

Continuing and Expanding US-China Cooperation on Nuclear Security by Hui Zhang

Hui Zhang (Hui.Zhang@harvard.edu), a physicist, leads a research initiative on China's nuclear policies for the [Managing the Atom Project](#) at Harvard Kennedy School's [Belfer Center for Science and International Affairs](#).

Since the Sept. 11, 2001 terrorist attacks, China has made significant progress in improving its nuclear security. This effort has benefited significantly from cooperation between the China Atomic Energy Authority (CAEA) and the US Department of Energy. This cooperation has included an extensive series of exchanges, including visits to a range of US facilities to observe nuclear security and accounting approaches; in-depth training and workshops on everything from approaches to protecting against insider threats to the design of physical protection systems to steps to strengthen security culture; a second joint demonstration of advanced material protection, control, and accounting of nuclear materials (MPC&A) technology in 2005; work to strengthen security and accounting regulations and inspections in China; and, most recently, cooperation to build a Center of Excellence (CoE) on Nuclear Security.

Then Presidents Hu Jintao and Barack Obama announced cooperation on the CoE at the Nuclear Security Summit in Washington in 2010. In January 2011, China and the United States signed a memorandum of understanding on the project. The center will serve as a forum for exchanging technical information, sharing best practices, developing training courses, and promoting technical collaboration to enhance nuclear security in China and throughout Asia. The National Nuclear Security Technology Center of the CAEA, established in November 2011, is responsible for the construction, management, and operation of the CoE. The CoE broke ground Oct. 29, 2013 and will be completed in 2015.

Cooperation on nuclear security in the civilian sector

While current cooperation focuses mainly on the Chinese civilian sector, personnel from defense facilities participate too. It is reasonable to assume that best practices associated with modern MPC&A principles learned through cooperation will be applied to fissile materials and facilities in the military sector as well, in part because the CAEA is responsible for controlling fissile materials nationwide in both military and civilian stockpiles and can transfer lessons from one to the other. Thus, it is imperative to maintain and strengthen cooperation. Future steps should include:

- in-depth discussions and best practice exchanges on how to construct a more systematic and rigorous approach to design-bass threats (DBT) for each type of nuclear facility, focusing on those dealing with weapon-usable nuclear materials;

- in-depth discussions and best practice exchanges on how to decrease vulnerability to an insider threat, in particular at bulk processing facilities and storage facilities of weapon-usable fissile materials;

- collaboration on applying modern material control and accounting systems and best practices for China's pilot reprocessing plant and for a pilot MOX facility that is under construction;

- in-depth discussions and best practice exchanges on China's updating and enforcing new regulations, drafting an atomic energy law, strengthening the independence of regulatory bodies, and providing adequate legal authority, technical and managerial competence, and financial and human resources to ensure regulatory capacity;

- assistance on adopting realistic performance tests including "force-on-force" exercises. Chinese experts should be invited to witness such exercises at US sites;

- moving forward with cooperation on security culture including implementing targeted programs to assess and improve security culture at each key site;

- in-depth discussions and best practice exchanges on how to increase international assurance about China's nuclear security conditions, including how China can make substantial amounts of information public while protecting sensitive information;

- using the new CAEA Center of Excellence to provide training and exchanges of best practices for domestic guards and security personnel and those from other countries in the Asia-Pacific region; and

- adding more Chinese "gifts" for the 2016 Washington Nuclear Security Summit. China should join the initiative on Strengthening Nuclear Security Implementation agreed at the 2014 Nuclear Security Summit, incorporate the IAEA principles and guidelines regarding nuclear security into its national laws; and allow teams of international experts to periodically evaluate its security procedures.

Extending cooperation to the military sector

More importantly, to prevent nuclear terrorism US-China cooperation needs to expand from civilian efforts to the military sector, since it is the military that has custody of the largest stocks of weapon-usable fissile materials – and all nuclear weapons. Without knowing the problems that exist in the military sector, the indirect benefits of cooperation with the civilian sector for the military will be limited.

The two governments should restart the lab-to-lab program that was conducted from 1995 to 1998. The program was designed to help create in China an interest in strengthening security systems by demonstrating the

advantages of a modern MPC&A system. The collaborative program was terminated in the aftermath of the 1999 Cox Committee Report, which alleged Chinese espionage at US nuclear weapons laboratories. The Cox report was denounced by the Chinese government. Since the “lab-to-lab” program ended, direct cooperation on nuclear security and control of China’s nuclear weapons has not occurred. Since 9/11, however, the two governments have undertaken significant cooperation against terrorism, and this should provide an opportunity to restart the lab-to-lab program, which would significantly benefit China’s nuclear materials and facilities in the military sector.

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The program should begin with less sensitive activities that are identified as mutually beneficial. The two governments could conduct in-depth discussions and best practice exchanges on a number of areas, including applications of modern seals techniques and continuous remote monitoring approaches for the storage of nuclear warheads and sensitive nuclear materials; tracking and monitoring techniques for shipments of fissile materials; and safety and security measures protecting nuclear weapons and nuclear materials. As the lab-to-lab program moves forward, based on the experience from US-Russian cooperation, China and the United States may consider mutual visits and joint work at selected key sites. Others areas of focus could include DBT approaches for sensitive facilities, advanced MPC&A applied at some sites, updating regulations and procedures, and strengthening security culture at some sites.

Conclusions

The Chinese government has taken significant steps to develop and apply approaches to nuclear security and nuclear accounting in the aftermath of 9/11. One driver of Chinese improvements has been international cooperation, in particular with the US. Since the 9/11 attacks, China has actively cooperated with the US to improve its nuclear security in the civilian sector. Such cooperation should continue and grow stronger. More importantly, China-US cooperation should extend to the military sector that has custody of the largest stocks of weapon-usable fissile materials and all nuclear weapons.

At the 2014 Nuclear Security Summit, Chinese President Xi Jinping stressed that increased cooperation regarding the nuclear security of one country is beneficial to all nations. As Xi pointed out, “The amount of water a bucket can hold is determined by its shortest plank. The loss of nuclear material in one country can be a threat to the whole world.” President Barack Obama has emphasized that the biggest threat to US security is the possibility of a terrorist organization obtaining a nuclear weapon. The three Nuclear Security Summits have focused the top leaders in Beijing and Washington on nuclear security issues and enhanced consensus on the danger of nuclear terrorism. It is time to extend China-US cooperation on nuclear security to the military sector. Since the threat of nuclear terrorism is a top US priority, Beijing’s cooperation on the issue would benefit the Sino-US relationship. Moreover, Beijing’s active participation in building a robust global nuclear security system would improve its international image.