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The Sum of All Fears: Radiological Materials on the Global Market

Recent developments regarding the current nuclear threat have been far from reassuring. In November 2007, three men were arrested in Slovakia for an attempted sale of uranium believed to have originated from the former Soviet Union. The uranium was sufficiently enriched and potent enough to be used in a radiological "dirty bomb," which uses conventional explosives to scatter radioactive debris. Investigators are still determining who, ultimately, attempted to purchase the one kilo (2.2 pounds) of uranium in powder form, being marketed for one million dollars.

In 2003, police in the Czech Republic (which borders Slovakia) arrested two Slovaks in a sting operation after they sold undercover officers naturally depleted uranium for \$715,000. The arrests heightened long-standing concerns that Eastern Europe serves as a source of radioactive material for dirty bombs. In recent years, Ukrainian authorities arrested more than a dozen people on suspicion of smuggling or purchasing radioactive materials. Last year, the International Atomic Energy Agency (IAEA), the United Nations nuclear watchdog, registered 252 reported cases of radioactive materials that were stolen, missing, smuggled or in the possession of unauthorized individuals. This is an almost 400 percent increase since 2002.

The former Soviet Union, where security at nuclear-related industries deteriorated after the 1991 Soviet collapse, has traditionally been fingered as the main source for stolen, missing or smuggled nuclear material. A 2006 report conducted by the United States-based Nuclear Threat Initiative (NTI), an organization dedicated to reducing the global threat from nuclear weapons, identified Russia as the prime country of concern for contraband nuclear materials, despite the fact that over 400,000 nuclear weapons and materials were still present in Belarus, Ukraine and Kazakhstan when the Soviet Union dissolved. In 1994, however, these three countries agreed to return the stockpiled weapons to Russia.

Physical protection at some Russian facilities in the early 1990s was virtually non-existent. In 1998, it was reported that U.S. visitors to Moscow's elite

Kurchatov Institute of Atomic Energy found a building with 220 pounds of highly enriched material, enough to make several bombs, completely unguarded, because the cash-strapped institute could not afford to hire a single security officer. At other locations in Russia, U.S. visitors found alarm systems shut down because of unpaid electricity bills, cables cut by guards annoyed by false alarms and posts abandoned by guards who had left to pick potatoes. Russia's economic situation has improved immeasurably since then, leaving no excuse for such vulnerability today. This is particularly true in the wake of Beslan, the 2004 Chechen school hostage crisis and massacre that served as a wake-up call for concerns about large-scale terrorist activity worldwide.

The Current Risks

Additional disheartening information was announced in November 2007, when the Department of Homeland Security claimed the purchase of new radiation-detection machines had been put on hold because the devices are not sufficiently effective. In July 2006, the Homeland Security Secretary had announced plans to buy up to 1,400 new scanners to improve screening at the nation's borders. However, authorities at the NTI questioned the effectiveness of these new radiation monitors because both plutonium and enriched uranium, the primary ingredients for nuclear devices, emit levels of radiation low enough to be shielded from detection by lead. Thus the scanners may be easily thwarted. Currently, work is being done to make the scanners more effective, but the acquisition has been put on hold until that is accomplished. Additionally, although customs officers can now scan every container entering the U.S. for signs of radioactivity, all cargo at both foreign and domestic ports will not be scanned until 2012.

Securing nuclear materials and weapons at their source and establishing barriers to their transportation are key to preventing these dangerous items from falling into the hands of terrorists. However, security lapses such as recent alleged sleeping guards at a domestic atomic power station are prevalent and continue to present serious threats. A recent report by the U.S. Government Accountability Office recommended that nuclear weapons laboratories take tougher safety and security measures to fix a track record that includes a frightening array of oversights, accidents and near misses.

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The Sum of All Fears

About 60 years ago the United States and the Soviet Union were the only countries to have nuclear weapons. Despite their differences, both countries were intently focused on preventing either an accidental disruption or intentional sabotage of their weapons through highly organized and efficient security forces. Today, security is less certain. Nine countries now possess, or are thought to possess, nuclear weapons and materials: the United States, Russia, China, France, Great Britain, India, Pakistan, Israel and North Korea. Because some of these nations do not feel the weighty responsibility that the two superpowers felt sixty years ago, the mathematical odds are significantly higher that the detonation of a radiological weapon may happen in this decade.

During the initial 2004 presidential election debate between President George W. Bush and Senator John Kerry, the candidates were asked what they most feared. In a rare moment of agreement, both answered their single greatest fear was a nuclear terrorist attack upon the U.S.

According to our sources, on October 11, 2001, a month after the attack on the World Trade Center and Pentagon, President Bush came face-to-face with this terrifying prospect. At that morning's Presidential Daily Intelligence Briefing, George Tenet, Director of the Central Intelligence Agency (CIA), informed the president that a CIA agent (code-named Dragonfire) reported that al Qaeda terrorists possessed a ten-kiloton nuclear bomb, evidently stolen from the Russian arsenal. According to Dragonfire, this nuclear weapon was now on American soil, in New York. The CIA had no independent confirmation of this report, but neither did it have any basis to dismiss it. The following questions immediately came to mind: Did the Russian arsenal include a large number of ten-kiloton weapons? Yes. Could the Russian government account for all the nuclear weapons the Soviet Union built during the Cold War? No. Could al Qaeda have acquired one of these weapons? Yes. Could al Qaeda have smuggled a nuclear weapon through American border controls into New York without anyone's knowledge? Yes.

Experts who have studied this scenario, which strategists have rightly called the "problem from hell," disagree on

the odds of its successful execution, but none have completely discounted the very real possibility of it occurring. Were al Qaeda to select a heavily populated area, where on a normal workday up to half a million people crowd within a small radius, the results would be nothing less than catastrophic. In the end, the Dragonfire report turned out to be a false alarm, but in the weeks and months following 9/11, the American national security community focused on what was called the "second shoe;" no one believed that 9/11 was an isolated event.

A recent report commissioned by the NTI, "Securing the Bomb, 2007," recommended that new steps are needed to keep nuclear weapons out of terrorist hands. This report provides a comprehensive assessment of efforts to secure and remove vulnerable nuclear stockpiles around the world and calls for a detailed plan of action for reducing the risk of nuclear terrorism. The situation has already improved to a degree, particularly in Russia where joint American and Russian efforts have secured more and more of the weapons and stockpiles of nuclear material. However, the National Resources Defense Council estimates that no less than approximately 20,000 nuclear weapons remain in the world today.

The Soviets had the distinction of producing the world's largest nuclear bomb, the "Tsar Bomba," with an estimated yield of 1000 megatons, or 6,500 times the yield of the bombs dropped on Hiroshima and Nagasaki. The U.S. produced the smallest confirmed nuclear weapon, the "Davy Crockett," with a yield of 0.25 kilotons and weighing only 50 pounds. Currently, 32 nations possess approximately 3,200 tons of weapons-grade fissile material, enough to make more than 240,000 nuclear weapons. Today, only India and Pakistan openly produce weapons-grade fissile material.

Securing the world's supply of fissile material is estimated to cost between \$30-50 billion. Although terrorists are trying to acquire this material, no concrete information indicates they have been successful. However, according to the Justice Department, since 1992 Osama bin Laden and others have made efforts to obtain components of nuclear weapons.

Debate on the internationalization of the dangerous aspects of the nuclear fuel cycle actually predates the

inception of the IAEA in the 1950s. But this issue was never resolved and has become even more vexing with the drastic changes in the world since then. Projected increases in world population and per capita energy demand over the next few decades are expected to cause a substantial rise in global energy use. In addition, there is a growing interest in non carbon-based energy sources, including nuclear power. Currently, 435 nuclear power plants operate in 30 countries, and these figures continue to rise. An additional 28 plants are under construction, another 64 are planned, and countries ranging from China to South Africa propose 158 more.

Uranium is also a very specific commodity compared to other energy sources such as oil and gas. The same enrichment process used to deliver electricity-producing uranium from mines (low-enriched uranium) can be prolonged to produce highly enriched uranium used to make nuclear weapons. Distinguishing between the two represents a huge problem for both the future of energy markets and international security.

Scholars and experts are worried about three potential scenarios. The first is that subversion of state control over Pakistani nuclear weapons could allow terrorists easy access to them. Islamic jihadists could infiltrate the security and intelligence services in Pakistan, especially considering the numerous assassination attempts on the current president. In view of its current political instability, Pakistan must also be aware that nuclear experts can steal sensitive information or assist nuclear weapons programs of other countries or terrorist groups. For example, in the last two decades Pakistani scientist AQ Khan helped spread nuclear technologies to a host of countries, including Iran, Libya and North Korea.

Another potential scenario is that North Korea might sell materials or weapons to wealthy terrorist groups. North Korea has a documented history of collaborating with organized crime elements and selling missile technology to anyone with hard currency. In view of North Korean leader Kim Jong-il's hatred of the U.S., the possibility that Korea could supply terrorists with a nuclear capability is not unrealistic.

A third potential scenario is that Iran could acquire nuclear weapons and work with Hezbollah to sell them to terrorist groups. However, experts have identified

stolen materials as the most likely source of materials for terrorist, rather than materials provided by governments.

The 9/11 Commission Report found that al Qaeda has tried to acquire or make weapons of mass destruction for at least ten years, and also revealed additional details about occasions when Osama bin Laden's operatives were scammed in their attempts to buy nuclear weapons or materials. In addition, the CIA has tracked the careful and professional manner in which al Qaeda sought to acquire nuclear weapons since 1996. During May 2003, bin Laden obtained a fatwa, a religious proclamation, from a Saudi cleric providing religious justification to use nuclear weapons against the U.S. entitled "A Treatise on the Legal Status of Using Weapons of Mass Destruction against Infidels." With al Qaeda's central command reconstituting in the mountains of Pakistan, a stepped-up global campaign to secure every single nuclear weapon and every significant cache of potential nuclear bomb material worldwide is urgently necessary.

The Shape of the Danger

Investigation and interrogations of 9/11 conspirators determined the plot was planned over a period of six years. Another attack on America would take at least that long to organize and execute. Although it has been over six years since 9/11, several points are of urgent concern:

- Al Qaeda and associated terrorist groups are actively seeking stolen nuclear weapons and materials and recruiting nuclear expertise.
- Terrorists could plausibly build and detonate at least a crude nuclear weapon were they to acquire a sufficient quantity of highly enriched uranium.
- Tens of thousands of nuclear weapons, plus sufficient usable nuclear material to make a large number of weapons, are stockpiled around the world.
- Security and accounting arrangements for these nuclear stockpiles range from excellent to appalling. There are no binding security standards in place.
- A worrisome number of incidents of actual theft of weapons-usable nuclear material have occurred.
- Smuggling of nuclear weapons or materials is extraordinarily difficult to stop. Borders are porous, as witnessed by the inability to prevent the smuggling of narcotics and the trafficking of people throughout the world.

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A Plan for Action

The Russian physicist, peace advocate, dissident and 1975 Nobel Peace Prize winner Andrei Sakharov repeatedly called for reducing the risk of a nuclear war or accident. Now that the Cold War is over, a comprehensive strategy is urgently needed to achieve this. Since potential nuclear terrorists would have to successfully navigate several phases in order to detonate a bomb in the U.S., obstacles need to be implemented to reduce the risk at every phase in this journey. The group would have to acquire either a weapon or enough material to create a weapon so security at the source is paramount. They would then have to transport their weapon and themselves, most likely across several borders, creating the need for better border security. Lines should also be drawn to prevent "new nascent nukes," including an agreed moratorium to prevent additional states from enriching uranium or reprocessing plutonium. Additionally, there should be international mutual recognition that the world does not need any new nuclear weapons states. While the probability that terrorists could get and use a nuclear weapon can never be reduced to zero, the goal is to get as close to zero as possible, a small fraction of its current dangerous level.

The NTI and the Council on Foreign Relations recently commissioned separate studies regarding nuclear terrorism and concluded that a drastic reduction in the risk of terrorism will require a comprehensive strategy to include the following points:

Secure: Support the strongest possible efforts to improve controls over nuclear weapons and materials and to prevent their further spread. Every nuclear weapon should be secured and accounted for, using standards stringent enough to defeat the threats that criminals and terrorists pose. All nuclear facilities should be adequately protected from threats from the outside and the inside.

Remove: Potential nuclear bomb material should be entirely removed from the world's most vulnerable sites.

Disrupt: Place special emphasis on defensive measures that address nuclear terrorism while addressing other terrorist or criminal threats. Greatly strengthen

counterterrorism measures focused on detecting and disrupting groups with the skills and ambitions of nuclear terrorism, and take new steps to make recruiting nuclear experts more difficult. Organize and implement a defensive system that would define the responsibilities of each part of the government in combating the nuclear terrorist threat, by breaking down information sharing barriers and promoting international cooperation.

Interdict: A broad system of measures to detect and disrupt nuclear smuggling and terrorist nuclear bomb efforts should be put in place. These measures should include not only radiation detectors at the borders, but also adequate detection and searching procedures at the ports regarding containerized freight. Increased efforts concerning intelligence operations and stings to identify and arrest conspirators and penetrate the groups should also be implemented.

Prevent and Deter: Steps should be taken to ensure that North Korea and Iran have abandoned their nuclear weapons programs. The world cannot afford to allow these rogue nations, distinguished by their recent history, to be custodians of weapon-grade nuclear material.

The possibility of a coup d'etat or other political instability, coupled with the irresponsible management of nuclear weapons by developing nations during this period of nuclear proliferation, increases the danger for the entire world. As long as we continue to live with nuclear weapons and materials, completely eradicating nuclear terrorism will not be possible; however, the right strategy can tilt the odds strongly in our favor. Procedures must be put in place to secure every weapon, guard borders and prevent production of new weapons. In order to reduce the risk, as Andrei Sakharov repeatedly advocated, the world should take these recommendations seriously and engage the major parties in a global campaign to prevent nuclear terrorism. The time for urgency is now.®



The Lipman Report Editors