

NGO Nuclear Security Summit
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Progress and Challenges to Secure Vulnerable Nuclear Materials in East Asia

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Nuclear Security in East Asia

- **Traditional Countries in the Area:**
China, Mongolia, DPRK, ROK, Japan
- **Security Environment in the Area:**
 - **History problem: Japan and other countries, Korea peninsula confrontation, China mainland and Taiwan separation, US military exists**
 - **DPRK nuclear issue**
 - **Terrorist attack exists**
 - **Potential Social problem in some countries**

Security Environment in East Asia

Japan: 1995 Tokyo Subway nerve gas attack
by Aum Doomsday Cult

China: Religious extremists, Ethnic separatists,
International terrorists

Korea Peninsula: Concerns on potential social
turmoil and its impact to nuclear devices

Nuclear Capability in East Asia

China:

NPT nuclear weapon state

Full nuclear fuel cycle

Ambitious nuclear power plan

China's nuclear power development expectation

Year	2008	2020	2030
Installed capacity (GW)	9	70	>100
Share	1.3%	>5%	>10%

♣ **China's recent progress on nuclear power**

♣ ● **Present NPP units :** **11 (9 GW)**

♣ ● **The newly approved NPP units:** **24 (25.4 GW)**



♣ ● **New units under construction:** **14**



♣ **(about 30% of the NPP units under construction in the world)**

**♣ Build an Integrated Fuel Cycle Industry for
♣ China's Nuclear Power Program**

♣ Closed fuel cycle option is selected.

**♣ To support the big nuclear energy program,
China has to build an integrated fuel cycle
industry.**

Nuclear Capability in East Asia

Japan: Advanced nuclear technology
nuclear fuel cycle capability
54 nuclear power sets in commercial
operation
14 more are planned in 20 years

Nuclear Capability

♣ North Korea

2 nuclear test, proclaimed NW state

Reprocessing capability

Enrichment: “enter into test phase” as claimed by DPRK in June 2009

♣ Mongolia

Planned nuclear power station in 2021

Uranium mine:

estimated to be 120,000-150,000 ton

Spent fuel stored/to be stored in East Asia region

Country/region	2008	2020	2050
Japan	12600 t*		24000 t**
Korea	14000 t	36000 t	55000 t
China:			
Mainland	1250 t	~12000 t	
Taiwan	3000 t		

*Another 8100 t was reprocessed

** Another 32000 t will be reprocessed

Nuclear Capability in East Asia

♣ **South Korea**

Advanced nuclear technology

36% nuclear share in 2008, to be raised to 59% by 2030

legal restriction on fuel production

-123 US-ROK Agreement, which will
expire in 2014

pursuing “nuclear sovereignty”

Challenges in East Asia

- ♣ Potential military conflicts in Korea Peninsula
- ♣ Rapid and tremendous nuclear power plants
- ♣ Terrorists threat exist
- ♣ Risk of nuclear material smuggling
- ♣ Radioactive sources management
- ♣ Increasing of spent fuel storage

Nuclear Security in China

- ♣ International commitment, national security, personal safety**
- ♣ nuclear weapons are in the most secured status**
- ♣ civil nuclear power plant and facility are guarded by armed police or guard company,**
- ♣ Electronic monitoring and alarm system**
- ♣ Radioactive sources are more complicated and challenging**

Nuclear Security in China

- ♣ International treaties and commitments
- ♣ International practice and code of conduct
- ♣ National law and regulations, department rules and code
- ♣ Industry safety and security culture, personal training
- ♣ Emergency response mechanism and measures

China and International Treaties

- ♣ Joined CPPNM in 1989, ratified the amendment of CPPNM in 2009
- ♣ International Convention for the Suppression of Acts of Nuclear Terrorism in 2005
- ♣ Accepted Code of Conduct on Safety and Security of Radioactive Sources in 2004
- ♣ Almost all other nuclear and radioactive safety and security related conventions

China- legislation in nuclear field

- ♣ Law on Prevention and Control of Radioactive Pollution

- ♣ Regulations:

 - on Nuclear Materials Control

 - on Safety of Radioactive Articles

 - on nuclear Materials Transportation

- ♣ Rules:

 - Physical Protection of Nuclear Installations

 - Nuclear Materials Accountability

 - Nuclear Materials Control

Chinese Practice for Securing NM

♣ License System

- covers production, possession, sale, use of nuclear and radioactive materials
- nuclear material owner must apply license if amount reaches the regulated threshold
- documents review and on-site inspection before issue a license
- transfer can only happen within license owner, transfer report is obliged

Chinese Practice for Securing NM

♣ Accountability

- divide nuclear facility into balance district
- Account by classification of nuclear materials
- inventory system is established by license owner

Nuclear Security in China

Table 1. The physical protection grades of nuclear materials

materials	Status	Grades		
		I	II	III
Pu	Non irradiation	2kg above	10g-2kg	Less than 10g
U	Non irradiation, U abundance $\geq 20\%$	5kg above	1-5kg	10g-1kg
	Non irradiation, U abundance in 10-20%		20kg above	1-20kg
	Non irradiation, U abundance $< 10\%$ (not include natural U and DU)		300kg above	10-300kg
T	Non irradiation	10g above	1-10g	0.1-1g
Li	Condensed Li		20kg above	1-2kg

Chinese Practice for Securing NM

♣ Physical protection

- nuclear material is divided as three grades
- Grade I fixed site are protected by armed guard
- Grade II are protected by armed guard or regular supervisor watched day and night
- Grade III appointed man to guard, reliable physical barrier should be built up

Chinese Practice for Securing NM

♣ Radioisotope Management and Security

- all radioactive sources are regulated by government

- in full line with IAEA Code of Conduct on Safety and Security of Radioactive Sources.

- cover whole life span of the radioactive

- strict procedure for export/import

International cooperation

- ♣ Region Seminar
- ♣ IAEA security network
- ♣ IAEA Database on Illicit Trafficking
- ♣ China-IAEA safeguards and security training center
- ♣ IAEA cooperation for 2008 Beijing Olympic games
- ♣ China-US bilateral cooperation on nuclear security related to personal training, workshop etc
- ♣ Ports and customs inspection cooperation with US and IAEA

Possible contribution in the future

- ♣ China has plenty of nuclear facilities and materials, more open attitude to international cooperation to and with other countries would conducive to its own and the region.
- ♣ Nuclear security culture building in China, including public awareness of relevant laws, regulations and rules, needs to be in pace with its rapid nuclear power plan
- ♣ China can contribute more on institutionalization of initiatives in nuclear security field like Global Initiative to Combat Nuclear Terrorism etc.
- ♣ China's continuing leading role to Six-party talks would contribute a lot to nuclear security in the region.

Personal observation

1. The sensitivity of the material and facility decides countries bear the primary obligation for nuclear security. International assistance have to go through the sovereign states. Respect this sovereign right would get better and broader support and cooperation.
2. Nuclear security culture building is as important as legislature and capacity building. International forum and seminar in this regard will be very helpful. This is an area NGO and civil society could contribute a lot.

3. Ban on use of nuclear weapons and forbidden of military attack on nuclear facility are important components of nuclear security. Emphasis should be also attached to this respect as we talking about nuclear security. Military attack on the disputed facilities may cause unpredictable outcome and shall be stopped. Nuclear proliferation issues shall be solved through diplomatic and political means instead of military action.

4. The 2005 amended CPPNM had prohibit military attack on civilian nuclear facilities. More international efforts to avoid such risk is necessary against the background of nuclear power renaissance and upheaval proliferation disputes. Any nuclear facility subjected to IAEA safeguards shall be accepted as civilian use unless the IAEA has safeguards conclusion otherwise. Military attack to such facilities shall be criminalized as war crime. This will greatly safer the world of nuclear disaster and encourage more countries to accept the IAEA comprehensive safeguards and additional protocol.

THANK YOU!

谢谢！