

The entry into force of the Amendment to Convention on the Physical Protection of Nuclear Material:

A key step in strengthening nuclear security - but is it enough?

By Tariq Rauf¹

STOCKHOLM, 8 May 2016: Today marks an important milestone in the global effort to strengthen the security of nuclear materials and nuclear facilities in the civilian nuclear fuel cycle.

The Amendment to the Convention on the Physical Protection of Nuclear Material (CPPNM/A) enters into force today, 30 days after the ratification by Nicaragua as the 102nd of the 153 States Parties to the Convention, thus reaching the required adherence by two-thirds of the Convention parties.

Although nuclear security is a national responsibility of the state, nuclear threats and consequences of nuclear terrorism transcend international borders. With the entry into force of the CPPNM/A, the risks of nuclear terrorism and smuggling and illicit trafficking in nuclear materials are likely to be reduced. This agreement is a concrete success of the Nuclear Security Summit (NSS) process that was launched in Washington in 2010 and concluded with the summit in Washington on 31 March 2016.² But is all this effort enough to deal with the challenges of nuclear security? This paper discusses some key issues.

Convention on the Physical Protection of Nuclear Material

The CPPNM adopted on 26 October 1979, entered into force on 8 February 1987. It is one of thirteen counter-terrorism instruments developed by the international community, and is the only internationally legally binding undertaking for the physical protection of nuclear material. Its objectives include a commitment to:

- achieving and maintaining effective physical protection of nuclear materials and facilities in the civilian nuclear fuel cycle;
- preventing and combating offences relating to such material and facilities; and
- facilitating appropriate co-operation among States Parties.

The Convention covers only nuclear material used for peaceful purposes during international transport and, with certain exceptions, in domestic use, storage and transport. It provides a categorization of nuclear material requiring appropriate levels of physical protection during storage and international transport (see box 1).

Amendment to the CPPNM

In July 2005, States Parties decided to amend the Convention to strengthen its provisions to make it legally binding to protect nuclear facilities and material in peaceful domestic use, storage and transport. It also provides for expanded cooperation between states for rapid measures to locate and recover stolen or smuggled nuclear material, mitigate any radiological

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² The second Nuclear Security Summit was held in 2012 in Seoul and the third in The Hague in 2014.

consequences of sabotage, and combat related offences through criminalization. The Amended Convention establishes eleven Fundamental Principles at the level of the state for the physical protection of nuclear material and nuclear facilities in civilian use (as listed in Annex A of this paper). The responsibility for physical protection remains vested exclusively with the state. The CPPNM/A does not provide authorization to use or threaten to use military force against nuclear material or nuclear facilities in peaceful uses.

Box 1. Categorization of nuclear material				
<i>Material</i>	<i>Form</i>	<i>Category I</i>	<i>Category II</i>	<i>Category III</i>
Plutonium	Unirradiated	2kg+	500g to 2kg	15g to 500g
Uranium₂₃₅	Unirradiated	5kg+	1kg to 5kg	15g to 1kg
	Enriched to 20%+			
	10% to 20%			
	0.7%+ to 10%			
Uranium₂₃₃	Unirradiated	2kg+	2Kg to 500g	15g to 500g
Irradiated Fuel			DU, NU, Th ³ (>10% fissile content)	

Source: IAEA, CPPNM, Annex II

Gaps in coverage and implementation of CPPNM/A

Given the strong opposition of some of the nuclear-armed States Parties, the scope of the Amendment is confined to nuclear material and facilities in civilian use and does not cover ‘all radioactive material and associated facilities’. It explicitly excludes ‘activities of armed forces during an armed conflict’, and ‘activities undertaken by military forces in the exercise of their official duties’.⁴

In December 2015, the Director General of the International Atomic Energy Agency (IAEA) noted that States Parties are required to inform the Agency, as the Depository, of the laws and regulations adopted to implement the CPPNM, but only 12 have done so thus far. All States Parties are also obligated to provide information on Points of Contact and Central Authorities, but only 111 of 152 have complied to date.⁵ Finally, while the CPPNM/A enters into force today, 50 States Parties have yet to ratify the Amendment.

Nuclear material in military use

The entry into force of the CPPNM/A and the NSS process will contribute to strengthening nuclear security globally for nuclear materials and nuclear facilities in the civilian sector. However, this only covers 17 per cent of the world’s stocks of nuclear materials. The other 83 per cent in military use is not covered by the CPPNM/A nor by the NSS, as shown in figure 1.

³ Irradiated FUEL: DU = depleted uranium, NU = natural uranium, Th = Thorium, with less than 10% fissile content.

⁴ The activities of armed forces during an armed conflict, such as use of nuclear weapons, are governed under international humanitarian law and, as such, are not governed by the CPPNM/A.

⁵ IAEA, ‘IAEA Director General Yukiya Amano’s Remarks to the Technical Meeting of Points of Contact and Central Authorities of States Parties to the CPPNM’, Vienna, 14 Dec. 2015.

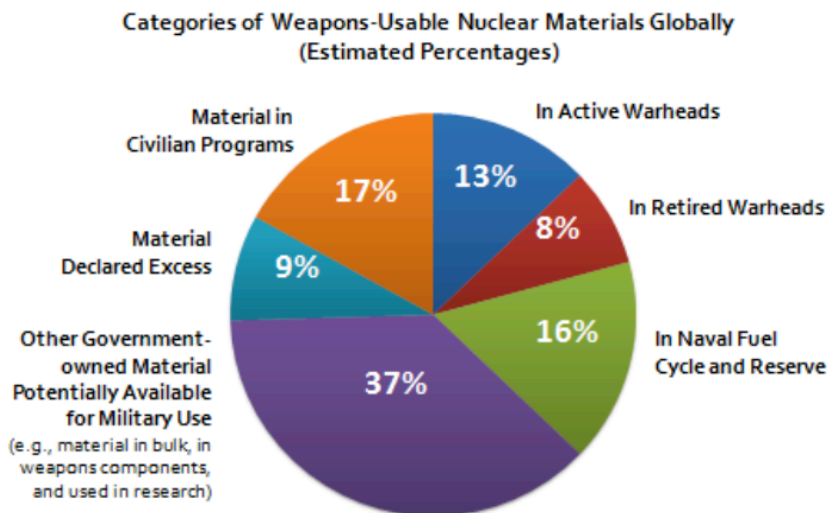


Figure 1. Categories of weapons-usable nuclear materials globally, estimated percentages

Source: Nuclear Threat Initiative, © NTI – used with the permission of NTI.

The Way Forward

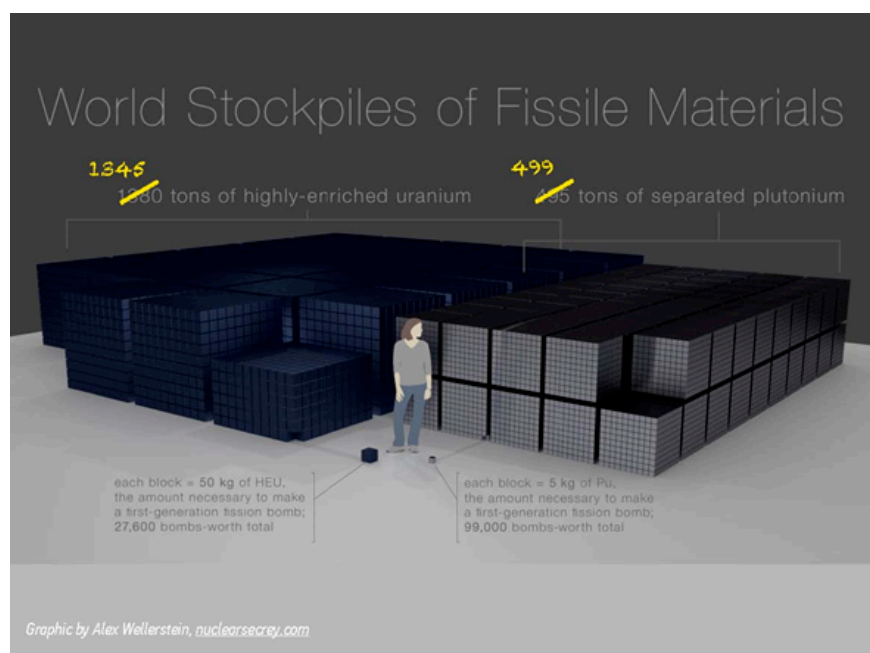
While the IAEA plays a central and essential role in assisting states

with nuclear security, the fundamental responsibility for the physical protection of nuclear materials and facilities rests squarely with the state. The CPPNM/A establishes a strengthened regime for nuclear security in the civilian nuclear fuel cycle. However, nuclear-armed states thus far have been unwilling to formally accepting an internationally legally binding regime for the physical protection of military nuclear materials, associated facilities and warheads.

Despite all well-meaning measures, the possibility cannot be ruled out that nuclear or other radioactive materials could be misused for malicious or terrorist purposes. Given the vast overhang of military nuclear materials, as shown in figure 2, it is imperative that nuclear-armed states commit to establishing internationally binding principles and measures to ensure the highest possible levels of physical protection, and to continually review and update them in light of emerging challenges and threats. In this regard, implementing the provisions of the CPPNM/A along with those contained in the IAEA’s Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Revision5) would be a good start.⁶

Figure 2. World stockpiles of fissile materials

Source: Presentation of the IPFM Global Fissile Material Report 2015. Zia Mian, Alexander Glaser, ‘Global Fissile Material Report 2015. Nuclear weapons and fissile material stockpiles and production’, Presentation at NPT Review Conference, May 8, 2015, United Nations, New York. © International Panel on Fissile Materials (IPFM), Princeton University – used with the permission of IPFM.



⁶ IAEA, Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Revision5), IAEA Nuclear Security Series No. 13 (2011).

Annex A: Fundamental Principles of the Amended Convention

The Amended Convention establishes eleven Fundamental Principles at the level of the state for the physical protection of nuclear material and nuclear facilities in civilian use:

A: Responsibility of the state: The responsibility for the establishment, implementation and maintenance of a physical protection regime within a state rests entirely with that state.

B: Responsibilities during international transport: The responsibility of a state for ensuring that nuclear material is adequately protected extends to its international transport, until that responsibility is properly transferred to another state.

C: Legislative and regulatory framework: The state is responsible for establishing and maintaining a legislative and regulatory framework to govern physical protection, including a system of evaluation, licensing, inspection of nuclear facilities and transport to verify compliance with applicable

D: Competent authority: The state should establish or designate a competent and independent well-resourced authority responsible for the implementation of the legislative and regulatory framework.

E: Responsibility of the license holders: The state should ensure that the prime responsibility for the implementation of physical protection of nuclear material or facilities rests with the holders of the relevant licenses or of other authorizing documents (e.g., operators or shippers).

F: Security culture: All organizations involved in implementing physical protection should give due priority to the development and maintenance of an appropriate security culture, within the entire organization.

G: Threat: Physical protection should be based on the state's current threat evaluation.

H: Graded approach: Physical protection requirements should be based on a graded approach, taking into account the current threat evaluation, and the nature of the material and potential consequences associated with its unauthorized removal or sabotage against nuclear material or nuclear facilities.

I: Defence in depth: Requirements for physical protection should reflect a concept of several layers and methods of protection that have to be overcome or circumvented by an adversary.

J: Quality assurance: Quality assurance policies and programmes should be established and implemented to provide confidence that specified requirements for all activities important to physical protection are satisfied.

K: Contingency plans: Contingency (emergency) plans to respond to unauthorized removal of nuclear material or sabotage of nuclear facilities or nuclear material should be prepared and appropriately exercised by all license holders and authorities.

L: Confidentiality: The state should establish requirements for protecting the confidentiality of information, the unauthorized disclosure of which could compromise the physical protection of nuclear material and nuclear facilities.