Nuclear Forensics Cooperation

-- Reviewing Frameworks, Goals & Capabilities

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Overview

- Need for Cooperation
- Goals of Cooperation
- Cooperation & Capabilities Vary
- International Frameworks
- National Forensics Libraries
Smuggling Trends

Reported weapons usable nuclear material seizures

Podolsk, Russia
1.5 kg HEU

Andreeva Guba, Russia
1.8 kg HEU (36%)

St. Petersburg, Russia
3.0 kg HEU (90%)

Munich, Germany
400 g Pu (87% Pu-239)

Batumi, Georgia
920 g HEU (30%)

Ruse, Bulgaria
4 g HEU (72%)

Paris, France
2.5 g HEU (72%)

Georgia
100 g HEU (~90%)

Vilnius, Lithuania
100g HEU (50%)

Murmansk, Russia
4.5 kg HEU (20%)

Tengen, Germany
6 g Pu (99.75% Pu-239)

Moscow, Russia
1.7 kg HEU (20%) - Electrostatic Diversion

Prague, Czech Republic
0.415 g + 17 g HEU (87.8%)

Landshut, Germany
0.8 g HEU (87.8%)

Prague, Czech Republic
2.7 kg HEU (87.8%)

NOTE: enrichments have not been independently verified for all seizures

As of September 21, 2007
Definition

Nuclear forensics is ...
► Analysis to determine the physical, chemical, elemental and isotopic characteristics of nuclear or radiological material.
  ▪ help determine age and production process
  ▪ also used to compare illicitly trafficked material with known samples

Nuclear forensics is not ...
► Attribution -- a process that uses results of forensic analyses and combines them with other law enforcement or intelligence information to help form conclusions about the origin of illicitly trafficked material.
Goals for Cooperation

- Best Practices
- Analysis/Safeguards
- Prosecution
- Attribution
- Deterrence
Cooperation Varies by Incident

- Prosecution of a smuggler
  - Categorize material
  - Present evidence

- Investigation of Diversion
  - Detailed characterization
  - Compare samples
Capabilities Vary

► Core Capabilities
  ▪ National Response Plan
  ▪ Ability to categorize material
  ▪ Ability to transport, store and present at trial
  ▪ National Forensics Library

► Useful Capabilities
  ▪ Ability to interpret data
  ▪ Ability to characterize material
  ▪ Ability to develop investigative leads

► Cutting Edge Capabilities
  ▪ Perform sophisticated analysis
International Frameworks

► ITWG
  ▪ Round Robins, Best Practices

► IAEA
  ▪ Guidelines

► Global Initiative to Combat Nuclear Terrorism
  ▪ Build Capabilities, Political Mandate

Need framework to promote cooperation between governments to investigate illicit uses of nuclear or radiological material
Problem

How does a law enforcement officer in Country A contact an atomic energy experts in Country B about an illicit activity involving nuclear or radioactive material?
Law enforcement seizes illicitly used nuclear or radiological material in Country A.

Country A fully categorizes material.

Country A asks Country B (and possibly C, D, E, etc.) if they have similar material.

Country B reviews data.

If no match, Country B informs Country A. No further action.

If a potential match, Country B requests a sample to determine if a potential diversion from one of its facilities.

If Country A provides sample, Country B analyzes.

If likely match, Country B law enforcement opens investigation into possible diversion and contacts Country A law enforcement.

Country A law enforcement may share investigative data.
Vision

System of National Forensic Libraries
- Library contains data on a country’s nuclear and radiological materials
- National Points of Contact
- Procedures making queries and sharing samples if necessary

*A system of national databases has the greatest opportunity for near-term progress for a problem that requires attention now.*
Next Steps

► Need input from law enforcement and atomic energy experts

► Define procedures & common data structure

► Develop political support, e.g. through GI and other organizations