

Securing Fissile Materials: International Framework and the Role of Nuclear Security Summits

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Andalo, Italy, January 10, 2014

Key Points

- Security of fissile materials and facilities is a relatively new regime within the global nuclear governance sphere
- Responsibility for nuclear security rest with states but problems are not compound to a state or even a region
- No legally binding, universally monitored, and enforced international nuclear security standards are in place
- Current system of coping with global nuclear security risks consists of a mix of limited mandatory international norms, voluntary measures, and ad hoc arrangements

Threats and Risks Associated with Nuclear and Radioactive Materials

- Dual-use nature
- Proliferation risks – material for nuclear weapons
- Nuclear and radiological terrorism risks
- Criminal use of nuclear or radioactive materials
- Accidental exposure to radiation



Four Scenarios of Nuclear Terrorism

- Theft and detonation (or threat of detonation) of an intact nuclear weapon
 - **BOMB**
- Theft or purchase of fissile material (HEU or Pu) leading to the fabrication of an improvised nuclear device
 - **NUCLEAR MATERIAL**
- Attack against and sabotage of a nuclear facility causing the release of large amount of radioactivity
 - **NUCLEAR FACILITY**
- Fabrication and detonation of a radiological dispersion device (RDD or dirty bomb) or radiation emission device (RED)
 - **RADIOACTIVE SOURCE OR MATERIAL**



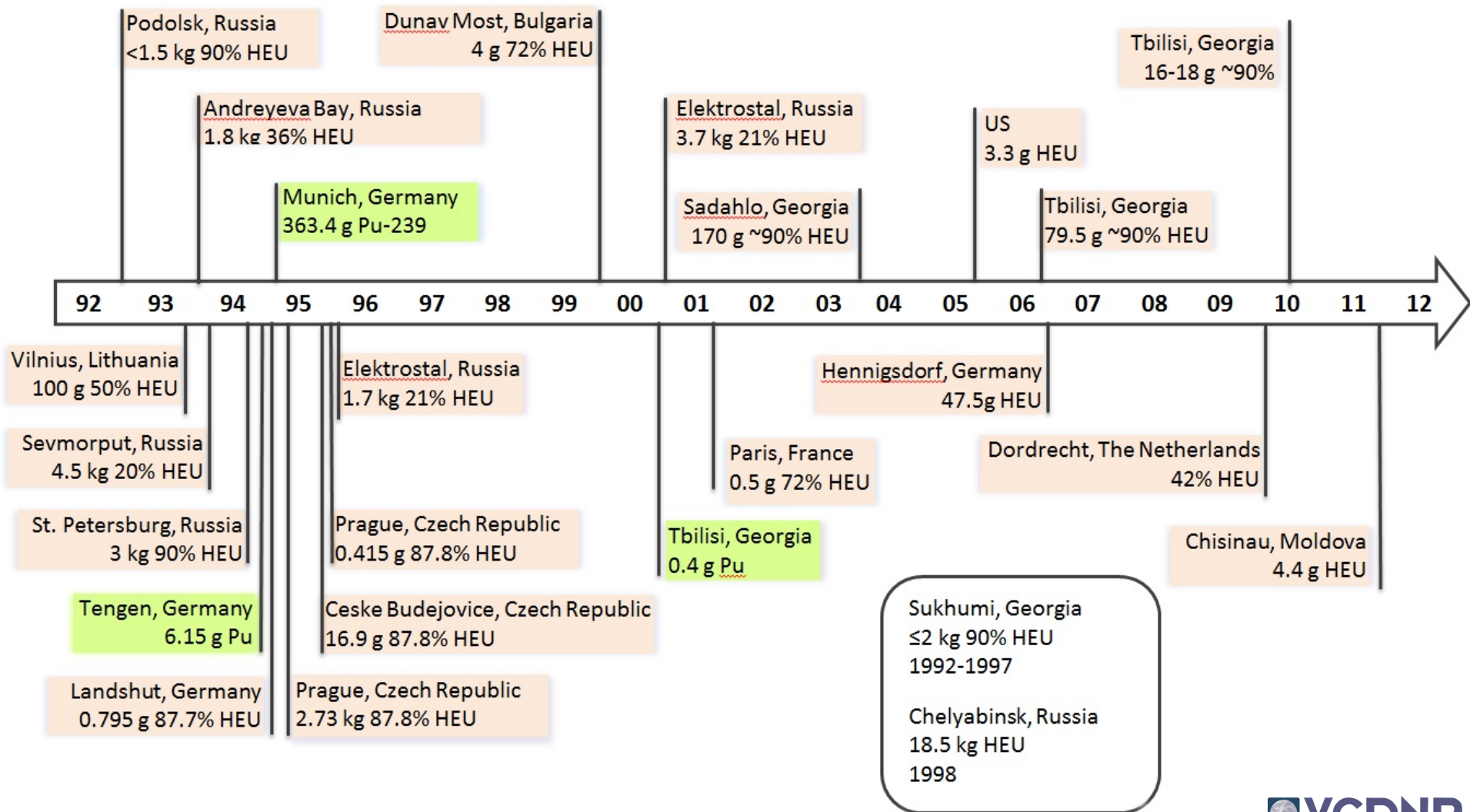
Key Security Events and Reaction to Them

- **Catalyst 1:** terrorist massacre at Munich Olympic games (1972)
 - Convention on the Physical Protection of Nuclear Materials (1980)
 - Development of recommendations on physical protection – INFCIRC 225
- **Catalyst 2:** nuclear material trafficking following the collapse of the USSR – early 1990s
 - Improved monitoring of trafficking cases, IAEA programs
 - International assistance programs to upgrade security in the FSU (CTR, MPC&A, and the like)
 - Development of MPC&A recommendations, training, and assessment programs
- **Catalyst 3:** 9/11 attacks on the US (+ A.Q. Khan)
 - Security upgrades beyond the FSU (G8 Global Partnership, CTR 2.0)
 - UNSCR 1540, Nuclear Terrorism Convention (ICSANT)
 - Ad Hoc arrangements (GICNT, PSI, Nuclear Security Summits, etc.)

The Scope of the Problem

- ~1,880,000 kg of weapons-useable material (HEU and separated plutonium) in 25 countries (down from 32 in 2012 and down from over 50 countries in 1992)
- Nuclear materials are present in over 1130 facilities and sites in ~70 countries
- 8 million radioactive sources worldwide
- IAEA Statistics: Since 1993 – over 2300 incidents of nuclear and radioactive material trafficking (theft, loss, illegal possession, etc.)
- Nuclear facility breaches and other vulnerabilities (Pelindaba – South Africa, 2007; United States – Y-12, Oak Ridge 2012)

HEU and Pu Trafficking



International Framework for Nuclear Security

- Responsibility for nuclear security within national borders rests with states
- Tension between national sovereignty and global risks and problems in the absence of global norms and relevant institutions
- **International conventions and treaties**
 - Convention on the Physical Protection of Nuclear Materials, Amended 2005
 - Convention for the Suppression of Acts of Nuclear Terrorism
 - And others (altogether about 17 different conventions and treaties dealing with nuclear and radioactive materials & WMD terrorism)
- **UN security Council Resolutions**
 - **UNSCR 1373** (28 September 2001) (prevention of terrorism financing and suppression of preparation of terrorist acts)
 - **UNSCR 1540**, 2004 (1673, 1810, 1977)
 - UNSCR 1887
- **UNSCR 1540** calls on states to:
 - Refrain from supporting non-state actors
 - Adopt laws prohibiting non-state actors to acquire, possess, develop, etc. of WMD and delivery systems
 - Implement existing international treaties and conventions and introduce corresponding national laws and regulations
 - Take and enforce *effective* measures in the area
 - Export and border controls
 - Accounting
 - Physical protection

International Framework (cont.)

- **Codes of Conduct**
 - IAEA Code of Conduct on Safety and Security of radioactive sources and supplemental Guidelines on Import/Export of Sources (2004&2005)
- **IAEA**
 - Guidelines and Recommendations
 - INFCIRC 225/Rev.5
 - Nuclear Security series
 - Advisory and evaluation services
 - Assistance with training, equipment
 - Does not have authority to establish international nuclear security standards, monitor compliance, and enforce the implementation
- **Ad hoc multilateral initiatives and mechanisms**
 - Cooperative Threat Reduction Program (US-Russia and FSU)
 - G-8 Global Partnership (2002);
 - Proliferation Security Initiative (2003);
 - Global Initiative to Combat Nuclear Terrorism (2006)
 - Nuclear Security Summits process (2010, 2012, 2014, 2016)
- **Non-governmental efforts**
 - World Institute for Nuclear Security (WINS)
 - Fissile Materials Working Group
 - Nuclear Threat Initiative



Nuclear Security Summits Process

- Effort to elevate the significance of the issue and address some of the most pressing risks in the absence of binding norms and mechanisms at international level
- Focus on **HEU and Pu** – i.e. weapons-useable materials
- 2010, Washington DC Summit:
Participation: 47 countries plus UN, IAEA, EU
- The summit recognized nuclear terrorism as "one of the most challenging threats to international security"
- Communiqué and Work plan (50 cooperative nuclear security measures across 11 areas)
- Support and endorsement of the IAEA's work
- Individual pledges or "house gifts" (to convert HEU reactors to LEU, repatriate HEU, establish centers of excellence, ratify relevant conventions, including the Amended CPPNM)
- Education and training/capacity building
- Recognized the role of industry in nuclear security
- Created a network of sherpas and sous-sherpas



2012 Nuclear Security Summit and Beyond

- Second Summit - March 26-27, 2012, Seoul, Republic of Korea
- 80% of 2010 commitments fulfilled
- 6 states + Interpol added
- New topics:
 - Radioactive sources and materials
 - Nexus between safety and security
 - More in-depth discussion of and commitments on
 - CPPNM (Amended) + other relevant treaties adherence
 - Nuclear forensics
 - Nuclear security culture
 - Information security
 - Did not agree on HEU transparency guidelines
 - Did not agree on making INFCIRC 225/Rev 5 requirements mandatory
- Next Security Summit – March 2014, the Netherlands, then another one – 2016 in the United States
 - Assurances of security arrangements
 - Interactive segment for world leaders



Nuclear Security Summit Process and Beyond (cont'd)

- NSS elevated the issue, provided visibility and international recognition; “cleaned up” a large number of sites and even countries from HEU and Pu; accelerated (somewhat) participation in major treaties and conventions; expanded efforts to develop human resources; elevated the role of the IAEA
- Universality is lacking; limited legitimacy
- Diminishing returns
- Lowest denominator factor (bold proposals and actions rejected)
- Military materials or security of nuclear weapons are not part of the discussion
- No interest from key countries in legally binding standards or new agreements

IAEA International Conference on Nuclear Security : Enhancing Global Efforts (July 1-5, 2013)

- Ministerial declaration and wide participation (1300 participants, 125 countries, 34 ministers)
- Call by IAEA Director General Yukiya Amano on all countries to allow peer-reviews of their security arrangements
- But... no changes in the IAEA responsibilities or tools, including no regular peer or IAEA nuclear security reviews or other breakthroughs
- In December 2013 – Office of Nuclear Security was elevated to the status of a Division within the Department of Safety and Security
- The bulk of its funding still comes from voluntary contributions rather than regular budget

Gaps, Challenges, and More Challenges

- National Sovereignty and Responsibility vs. International Instruments
 - No legally binding standards, accountability, enforcement
 - No transparency
- Universality, legitimacy vs. timeliness, efficiency, prevention
- Intergovernmental organizations - states – industry (private sector) – non-state actors
- Non-proliferation – nuclear security – peaceful nuclear cooperation – progress in disarmament challenge (Article IV and Article VI and Nuclear Terrorism)
- Civilian vs military stocks
- Pu challenge
- Impact on other nuclear spheres; linkages and nexus nonproliferation, safety, arms control, disarmament:
 - HEU minimization
 - Transparency