
- **Development of expertise to support reachback programs for States**
- **Development of performance test standards for radiation detection equipment and methodology for estimating cost benefit**
- **Best practices in meeting UNSCR-1540 obligations**
- **Continued research in approaches, methodologies, and technologies to address NPT, Article VI objectives**



Next Steps

- **Fifth workshop in planning**
 - **Spring 2011**
 - **West**
- **Panels**
 - **Nuclear Trafficking**
 - **Transportation Security for Nuclear and Radioactive Materials**
 - **Two Sessions on Current Topics**

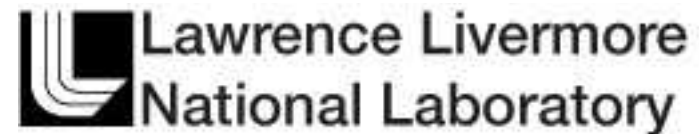


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*Special Thanks Our Host,
the Northeast Chapter!*



Workshop Committee Members

Ruth Duggan, Chairperson

- Galya Balatsky
- Steve Bellamy
- Mona Dreicer
- Corey Hinderstein
- Steve Mettler
- Steve Mladineo
- Deb Pederson
- Deno Photinakis
- William Severe
- Elena Sokova
- Larry Satkowiak
- Richard Wallace

**If you have an interest in
this topic,
please let me know if you
would like to
participate in this committee
or in the next workshop.**



Backup Slide



Report Card on Previous INMM Calls to Action

Some Progress

- Source Hardening – Efforts to harden sources and source security were shown
- Interagency Cooperation – Improving
- Education and Awareness – Shipping Medical Radioactive Material Awareness DVD promulgated to pilots with some success
- National Inventory tracking in progress for Category 1 & 2 materials
- Intelligence Fusion Centers along borders
- Development of Best Practices on INMM Website and the establishment of the World Institute for Nuclear Security

Key Issues Still to Act On

- Develop full understanding of material characterization, location, and security as well as methods of material removal, smuggling routes, and smuggling methods
- Identify INMM experts to serve as media resources and national reachback capability and put on website
- Harmonization of transportation and tracking standards, domestic and international