PREVENTING NUCLEAR TERRORISM

THE MOSCOW-WASHINGTON ALLIANCE

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PREFACE

There is no counter-terrorism goal more important for protecting people than the fight to prevent nuclear terrorism. Such an attack could involve detonation of a nuclear bomb, but most specialists agree it is more likely to come in the form of a 'dirty bomb', using conventional explosives to disperse radioactive material, or using other radiological substances. The United States and Russia are working closely together to prevent such attacks. The two governments have taken on themselves a moral obligation to lead this fight since between them they account for around half of the world's nuclear reactors (civil and military) and the overwhelming share of nuclear weapons and related material.

This cooperation is just one example of many where the two countries share common interests and values that transcend other important concerns. We commend the governments for leading this initiative. The EastWest Institute (EWI) is particularly grateful to be able to support the common effort constructively through the analysis provided in this paper. As for all EWI papers of this sort, the views are those of the author alone. The paper has been released in time to inform discussion at a special meeting to be convened by the United States and Russia in Turkey on February 12-13 to devise practical measures for preventing nuclear terrorism.

We are grateful to Donald M. Kendall for his consistent support of EWI work on improving US-Russia relations. His support reminds us that the conduct of bilateral relations between Russia and the United States is not just for the two governments or about the two governments, but the sum of the efforts and achievements of businesses, communities, civil society organizations, individuals and governments working together to draw mutual benefit and inspiration from each other.

George F. Russell, Jr.
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EXECUTIVE SUMMARY

The United States and Russia have the biggest responsibility for countering nuclear terrorism because together they account for the overwhelming share of global nuclear materials, expertise and weapons. The two countries also have between them the most substantial capacities in counter-terrorism intelligence and response. There is little to separate the two in their policies against nuclear terrorism. Where there are differences in approach on some aspects of nuclear proliferation, the two countries have accepted an obligation as the pre-eminent nuclear powers to try to narrow their differences. The international community cannot defeat nuclear terrorism or limit it without an active and vigorous alliance between Washington and Moscow.

To increase the pace, and to inject new energy into their bilateral efforts, the Presidents of the United States and Russia on 15 July 2006 launched a new Global Initiative to Combat Nuclear Terrorism. Thirteen interested countries will meet in Turkey on 12-13 February 2007 to consider a practical work plan and ways of expanding participation. This EWI Policy Paper is intended to inform those discussions and the action agenda to be developed in coming years. The paper identifies key points for further action to counter the threat of nuclear terrorism. In particular, it addresses the measures that the United States and Russia must take together if their goal of suppressing nuclear terrorism is to be fulfilled.

The Litvinenko case in London in late 2006 reminds us that nuclear and radiological materials of the sort that terrorists might use can pass national borders easily. That case, alongside the unsolved anthrax attacks in the USA in 2001 and the Aum Shinrikyo attacks in Tokyo in 1995, also demonstrates that there are technical and/or scientific staff in the richer developed countries who have no scruples about using devices, substances or weapons with mass death potential. These cases also show that preparation for acts of terrorism with such weapons or devices may be very hard and at times impossible to detect. Thus, states will need to arrive quickly at procedures for detecting the presence of nuclear materials in significant transportation hubs. There are many other aspects of policing and customs control that bear on the threat of nuclear terrorism. These need to be coordinated against a clear risk management strategy: there are simply

not enough police and intelligence resources to detect all potentially threatening activity.

At the same time, much more needs to be done than simply tightening national legislation or strengthening national police capabilities. Substantive issues of wider application need to be considered at the meeting in Turkey. The scientific and technical community, the source of the advice needed by nuclear terrorists, has to be more directly involved in denying them the technologies. In the next 10 to 15 years, terrorism inspired by Al Qaeda will likely give way to violence inspired by other causes. The emergence of eco-terrorism, in response to rising panic about global warming, may be one such cause. So the issue of involving the scientific and technical community is much more complex than simply looking for sympathizers of just one cause. A number of longer term goals (such as a move toward the reduction or elimination of nuclear weapons stocks) may also have some relevance.

RECOMMENDATIONS

The next meeting in Turkey of the US-Russia Global Initiative should consider amongst other things the usefulness of the following measures:

- Globally applicable standards for inventory of nuclear materials and tracking their movement;
- Joint review and improvement of detection systems for nuclear material in transport hubs;
- Development of a shared database of personnel known to be involved in nuclear programs and monitoring of their activities;
- The role of Track Two processes, including scientists, technical staff and business representatives, in supporting official measures to prevent nuclear terrorism;
- Re-examination of objections to negotiation of a Fissile Material Cut-off Treaty, including a verification regime, and consideration of other related measures;
- Greater controls on materials which might be used in radiological weapons;
- A declaration of the need to negotiate a multilateral anti-missile treaty;
- A commitment by the five nuclear weapon states that are signatories to the Nuclear Non-Proliferation Treaty (NPT) to develop a timetable for the complete elimination of nuclear weapons.

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INTRODUCTION: THE THREAT

Since 1995, there have been three cases that confirm the danger that terrorists can have access to -- and no scruples about using -- devices, substances or weapons with the potential for mass killings. These cases also show that preparation for acts of terrorism with such weapons or devices may be difficult and at times impossible to detect.

The Aum Shinrikyo attacks in Tokyo in 1995 and the unsolved anthrax attacks in the United States in 2001 are the first two. The third is the poisoning of Alexander Litvinenko in London in 2006 with Polonium-210. Though this case is still being investigated by Britain's anti-terrorist police, most scenarios suggest that it can be read in one of only two ways. First, though the event may not have been an act of nuclear terrorism, it has to be taken as a warning of how undetectable the preparations for nuclear terrorism might be. Second, the death may have been the result of an active plan to conduct nuclear terrorism. (The term nuclear terrorism is understood to be a terrorist act using a nuclear or radiological weapon intended to kill or capable of killing hundreds or thousands of people with one attack.)

According to the Los Alamos National Laboratory in the United States, Polonium-210 is 250 billion times more toxic – weight for weight – than hydrocyanic acid,[1] the chemical used in Nazi gas chambers. Polonium-210 has been used as part of the trigger process in many nuclear weapons and Iran's reported experimentation with this substance is one of the main grounds for suspicion that it wants to develop nuclear weapons.

So regardless of whether the death of Litvinenko was directly linked to terrorists, its implications for the prevention of nuclear terrorism are much the same. According to two leading US and Russian specialists, the use of the Polonium-210 sample that killed Litvinenko and its spread through several countries around that time conform to the sort of situation envisaged in parts of the International Convention for the Suppression of Acts of Nuclear Terrorism adopted by the UN General Assembly without a vote in 2005.[2]

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[1] See http://periodic.lanl.gov/elements/84.html.

[2] See William C, Potter and Igor Khripunov, 'Polonium Mystery Sheds Light on Treaty', *San Jose Mercury News*, December 26, 2006, http://cns.miis.edu/pubs/other/potter_061226.htm. Professor Potter is Director of the Monterey Institute's Center or Non-Proliferation Studies. Khripunov, a former diplomat, is Associate Director of Georgia University's Center for International Trade and Security.

The adoption of that convention reflects in part the fact that the resurgence of terrorism since the mid-1990s is running in parallel with the declining legitimacy of the regimes embodied in the 1967 Nuclear Non-proliferation Treaty (NPT). Early hopes that the end of the Cold War might lead to the elimination or reduction of the nuclear threat dissolved with the emergence of North Korea's nuclear weapons ambitions in 1994 and successful nuclear weapons tests by India and Pakistan in 1998. The nuclear-related confrontation between Iran on the one hand and on the other, the IAEA, the permanent members of the UN Security Council and the European Union, has further weakened the non-proliferation regime. Concerns about the threat of nuclear terrorism have dominated US national security policy since 2002.

The possible link between the poisoning of Litvinenko and further acts of nuclear terrorism has been recognized by the UK, whose anti-terrorist police unit has been charged with the investigation and whose nuclear weapons research facility at Aldermaston was tasked with analyzing radiological samples taken from Litvinenko while he was still alive. Thus, regardless of whether terrorist groups currently have a nuclear weapon, nuclear terrorism has arrived. The Litvinenko incident seems to confirm the long-recognized threat of radiological weapons but it also reminds us that criminals and terrorists can obtain a key component for producing nuclear weapons and smuggle it undetected through the airports of countries on high alert against terrorist threats.

To an extent, it does not even matter whether terrorist groups have, or can gain access to, actual nuclear weapons. Creating widespread fear is the central element of any act of terror, as well as its measure of success. Thus the fear that terrorists might have the capacity to use the most dangerous radiological materials is already a partial victory for terrorists intent on spreading fear and disrupting daily life. At the same time, the Litivinenko poisoning also adds impetus to the search for ways to deal with nuclear terrorism across the range of necessary operations: detection, prevention, effects mitigation and prosecution and conviction of perpetrators.

The high level of mobilization of counter-terrorism agencies against the nuclear threat would surprise the general public. Some excerpts from the recent testimony of FBI Director Robert S. Mueller reveal the high level of concern:

> terrorists … continue to demonstrate an interest in acquiring and using …. radiological and nuclear weapons …. The ability of a terrorist group to build and use a radiological dispersal device is well within the capability of extremists who already understand explosives if they are able to acquire radiological material.[3]

Mueller noted that in July 2006, the FBI established a new Weapons of Mass Destruction (WMD) Directorate to bring together its disparate components addressing these threats. In testimony in 2005, another senior FBI officer outlined in broad terms the scale of the FBI effort against nuclear terrorism, including active cooperation through provision of training and other assistance to the law enforcement agencies of 53 countries.[4] There are thousands of staff in US government agencies whose main job on a daily basis is involved in studying the threat of nuclear terrorism or responding to it. As one small example of this work, all FBI field offices in the US are obliged to develop close relations with security personnel at critical nuclear installations. As another example, in FY 2005, teams from the US Department of Energy surveyed some 30 sites, including large public events such as the Super Bowl football game, and the State of the Union address by President Bush, to provide assurance that there were no nuclear threats.[5] (The same report found that only one major city in the United States had even been surveyed from the air for background radiation in spite of the obvious benefits for later detection of and response to nuclear threats from terrorists.[6])

Yet detection alone is no 'silver bullet', as a senior US official has observed. It is just 'one tool in the broad array of ongoing activities and emerging capabilities, systems and architectures' that is needed.[7]

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[3] Testimony to the Senate Select Committee on Intelligence, 11 January 2007, http://www.fbi.gov/congress/congress07/mueller011107.htm.

[4] See testimony by Deputy Assistant Director of the Counter-Terrorism Division, John E. Lewis, to the House of Representatives Committee on Homeland Security, Sub-Committee on Prevention of Nuclear and Biological Attack, 27 October 2005, http://www.fbi.gov/congress/congresss05/lewis10272005.htm.

[5] Government Accounting Office, 'Combating Nuclear Terrorism', September 2006, GAO-06-1015, http://www.gao.gov/new.items/d061015.pdf.

[6] ibid. p. 5.

[7] Testimony by the Deputy Undersecretary of Energy for Counterterrorism, Dr Steven Aoki, to the Senate Judiciary Committee, Sub-Committee on Terrorism, Technology and Homeland Security, 27 July 2006, http://www.nnsa.doe.gov/docs/congressional/2006/2006-07-27_SJC_Nuclear_Detection_Hearing_(Aoki).pdf.

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To increase the pace, and to inject new energy into their bilateral efforts, the Presidents of the United States and Russia on 15 July 2006 launched a new Global Initiative to Combat Nuclear Terrorism. The objective of the US-Russia global initiative is 'to prevent the acquisition, transport, or use by terrorists of nuclear materials and radioactive substances or improvised explosive devices using such materials, as well as hostile actions against nuclear facilities'.[8]

The US-Russia Global Initiative is one part of the many 'architectures' intended to address the threat. And its purview legitimately embraces a wide swath of measures, including missile delivery systems and consideration of efforts to reduce or eliminate nuclear weapons.

While having a new ring to it, the Global Initiative in reality appears aimed at jump-starting more practical action to implement agreements reached bilaterally and multilaterally over the preceding three or four years. Amongst other things, it will seek to identify shortcomings in national capabilities, legal and regulatory authorities, and partnership capacity to combat nuclear terrorism, and to develop means of covering those gaps.

The presidents agreed that the International Atomic Energy Agency (IAEA) has a leading role to play, particularly in view of its functions in implementing the UN Convention on the Physical Protection of Nuclear

[8] White House Press Release, 15 July 2006. http://www.whitehouse.gov/news/releases/2006/07/20060715-2.htm.

Material and Facilities[9] and its Nuclear Security Program. It will have observer status at future meetings of the Initiative.

Thirteen countries[10] endorsed a Statement of Principles[11] of the Initiative at a first meeting of partners in Rabat, Morocco, on 30–31 October 2006. Those countries will meet in Turkey on 12-13 February 2007 to consider a practical work plan and ways of expanding participation. This EWI Policy Paper is intended to inform those discussions and the action agenda to be developed in coming years. The paper identifies key points for further action to counter the threat of nuclear terrorism. In particular, it addresses the measures that the United States and Russia must take together if their goal of suppressing nuclear terrorism is to be achieved.

EARLIER MEASURES

The idea of boosting cooperation between the US and Russia (and more widely to include other states) on nuclear security issues related to terrorism, is not new. Earlier developments that led to the current initiative included UN Security Council Resolutions and a number of UN treaties. It also grew out of a continuing concern in some parts of the US Administration that Russia was not doing enough to safeguard its own stocks of nuclear weapons and materials.

In 2002, the Global Partnership against the Spread of Weapons and Materials of Mass Destruction, was proposed by President Bush, and launched by G8 leaders at their Summit in June that year. The goal of this partnership is to prevent terrorists or states that support them from acquiring or developing weapons of mass destruction. A further 13 states subsequently joined the partnership and contributed funds to it.

Subsequently, at their meeting in Bratislava in Slovakia in February 2005, Presidents Bush and Putin pledged enhanced nuclear security cooperation in the context of terrorism. At that time, they set up a senior interagency working group to develop and oversee a checklist of activities aimed at ensuring the security of nuclear materials and facilities. Specific agreements, including one for the disposal of 34

[9] The Convention was amended in 2005 to create a legal obligation to secure nuclear materials in storage and during transport, and to criminalize acts of sabotage against civilian nuclear facilities.
[10] The United States, Russia, Australia, Canada, China, France, Germany, Italy, Japan, Kazakhstan, Morocco, Turkey, and the United Kingdom.
[11] See *http://www.state.gov/t/isn/rls/fs/75845.htm*.

tonnes of weapons grade plutonium, were signed. But the presidents evidently felt that more speedy and substantial progress on other fronts was needed.

Another important predecessor of the Global Initiative was the Proliferation Security Initiative (PSI) launched by the United States on 31 May 2003. The PSI seeks to interdict the transport by sea or air of weapons of mass destruction (WMD) generally, including nuclear materials and missiles, by states and non-state actors of proliferation concern. It came as a direct result of the interdiction on the high seas of a North Korean ship transporting SCUD missiles that had to be subsequently released since the interdiction was considered illegal. Core countries participating in the PSI include, apart from the US, Australia, Britain, France, Germany, Italy, Japan, the Netherlands, Poland, Portugal and Spain, although a total of 60 states have declared varying degrees of support for it. Others have also participated in maritime interdiction exercises held pursuant to it, and some leading shipping countries, including Cyprus, Liberia and Panama, have signed mutual treaties with the United States to facilitate boarding inspections of ships flying those nations' flags. Other states, like China, have raised some objections to the legality of the interdictions.

In another measure, largely as a result of American and Russian urging, the Security Council adopted Resolution 1540 in April 2004. This resolution was aimed at preventing WMD from entering black market networks and, above all, keeping WMD and related material from falling into the hands of terrorists. An earlier Security Council Resolution (UNSCR) 1373 of 28 September 2001 – adopted in the immediate wake of the 9/11 terrorist attacks in New York, Pennsylvania and Washington, related to the sharing of information pertaining to the suppression of acts of terrorism generally. Presidents Bush and Putin, in announcing the latest Global Initiative, declared that the full implementation by all countries of the provisions of both Resolutions remained a priority.

In 2005, a new convention was signed after relatively accelerated negotiations. The International Convention for the Suppression of Acts of Nuclear Terrorism was adopted by the UN General Assembly without a vote. Russia and the United States were the first to sign (on 14 September of that year). The treaty provides for broad areas of cooperation among states for the purpose of detecting, preventing, suppressing, and investigating acts of nuclear terrorism. This treaty was a more specific application of principles already enunciated in the

International Convention for the Suppression of the Financing of Terrorism of 9 December 1999.

More generally, the whole issue of nuclear terrorism, and the question of safeguarding of nuclear weapons, materials and facilities, has to be seen against the background of the NPT, which, despite signs of fragility in recent years, remains one of the most widely endorsed multilateral treaties in history and a bulwark of the international non-proliferation and disarmament effort. And indeed Presidents Bush and Putin, in their 15 July 2006 announcement, reaffirmed the primary role of the nuclear weapons states (NWS) party to the NPT[12] in safeguarding nuclear materials and facilities under their control.

However, the fact remains that the cracks that began to appear in the fabric of the NPT with the inability of its parties to do anything effective in 1998 to curb the acquisition and testing of nuclear weapons by India and Pakistan – which were not parties to the treaty – have only widened more recently with the inability of the international community to contain the nuclear ambitions of states such as North Korea and Iran. The apparent acknowledgement by the Israeli Prime Minister in late 2006 of his own country's possession of nuclear weapons, while a surprise to no one, only added further fuel to the fire.

Apart from the generally successful efforts of the IAEA over the year to ensure that NPT parties only use nuclear energy for peaceful purposes, a number of those states have also banded together to take more practical measures to control the international trade in, and transport of, nuclear materials. The Nuclear Suppliers Group (NSG) was set up in 1974. As its name implies, its membership is made up of suppliers of either raw materials or the technology or equipment associated with nuclear energy. Its Guidelines, adopted in 1978, were amended in 1992 to include dual-use items. It currently has 45 members,[13] consisting principally of Western states and members of the former Soviet Union.

Despite some success, the NSG's Achilles' heel has been the fact that it is based purely on voluntary cooperation among members. Moreover,

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[12] The United States, Russia, Britain, France and China.

[13] Argentina, Australia, Austria, Belarus, Belgium, Brazil, Bulgaria, Canada, China, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Kazakhstan, Republic of Korea, Latvia, Lithuania, Luxembourg, Malta, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russian Federation, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, and United States.

the Group's guidelines are implemented in accordance with a member's national laws and practices and these vary considerably. Decisions on export applications are taken at the national level in accordance with national export licensing requirements. Given that NSG members include Russia and China, this has led to predictable tensions within the Group over those countries' real or perceived links with the nuclear programs of countries such as India, Pakistan, the DPRK and Iran. Given current international tensions over the nuclear ambitions of the two latter states, and particularly over the capacity or willingness of both states to furnish nuclear materials to terrorists, a large question mark hovers over the effectiveness of the NSG in recent times.

Nuclear Security in Russia

After the collapse of the USSR in 1991, there was widespread concern in the West, and particularly in the United States, about the security of the enormous Soviet arsenal of WMD, and especially its nuclear weapons, missiles and associated facilities. The US took a number of steps under the broad umbrella of the Nunn-Lugar Cooperative Threat Reduction Program, providing American technical expertise and over US$10 billion for cooperative projects to safeguard and destroy Russian WMD and related materials, technology, and infrastructure, and to prevent the proliferation of WMD expertise. This experience has no doubt conditioned US legislators and others to consider Russia a weak partner in the nuclear security debate. The need for steps such as the current Global Initiative is in a sense a possible further indication of this perception.

There is considerable evidence to suggest that in recent years, Russia has significantly tightened security over its nuclear arsenal, facilities, material and personnel. The state security apparatus, the FSB, has been much more vigilant in this regard, and the risk of Russian nuclear weapons, material or expertise falling into terrorist hands without state approval has been correspondingly reduced. But there are others who argue that these measures have not been sufficient.[14] And indeed, while the Russian economy has strengthened in recent years, the new-found wealth of some in Russia does not necessarily provide any inducement to lower-paid Russian nuclear personnel wanting to make a quick rouble by selling nuclear material or technology. The most recent

[14] Pluta, Anna M., and Zimmerman, Peter D., Nuclear Terrorism: A Disheartening Dissent, *Survival*, Vol. 48 No. 2, Summer 2006 pp. 55–70.

police interceptions of weapons-grade uranium in Georgia have shown that there are still weaknesses in the Russian system.[15]

It is vitally important that Americans put this fact into perspective against the unambiguous determination of Russia to stand side by side with the United States in preventing nuclear terrorism. The need to overcome existing weaknesses in control of nuclear materials and personnel in any country is a common fight, not one that should be left to each country to address by itself.

NEXT STEPS

The February 2007 meeting of Global Initiative partners will consider a work plan for carrying the Global Initiative forward. The following sections offer some comment on how the agenda for practical action might be advanced.

Policing

The Litvinenko case and its ramifications will no doubt be fresh in the minds of officials at that meeting, underlining the fact that the national origin of many potential nuclear terrorists and their materials will be the richer developed countries with advanced nuclear technologies and large pools of nuclear specialists. The case also shows that preparation for acts of nuclear terrorism may be difficult and at times impossible to detect. Thus, states will need to arrive quickly at procedures for detecting the presence of nuclear materials in significant transportation hubs. There are many other aspects of policing and customs control that bear on the threat of nuclear terrorism. These must be coordinated under a clear risk-management strategy: there are simply not enough police and intelligence resources to detect all potentially threatening activity.

Globally applicable standards for inventory of nuclear materials and tracking their movement will also need to be considered. Of necessity,

[15] In January 2006, Georgian police arrested a Russian trying to sell a small amount of weapons-grade uranium. He had indicated to possible buyers that he had much of the material in his home. A similar operation occurred in 2003. According to an IAEA database, there have been 16 previous confirmed cases in which either highly enriched uranium or plutonium have been recovered by authorities since 1993. See 'Georgian Sting Seizes Bomb Grade Uranium', *Washington Post*, 25 January 2007 http://www.washingtonpost.com/wp-dyn/content/article/2007/01/25/_AR2007012500169_pf.html.

this would include closer scrutiny of the sale and trade in uranium than those measures already in place; and ever stricter controls over the production and sale of dual use items in particular.

There is also a clear need for states to cooperate more closely, positively and effectively in coordinating and applying sanctions against recalcitrant proliferators such as North Korea and Iran.

Nuclear Personnel

One significant area needing closer attention is how to prevent the unauthorized transfer of nuclear expertise through the criminal acts or defection to a terrorist cause of nuclear-trained personnel. While Russia and Pakistan have been consistent targets of concern in this regard, the Aum Shinrikyo case in Japan involving chemical weapons and the still unsolved case of the use of Anthrax as a biological terror weapon in the United States confirm that any country with highly qualified technical personnel can be a source of threat. Thus, the visible tightening of security measures affecting nuclear materials and personnel in Russia needs to be duplicated elsewhere, including in the United States.

At the same time, remaining concerns about the monitoring of nuclear scientists in Russia must be addressed. It was in a conference in Moscow as recently as 2000 that a Russian security expert let it be known that the Taliban, then in charge in Afghanistan, had been trying to recruit Russian nuclear personnel. That attempt did not succeed, but it is known that at least three other nuclear experts left Russia to work in destinations that still remain unknown. The activity of foreign nuclear personnel in the domestic nuclear programs of Pakistan, North Korea and Iran is also well documented, as is the subsequent peddling of weapons technology by Pakistan's nuclear godfather A.Q Khan and some of his associates.

The possibility of such personnel falling into the hands of terrorist groups, and willingly or unwillingly working for them, remains a real one, and here the focus should not be only on Russia or the countries of the former Soviet Union. As already noted, control measures over nuclear security generally, including nuclear experts and expertise, have improved considerably in Russia in recent years. But there are of course other nuclear players in the field, including some who might be willing to make trained personnel available either on a commercial basis or as a fraternal gift.

One suggested step, and a highly intrusive one, is the creation of a shared database of personnel known to be involved in nuclear programs in any country; identification of the activities of such personnel should they travel abroad; preventing, or at worst monitoring, any contacts among such personnel and representatives of states or non-state groups of proliferation concern; and even possibly the interdiction/arrest of such personnel should they appear to be heading for a country of proliferation concern.

This would however probably be unacceptable in countries like the United States, but if the United States wants diplomatic support for such controls on Russian or Pakistani scientists, then it will need to find some middle ground that shows that all scientific communities are subject to similar observation.

Any step in this direction must look beyond current preoccupations with Al Qaeda and terrorists inspired by it. On the one hand, as suggested above, the effort needs to be global, and not aimed at only a few countries. On the other hand, the face of terrorism in 10-15 years will be quite different from today. The politics of war and peace, and of security, may well shift from Al Qaeda-style terrorism to eco-terrorism. In this scenario, there may be an even bigger prospect that scientific personnel from the richest countries will aid eco-terrorist use of nuclear weapons or materials.

Intelligence sharing, a subject of the Convention on the Suppression of Nuclear Terrorism, is obviously key to the process. States must continue to move forward to achieve more effective cooperation in this regard. There are many dimensions, some of which present significant obstacles, especially the possible compromise of national intelligence methods and sources. Yet if seen in a broader sense, the idea of information sharing can take several additional forms that promote the goal of preventing nuclear terrorism. Annual reporting, even at a broad level, to the UN and national parliaments on the nuclear terrorist threat could be one vehicle for raising the profile of the issue. More important, however, might be the creation of a Track-Two process involving security officials, nuclear scientists and business representatives of many countries to develop a common ethos and a system of prevention and early warning without the imposition of strict and impractical surveillance requirements.

A number of longer-term goals may also have some influence in shaping responses by individual nuclear personnel to possible

involvement in nuclear terrorism. Four eminent American statesmen (Henry A. Kissinger, George P. Shultz, William J. Perry and Sam Nunn) argued in January 2007 for eliminating nuclear weapons completely on this basis.[16] They saw 'reversing reliance on nuclear weapons globally as a vital contribution to preventing their proliferation into potentially dangerous hands'. There are reasons to be skeptical of the relevance of this move in practical terms to the prevention of nuclear terrorism, especially with the large amounts of nuclear materials and large numbers of weapons still in existence. At the same time, since no detection systems will be perfect, it is probably essential to include in the necessary prevention architectures a process that delegitimizes use of nuclear weapons by anybody, states and terrorists alike.

Legal Basis of PSI

Another positive step would be to give firmer underpinning in international law to the PSI. One possibility is that an existing treaty could be amended, or a new one developed, to cover a new crime of 'maritime terrorism'[17] It would be aimed at precluding transport of nuclear or associated materials of the type carried out by North Korea when it is reasonably suspected that the transport is for proliferation purposes contrary to the NPT. A similar provision might also be developed for the air transport of such goods. While it may be extremely difficult to arrive at a definition for such a crime, it is nonetheless worth trying.

An easier step, which would go a considerable way in diluting anxieties about the issue, would be to inject greater transparency and information dissemination into the exercise.[18] Many states might be more tempted to join if they had answers to questions such as who will be responsible for losses incurred as a result of interdictions? Is compensation provided? What happens to materials that are successfully seized? Also, what happens when information upon which an interdiction or seizure is based is wrong?

[16] George P. Shultz, William J. Perry, Henry A. Kissinger and Sam Nunn, 'A World Free of Nuclear Weapons,' *The Wall Street Journal*, 4 January 2007; p. A15.
[17] Bateman S., 'Practical Problems With Implementing PSI Against North Korea', AUS-CSCAP Newsletter No. 16, December 2003, pp. 27–28.
[18] *Ibid*.

Radiological Weapons

In many ways, a radiological weapon – a so-called 'dirty bomb' designed to spread radioactive material by means of a conventional explosion – may be more attractive to terrorists than an outright nuclear weapon. Mastering the technology involved in fission would not be necessary, and it could be easier to obtain the radioactive materials required rather than the fissile material required in a full nuclear bomb. Depending on the size of the conventional explosion and type of radioactive material used, the extent of damage to a city or its population might not be huge. But the panic and fear would be enormous, and the clean-up both costly and long-term.

Dirty bombs aside, radioactive materials have already been used on a number of occasions to kill individuals – the murder of Litvinenko being the latest example. In future, though, enterprising terrorists with sufficient quantities of radioactive material might find more innovative, non-explosive ways of dispersing a toxic substance. The states involved in the Global Initiative may thus wish to pay particular attention to radiological weapons in their February meeting.

Fissile Material Cut-off Treaty

Another issue which should be considered in the February meeting is the position of the principal states on negotiating a legally binding treaty banning production of nuclear materials for weapons – usually referred to as a Fissile Material Cut-Off Treaty, or FMCT.

The importance of negotiating such a treaty should not be underestimated in the long term. Its ultimate effect on nuclear terrorism would be to ensure there are no new sources of fissile material which terrorists might use to build a nuclear weapon or dirty bomb. In the short term, however, it would not have any positive effect on possible access by terrorists to existing stockpiles, nor for that matter to other radioactive materials which might be used in radiological weapons.

Nevertheless, an FMCT would significantly reinforce the non-proliferation regime by placing agreed limits on the nuclear activities of the states currently outside the NPT. Even more importantly, it would be a major step on the road to total nuclear disarmament. In that way, it would hopefully lead to the total eradication of existing stockpiles of fissile material and nuclear weapons – thus removing such material from the hands of terrorists forever.

Interest in an FMCT began after World War II, but was revived at the end of the Cold War, with the realization that both the United States and Russia had large stockpiles of fissile material greatly exceeding what was required for their military programs. In 1993, the Clinton administration swung the US position from opposition to support for a verified FMCT. But progress on the issue in the Conference on Disarmament in Geneva bogged down. The other NPT nuclear weapons states were prepared to take a back seat. China indicated that it was only prepared to consider an FMCT if there was a parallel agreement to begin negotiation of a new treaty on the non-militarization of outer space. Despite repeated calls from the UN General Assembly and NPT review conferences, the actual negotiation of an FMCT never began.

The situation was further complicated in July 2004, when in a move not dissimilar to that which scuttled the negotiation of a Biological Weapons Protocol in 2001, the Bush administration announced that while the United States still supported a legally binding FMCT, it no longer supported including verification measures in such a treaty. This was because such measures could compromise the national security of key states, and moreover would be unsustainably costly.

Since the NPT nuclear weapons states are theoretically bound by that treaty to produce no further fissile material, the most critical participants in any negotiation of an FMCT would be the states outside the NPT – India, Pakistan, and Israel, joined by North Korea, which has repudiated its NPT obligations, and Iran, with its own questionable nuclear program. India has, in the past, expressed interest in the goal of an FMCT while not committing itself to specific negotiations. Pakistan has done the same, though it wants to see such a treaty include existing stockpiles[19] – something India opposes. While none of the other states currently seems interested in participating in such negotiations, that could change in the future.

Given recent breakthroughs in US relations with India, including the supply of non-weapons nuclear technology and material, and the on-again, off-again nuclear negotiations with North Korea, there is at least some hope that an eventual FMCT is not a totally lost cause. But some

[19] Weapons of Mass Destruction Commission (the 'Blix Commission'), Weapons of Terror: Freeing the World of Nuclear, Biological and Chemical Arms, Stockholm, 2006, p.37.

sign is required from the older nuclear powers. There is no better time than the February meeting for the United States in particular to indicate at the very least a willingness to reconsider its negative position on a verification regime for any FMCT.

Related Measures on Nuclear Materials

A closely-related measure, which could precede negotiation of an FMCT, would be consideration of whether strategies can be put into place for the accelerated development of alternative technologies to allow the gradual phasing out of highly enriched uranium in peaceful civilian nuclear programs. This would go a considerable way in reducing the stockpile of nuclear materials which might inadvertently fall into the hands of terrorists and used in a dirty bomb. It would also eradicate another source of envy by those states not having the technology to highly enrich uranium for those that do.

Initiative members should also give serious consideration to supporting materially and financially the offer made in September 2006 by the Nuclear Threat Initiative (NTI) to donate US$50 million to the IAEA as seed funding for the creation and management of a stockpile of non-weapons grade nuclear material. This would guarantee states a source of fuel under strict non-proliferation controls should they choose to adopt a peaceful nuclear energy program. NTI made its offer contingent on at least one other state contributing a further $100 million to the stockpile. Such a contribution by the US, Russia and other Global Initiative partners would be a demonstration of serious intent by them.

Russia's President Putin publicly expressed support on 23 January 2007 for the establishment of international nuclear fuel enrichment centers under the control of international organizations, principally the IAEA, in effect endorsing the 2006 US proposal for a Global Nuclear Energy Partnership.[20] Further consideration needs to be given to this proposal as well.

While less directly relevant to the question of nuclear terrorism, such stockpiles and enrichment centers would diminish the temptation for states interested in nuclear energy to pursue a more aggressive weapons-related program. In turn, it would lessen the possibility of

[20] 'Russia favors international nuclear centers under IAEA control', Novosti Press Agency report, 23 January 2007, http://en.rian.ru/russia/20070123/59544393.html.

disaffected states in this category making nuclear weapons or related materials, technology or expertise available to terrorist groups.

Time for a Missile Treaty

Another major lacuna in international law is the total lack of any multilateral treaty to govern the production, trade or use of missiles.[21] The Fissile Material Control Regime (FMCT) has had limited success in applying the brakes on some countries' missile ambitions. However, the fact remains that the FMCT, like the NSG, is a relatively small group of countries applying national customs and other legislation on a purely voluntary basis. It does not include countries of missile and other proliferation concern such as Iran and North Korea, or for that matter India, Pakistan and others.[22] Nor has it prevented such countries from actively pursuing successful missile programs, including short, medium and long-range ballistic missiles capable of delivering significant payloads.

While some would-be nuclear terrorists might only seek to detonate a dirty bomb using conventional transport (shipping, trucks), the fact remains that state-sponsored or wealthy terrorists may have more sophisticated delivery systems at their disposal capable of delivering not only nuclear weapons, but chemical and biological weapons as well.

Although negotiation of an anti-missile treaty is likely to take years, partners in the Global Initiative may wish to consider whether now is the time to take the first step. It is not contemplated that they would actually start negotiating such a treaty, but they may wish at least to endorse the need for one.

NPT Commitment Timetable

While the issue of nuclear terrorism largely relates to non-proliferation or counter-proliferation, its immediacy and complexity often obscures

[21] Previous missile eradication treaties were bilateral, between the US and the former USSR. They included the Anti-Ballistic Missile Treaty, now abrogated by the US. In 2002, the US and Russia negotiated the Strategic Offensive Reductions Treaty (SORT) covering the eradication of some strategic nuclear missiles, though President Bush has subsequent removed the need for verified destruction required in the Treaty.

[22] China is not a member, but has indicated it will act in accordance with the FMCT's basic principles.

the other important pillar of the NPT: total nuclear disarmament.[23] The four statesmen mentioned above (Kissinger, Shultz, Perry and Nunn) made this very point, and presented a cogent set of proposals to make progress towards this goal.

They did not, however, refer to one significant issue which has equally wide implications for nuclear security and the NPT, and causes great angst in a range of countries much wider than only the more radical ones.[24] That issue is the total failure of the original five nuclear weapons states to commit to even developing a timetable for their fundamental obligation under the NPT to divest themselves totally of their nuclear arsenals and stockpiles. Despite the extensive nuclear disarmament which occurred in the US and Russia as a result of the START process, and despite all the recent initiatives, including the current one, to eliminate the possibility of nuclear weapons, material or expertise falling into the hands of terrorists, the all-important step of showing good faith by committing to a firm timetable for total nuclear disarmament has simply not been taken by any of the NWS. To the contrary, there are not so muted calls for the development of new classes of tactical nuclear weapons by the United States and the enhancement of existing weapons and delivery platforms by other NWS.

The argument from the NPT NWS is that the current international situation is hardly propitious for such a commitment. That may be so, but they have been saying that now for years. It is certainly understandable that countries such as the United States or Russia do not want to be caught in a situation where they are moving towards total disarmament, while states not party to the NPT retain their nuclear arsenals. However, committing to a timetable is not the same as total disarmament itself. Such a timetable in any case will, in practical terms, probably take many years, if not decades, to achieve its goal.

The gesture alone would be vital. It would be foolish to imagine that it would resolve the seemingly intractable issues. But it might at least be taken by some of the non-NPT NWS or aspiring NWS as an indication of good faith and willingness by the old NWS to break down the barriers

[23] See Harrison, Selig. S, 'The Forgotten Bargain: Non-Proliferation and Nuclear Disarmament', *World Policy Journal*, Fall 2006.

[24] Moderate countries so affected include the members of the New Agenda Coalition – New Zealand, Brazil, Egypt, Ireland, Mexico, South Africa, and Sweden. The Coalition was set up in 1998 in the wake of the Indian and Pakistani nuclear tests to try to inject some fresh thinking into multilateral consideration of the tests and the indefinite extension of the NPT.

between the nuclear haves and the have-nots. This in turn could possibly induce such states to be more willing to consider an FMCT and their own eventual commitment to a timetable for total nuclear disarmament. At the very least it might inject some new life into the next NPT Prepcom, scheduled for 30 April–10 May 2007 in Vienna.

At the end of the day, we need to bear in mind that while nuclear terrorism today is largely a non-proliferation issue (or, as the US would have it, a counter-proliferation issue), the access of terrorists to nuclear materials – and thus the central problem – would disappear if those materials themselves were to be eliminated.

CONCLUSION

The threat of terrorists acquiring nuclear weapons is real. Whether they build one themselves or acquire it through other means is largely irrelevant, except perhaps in relation to the extent of the damage it might cause. The willingness of such groups to actually use a nuclear weapon thankfully remains untested, though it can be presumed to exist. The FBI claims to have evidence of it. Terrorist groups have used other devices or substances with the potential to kill thousands. But this is to an extent irrelevant, since the threat of its use alone is a potent threat. Moreover, the likelihood of terrorists acquiring such weapons is growing as more states aggressively pursue their own nuclear ambitions, and an even wider group of states grows more embittered by the unequal nature of the NPT and the unwillingness of the original NWS to make even a small gesture towards a timetable for eventual total nuclear disarmament.

In 1996, the International Court of Justice firmly reminded the NWS of their obligation to negotiate and reach agreement on a comprehensive ban on nuclear weapons.[25] The Court was, however, unable to reach a firm opinion on the illegality of the threat or use of nuclear weapons. This, therefore, remains the ultimate goal: to establish a norm of international law declaring nuclear weapons illegal, regardless of whether it is states or terrorists who are using such weapons or threatening their use.

[25] International Court of Justice, *Legality of the threat or use of nuclear weapons*, Advisory Opinion of 8 July 1996, Opinion of the Court, para. 105(2)F.

There are many steps along this path, and many bricks must be laid down in building the overall norm. Many are already in place, both in relation to nuclear terrorism and nuclear weapons generally. But more are needed. The Global Initiative to Combat Nuclear Terrorism has the potential for significant action in this regard. To achieve real progress, it must consider an agenda of new and substantive ways of advancing both the anti-nuclear and anti-terrorism agendas. Merely repairing the mortar holding existing bricks together will not be enough.

These steps will not happen without sustained leadership by the United States and Russia. They have the means to lead. They have accepted the obligation to lead. On the one hand, they must deliver in terms of their own actions. On the other hand, they should keep pressure on all states, including those participating in the working meeting on 12-13 February 2007, to throw their weight behind an effective action agenda to be developed in the framework of the new Moscow-Washington alliance.

GLOSSARY OF ACRONYMS

FBI	Federal Bureau of Investigation (United States)
FMCT	Fissile Material Cut-Off Treaty
FSB	Federal Security Bureau (Russian Federation)
G8	Group of Eight
IAEA	International Atomic Energy Agency
NCI	Nuclear Cities Initiative
NPT	Non-Proliferation Treaty
NSG	Nuclear Suppliers Group
NTI	Nuclear Threat Initiative
NWS	Nuclear Weapons States
PSI	Proliferation Security Initiative
UNSCR	United Nations Security Council Resolution
WMD	Weapons of Mass Destruction

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