

International Seminar:
“Countering Nuclear and Radiological Terrorism”

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Concerns about nuclear terrorism have risen substantially over the past five years. Although no serious terrorist attempts to construct an improvised nuclear device have yet been uncovered, there are increasing indications of terrorist groups desiring to create and use such devices. Furthermore, experts agree that some terrorist groups would be technically capable of constructing a nuclear device, if they were able to obtain the necessary fissile materials. The prevention of nuclear terrorism, therefore, depends upon international cooperation to thwart nuclear trafficking and secure fissile materials.

I would like to begin my presentation with an evaluation of the threat of nuclear terrorism, focusing particular attention on the wide use of highly enriched uranium (HEU) in the civilian sphere, and evaluate the threat posed by HEU. I will next turn to international cooperation in the prevention of nuclear terrorism, including a look at both successes achieved and areas where more effort is needed. The final part of my presentation will be devoted to the issue of how to secure fissile materials—the basic material needed to construct a nuclear explosive device—and a discussion of what must be done to improve physical protection and prevent trafficking of nuclear materials.

Assessment of the Threat

The threat of nuclear terrorism is a relatively new phenomenon. Until recently, there were few indications that any terrorism group was considering the use of an improvised nuclear explosive device. However, recently terrorism experts have stated that there are now several violent non-state groups that have a stated desire to acquire and use WMD. There are also increasing ties between these groups and elements in states that might be able to help the terrorists achieve their goals. But even without state assistance, it is likely that the creation of a primitive nuclear device—a device with destructive power comparable to that of the nuclear bomb that the United States dropped on Hiroshima at the end of World War II. Although the likelihood of the successful use of a nuclear device by terrorists is not large, any such explosion would result in very substantial destruction. We must do everything we can to prevent such an event. Leading experts in many countries, including Russian weapons experts, as former director of Los Alamos National Laboratory Siegfried Hecker has noted, agree that from a technical point of view

the construction of the simplest type of first-generation nuclear device is within the capabilities of some terrorist groups.

This is the official assessment of the United States. Presentations by the U.S. Departments of Energy (DOE) and Homeland Security (DHS) state that there are terrorist groups today that could design and construct a simple nuclear device if they had the necessary fissile material. In this DOE presentation (see slide 3), it states that the “key is access to *special nuclear material*” – highly enriched uranium or plutonium. As a gun-type device, which would require HEU, is easier to construct than a nuclear explosive using plutonium, guarding this material is particularly critical. As can be seen from the DHS presentation (see slides 4-6), U.S. experts do not believe that terrorists can enrich uranium or breed plutonium. Therefore, their only source of this material is by stealing it from a fuel cycle facility, purchase on the black market, or getting it from a state sponsor. The other aspects of constructing a nuclear device—the design and engineering aspects—despite their complexity, can be solved by sophisticated terrorist groups.

International Agreements

The U.S. and Russian governments have acknowledged the common interests of the two countries in combating the threat of nuclear terrorism by concluding agreements in this area as well as issuing joint pronouncements at bilateral and multilateral summits (such as the G-8). One of the first such statements came at the Moscow Nuclear Safety and Security Summit in 1996, announcing a “program on preventing and combating illicit trafficking in nuclear material to ensure increased cooperation among our governments in all aspects of prevention, detection, exchange of information, investigation and prosecution in cases of illicit nuclear trafficking.”¹

There have been many additional agreements since, which have publicly committed Russia and the U.S. to sharing intelligence on illicit trafficking incidents. However, the exchange of information in cases involving nuclear and radiological materials remains inadequate. The United States knows no more about individual trafficking cases involving Soviet- (Russian-) origin radioactive materials today than it knew a decade ago. If we are serious about combating nuclear and radiological terrorism, we must do a better job in cooperating, and make our many formal agreements real.

Although the risk of a theft of nuclear materials today is far less than it was in the early 1990s, far more can be done to secure nuclear materials, given the terrorist threat. In addition, the repatriation and consolidation of nuclear materials in Russian, particularly in the civilian sector, requires more attention. Facility directors know that far more needs to be done in the area of physical protection. At the same time, the situation at U.S. facilities without its problems. Unfortunately, neither country is routinely providing information on trafficking incidents to the IAEA as it should. How can we persuade other countries to join and implement new agreements on cooperation in this area if we are not

¹ <http://www.g7.utoronto.ca/summit/1996moscow/declaration.html>

implementing the existing agreements on the books? It is time to get beyond rhetoric and implement the obligations we have assumed.

Russia deserves praise for its sponsorship and ratification of the International Convention for the Suppression of Acts of Nuclear Terrorism,² which entered into force on July 7 of this year. Unfortunately, Russia remains the only nuclear-weapon state to have ratified this agreement. It is hard to see why the United States has not moved forward with ratification. Another recent initiative that may prove useful is the Global Initiative to Combat Nuclear Terrorism, proposed by Presidents Bush and Putin in July 2006. Last October, goals, principles and methods for this initiative were agreed by a group of like-minded states (see slide 7).

Yet international agreements alone are not enough. National legislation must be passed and related export control provisions strengthened in order to ensure serious penalties for trafficking of nuclear and radiological materials. Furthermore, convictions and sentences in accordance with these laws are necessary if they are to have any impact on the terrorist threat. Most countries today have more serious penalties for drunken driving than for nuclear materials trafficking. Convictions and sentences in accordance with strict legislation is also necessary if we want our laws to deter terrorists.

However, while there are reports of transgressions in various countries, where are the prosecutions? In the Western European court cases related to the A.Q. Khan trafficking ring there have been suspended sentences when individuals were convicted at all. In South Africa, an individual was convicted but given no prison time. Personally, I am not aware of significant sentences or fines handed out in any Russian cases involving nuclear or radiological materials – however, if such penalties have been handed down, they must be publicized to have a deterrent effect.

Securing Highly Enriched Uranium

As I noted earlier in my presentation, experts do not believe that terrorists are capable of enriching uranium, the material needed to create the simplest type of nuclear device. Thus, securing HEU is the most effective way to prevent terrorists from creating such a device. Both Russia and the United States have made progress in reducing access to HEU, but more needs to be done. The United States has increased requirements for the security of facilities with HEU. This is why the decision was made to shut down the pulsed reactor at Sandia National Lab and use computer simulations instead – to reduce security costs.³ The U.S. is also dramatically improving the security of HEU in storage (see slide

² <http://www.un.int/usa/a-59-766.pdf>; more information:

http://www.un.org/Pubs/chronicle/2007/webArticles/072407_nuclear_terrorism.htm

³ As then-U.S. Secretary of Energy Spencer Abraham stated in 2004, “[A]fter operations of three years or perhaps less, the Sandia Pulsed Reactor will no longer be needed, since computer simulations will be able to assume its mission.... When its mission is complete, this reactor’s fuel will be removed from Sandia National Laboratories, New Mexico, allowing us to reduce security costs at Sandia and further consolidate our nuclear materials.” “Remarks Prepared for Energy Secretary Spencer Abraham for the Security Police Officer Training Competition,” May 7, 2004.

13). The U.S. has also committed to converting all U.S. research reactors from HEU to LEU by 2014, as well as dozens of other reactors around the globe.

The Soviet Union recognized the need to reduce the accessibility of HEU when it decided to replace 80% enriched uranium in research reactors sold to other countries with 36% HEU back in the 1970s. Since that time, Russia has cooperated with the United States, other countries, and the IAEA to remove HEU from a variety of Soviet-built research reactors abroad, and developed the technologies to convert these reactors from HEU to LEU (see slide 14).

However, Russia has yet to convert any of its research reactors at home. As has been correctly noted by several RosAtom speakers in international fora, it will be increasingly difficult to explain to other countries why they should have to convert their reactors if Russia is not doing it at home. Furthermore, I do not believe that there has been a single site in Russia that has gotten rid of all of its HEU. Consolidating this material is an important step towards improving security. Shutting down obsolete and old reactors is also an opportunity to save on security upgrades and operational costs in the long run. That money can be put to better use creating centers of excellence that have the best possible research tools and the highest security standards. Indeed, Russia might consider making a few such centers part of its proposal on international nuclear fuel cycle centers, permitting top international scientists to use them and thereby encouraging other countries to close down their less up-to-date facilities.

Russia has an opportunity to provide its scientists with the best possible equipment while setting an example for the world in terms of nuclear security. Russian scientists have been very active in developing new LEU fuels, and should contribute to the international effort to create other technologies that use LEU or other non-HEU alternatives. Many countries are now interested in expanding their use of nuclear power, yet they are also becoming increasingly concerned about the threat nuclear terrorism.

Russia has been a leader in the area of international agreements, most recently by sponsoring the International Convention for the Suppression of Acts of Nuclear Terrorism. However, continued progress in preventing nuclear terrorism requires more than high-level agreements, important though they may be. It requires action on the ground. As one of the world's key users and suppliers of nuclear technology, Russia's example has a great effect the world over. If Russia were to consolidate its HEU holdings in the civilian sphere and convert research reactors to LEU wherever possible, and increase the security at sites that continue to use HEU, it would help in the efforts to persuade other countries, such as Ukraine, to give up their HEU holdings.

If Russia were to hand out severe sentences for the trafficking of nuclear and radiological materials, and publicize such cases, it would help deter would-be traffickers from handling such materials. If all states, including Russia and the United States, shared intelligence information on trafficking cases to the fullest extent possible, we would maximize our chances of preventing a nuclear terrorist attack. The attacks on New York and Washington on 9/11, the seizure of the Nord-Ost Theater in Moscow, and the tragedy

in Beslan, horrible though they have been, do not approach the level of damage and losses of life that a nuclear attack would cause. Working together, we can do more to prevent such a thing from ever happening.