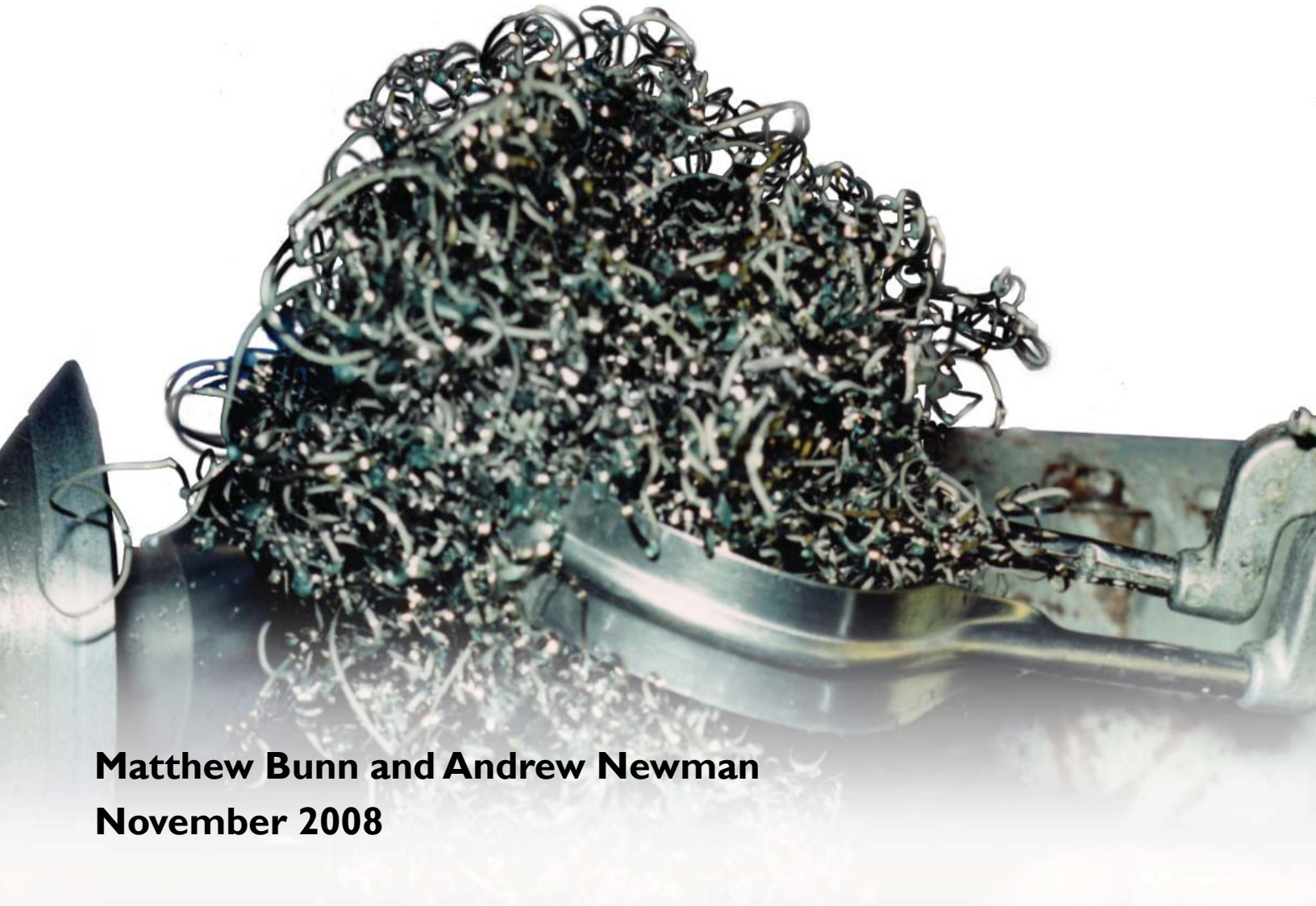
PROJECT ON MANAGING THE ATOM

PREVENTING NUCLEAR TERRORISM

An Agenda for the Next President



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Cover Image: Metal shavings from a Russian HEU nuclear weapon component.
Source: Oak Ridge National Laboratory

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Introduction

President-elect Barack Obama will take office in a world in which the danger that terrorists could get and use a nuclear bomb remains very real. Al-Qaeda is reconstituting its ability to carry out complex operations. Despite remarkable progress in improving nuclear security in Russia, serious risks of nuclear theft remain in that country. Pakistan's heavily-guarded stockpile faces severe threats from both al-Qaeda attackers and from insiders linked to violent Islamic extremists. Some 130 research reactors in 30 countries continue to use highly enriched uranium (HEU) as their fuel—in some cases, with no more security than a night watchman and a chain-link fence.

A single terrorist nuclear bomb could rip the heart out of any major city, turning it into a modern Hiroshima. Such a catastrophe would transform America and the world forever. Despite the myriad other challenges the new president will confront, President-elect Obama must make clear that keeping nuclear weapons and the materials needed to make them out of terrorist hands is a top priority of his administration that will not be pushed onto the back burner.

President-elect Obama has an historic opportunity to reduce the danger of nuclear terrorism to a fraction of its current level during his first term in office.

Existing programs have made substantial progress in reducing the danger that nuclear weapons or materials could be stolen and fall into terrorist hands. But major gaps remain, and the danger is still unacceptably high.[1]

Closing these gaps and accelerating the effort will not be easy. Complacency about the threat among policy makers and nuclear managers around the world, secrecy and sovereignty concerns, political disputes, and bureaucratic impediments all pose obstacles to expanded and accelerated progress that will be difficult to overcome. Breaking through these logjams will require sustained White House leadership, creative approaches, a comprehensive, prioritized plan, and adequate resources.

But President-elect Obama has an historic opportunity: by pulling those elements together, he can reduce the danger of nuclear terrorism to a fraction of its current level during his first term in office. As the president-elect has said, and as legislation he sponsored mandates, the target should be to remove nuclear weapons and materials entirely from as many sites as possible worldwide, and ensure highly effective security for all the remaining locations where these stocks exist by the end of his first term. That is a challenging goal—but U.S. security demands no less.

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[1] This paper summarizes the recommendations in Matthew Bunn, *Securing the Bomb 2008* (Cambridge, Mass: Project on Managing the Atom, Harvard University, and Nuclear Threat Initiative, November 2008), and provides additional detail on organizing the U.S. government to prevent nuclear terrorism and on steps that should be taken during the transition and the opening weeks of the new administration. *Securing the Bomb 2008* provides an updated nuclear terrorism threat assessment, in-depth analyses of the accomplishments of existing programs and the work yet to be done, detailed recommendations to reduce the risk, and complete references.

SECURING THE BOMB

This publication is part of the "Securing the Bomb" project commissioned by the Nuclear Threat Initiative, with additional support from the John D. and Catherine T. MacArthur Foundation and the Ploughshares Fund. Full text of all the reports in the Securing the Bomb series and hundreds of pages of additional information, including an on-line threat reduction budget database are available at http://www.nti.org/securingthebomb.

A Comprehensive Strategy

To accomplish this goal, the United States will need a comprehensive strategy with four key elements (in order of importance in reducing the risk):

- securing and reducing nuclear stockpiles around the world;
- countering terrorist nuclear plots;
- preventing and deterring state transfers of nuclear weapons or materials to terrorists; and
- interdicting nuclear smuggling.

To succeed in implementing this strategy will require forging a new sense of global cooperation and commitment to reducing the threat; organizing the government for success; and getting the United States' own house in order—including changing the political environment for nonproliferation by living up to our end of the nonproliferation bargain.

In the remainder of this paper, we provide more specific recommendations for each of these elements, and highlight the steps that must be taken immediately—during the transition and the opening weeks of the new administration.

Secure and Reduce Nuclear Stockpiles

Launch a fast-paced global nuclear security campaign. On taking office, President Obama, working with other world leaders, should forge a global campaign to lock down every nuclear weapon and every significant stock of potential nuclear bomb material worldwide, as rapidly as that can possibly be done—and to take other key steps to reduce the risk of nuclear terrorism. He should make it absolutely clear to countries around the world that this is a U.S. priority, and that providing effective security for any nuclear stockpiles they may have is essential to good relations with the United States—just as they have long understood that compliance with arms control and nonproliferation obligations is essential.

The goal should be to remove all weapons-usable nuclear material from the world's most vulnerable sites and ensure effective security wherever material must remain within four years or less.

The Global Initiative to Combat Nuclear Terrorism is a first step, which has been valuable in focusing countries' attention on the issue of nuclear terrorism and building legal infrastructure, capacity for emergency response, law enforcement capabilities, and more. But it has not focused on rapid and substantial security upgrades for nuclear stockpiles, and demands little of countries to count as partners. A modified approach—focused on locking down all nuclear weapons, plutonium, and HEU to high standards—is likely to be necessary to create the kind of fast-paced nuclear security campaign that is needed. Much of this campaign can be seen as simply implementation of United Nations Security Council Resolution (UNSCR) 1540, which legally requires all states to provide "appropriate effective" security and accounting for any nuclear weapons or weapons-usable material they may possess. The recently launched World Institute of Nuclear Security (WINS) can also play an important role, allowing operators to exchange best practices and approaches that have worked in achieving rapid and lasting improvements in nuclear security.

To succeed, such an effort must be based not just on donor-recipient relationships but on real partnerships, which integrate ideas and resources from countries where upgrades are taking place in ways that also serve their national interests. For countries like India and Pakistan, for example, it is politically untenable to accept U.S. assistance that is portrayed as necessary because they are unable to adequately control their nuclear stockpiles on their own. But joining with the major nuclear states in

jointly addressing a global problem may be politically appealing. U.S.-Russian relations have gone into a tailspin since the conflict in Georgia, making a real nuclear security partnership with Russia far more difficult to achieve, but no less essential—shared U.S.-Russian interests in keeping nuclear material out of terrorist hands remain. Such partnerships will have to be based on creative approaches that make it possible to cooperate in upgrading nuclear security without demanding that countries compromise their legitimate nuclear secrets. Specific approaches should be crafted to accommodate each national culture, secrecy system, and set of circumstances.

Seek to ensure that *all* nuclear weapons, plutonium, and HEU are secure. Terrorists will get the material to make a nuclear bomb wherever it is easiest to steal. The world cannot afford to let stovepipes between different programs leave some vulnerable stocks without security upgrades—the goal must be to ensure effective security for *all* stocks worldwide. Today, security upgrades in Russia are nearing completion, and there is significant progress in Pakistan, but the promising nuclear security dialogue with China does not yet appear to have led to major improvements in nuclear security there, and India has so far rejected offers of nuclear security cooperation. Upgrades in Belarus were delayed for years by poor political relations (though they are now nearing completion), and South Africa has not yet agreed to cooperate with the United States on nuclear security improvements, despite the November 2007 break-in at the Pelindaba Nuclear Research Center. Except for occasional bilateral dialogues, U.S. programs largely ignore stocks in wealthy developed countries, though some of these, too, are dangerously insecure. Sustained high-level leadership is needed to close these gaps.

Expand and accelerate efforts to consolidate nuclear stockpiles. President-elect Obama should place higher priority on working with countries to reduce drastically the number of sites where nuclear weapons and the materials to make them exist, achieving higher security at lower cost. The goal should be to remove all nuclear material from the world's most vulnerable sites and ensure effective security wherever material must remain within four years or less—and to eliminate HEU from all civilian sites worldwide within roughly a decade.

The Global Threat Reduction Initiative (GTRI) has greatly accelerated the pace at which research reactors are being converted from HEU to low-enriched uranium (LEU) that cannot be used in a nuclear bomb, and the pace of removing HEU from these sites to secure locations. But here, too, there are gaps that should be closed. New incentives should be offered so that much of the more than 13 tons of U.S.-origin HEU not covered in current GTRI removal plans will be sent back or otherwise eliminated. A new program should be established to give unneeded reactors incentives to shut down (an approach which may be cheaper and quicker, especially for difficult-to-convert reactors). The Department of Energy (DOE) should complete the necessary environmental assessments to pave the legal path for vulnerable nuclear material to be brought to the United States for disposition when that is the best available option.

President-elect Obama should launch new efforts to limit the production, use, and stockpiling of weapons-usable separated civilian plutonium—including renewing the nearly-completed late-1990s effort to negotiate a 20-year U.S.-Russian moratorium on plutonium separation. He should also terminate work in the Global Nuclear Energy Partnership (GNEP) that is focused on near-term reprocessing and recycling of plutonium in the United States, while supporting long-term research and development on both open and closed fuel cycle approaches.

Gain agreement on effective global nuclear security standards. As nuclear security is only as strong as its weakest link, the world urgently needs effective global nuclear security standards. All nuclear weapons and weapons-usable materials should be protected against the kinds of threats terrorists and criminals have shown they can pose—at a bare minimum, against two small teams of well-trained, well-armed attackers, possibly with inside help, as occurred at Pelindaba. (In some countries, protection against even more capable threats is needed.) As noted earlier, UNSCR 1540 legally requires all countries to provide "appropriate effective" security and accounting for all their nuclear stockpiles. The time has come to build on that requirement by reaching a political-level

agreement with other leading states on what the essential elements of appropriate effective security and accounting systems are, and then working to ensure that all states put those essential elements in place. Ultimately, effective security and accounting for weapons-usable nuclear material should become part of the "price of admission" for doing business in the international nuclear market.

Build sustainability and security culture. If the upgraded security equipment the United States is helping countries put in place is broken or unused in five years, U.S. security objectives will not be accomplished. President-elect Obama should step up efforts to gain top-level commitments from Russia and other countries to sustain effective nuclear security for the long haul with their own resources. He should also intensify programs to work with countries around the world to build strong security cultures, putting an end to staff propping open security doors for convenience or guards patrolling with no ammunition in their guns. As most nuclear managers only invest in expensive security measures when the government tells them they have to, President-elect Obama should greatly increase the focus on ensuring that countries around the world put in place and enforce effective nuclear security and accounting regulations.

Reduce stockpiles and end production. The United States, Russia, and other nuclear weapon states should join in an effort to radically reduce the size, roles, and readiness of their nuclear weapon stockpiles, verifiably dismantling many thousands of nuclear weapons and placing the fissile material they contain in secure, monitored storage until it can be safely and securely destroyed. Very deep reductions in nuclear stockpiles, if properly managed, would reduce the risks of nuclear theft—and could greatly improve the chances of gaining international support for other nonproliferation steps that could also reduce the long-term dangers of nuclear theft. As a first step, President-elect Obama should launch a joint program with Russia to reduce total U.S. and Russian stockpiles of nuclear weapons dramatically, and to place all plutonium and HEU beyond the stocks needed to support these low, agreed warhead stockpiles (and modest stocks for other military missions, such as naval fuel) in secure, monitored storage pending disposition. In particular, the United States and Russia should launch another round of reciprocal initiatives, comparable to the Presidential Nuclear Initiatives of 1991-1992, in which they would each agree to (a) take several thousand warheads—including, but not limited to, all tactical warheads not equipped with modern, difficult-to-bypass electronic locks—and place them in secure, centralized storage; (b) allow visits to those storage sites by the other side to confirm the presence and the security of these warheads; (c) commit that these warheads will be verifiably dismantled as soon as procedures have been agreed by both sides to do so without compromising sensitive information; and (d) commit that the nuclear materials from these warheads will similarly be placed in secure, monitored storage after dismantlement. President-elect Obama should also reverse the Bush administration's misguided opposition to a verified fissile material cutoff treaty, and lead work with other governments to overcome the obstacles to negotiating such a treaty.

Counter Terrorist Nuclear Plots

President-elect Obama should work with other countries to build an intense international focus on stopping all the elements of a nuclear plot beyond getting the nuclear material—the recruiting, fundraising, equipment purchases, and more that would inevitably be required. Because of the complexity of a nuclear effort, these would offer a bigger and more detectable profile than many other terrorist conspiracies—although, as U.S. intelligence officials have pointed out, the observable "footprint" of a nuclear plot might be no bigger than that of the 9/11 plot. The best chances to stop such a plot lie not in exotic new detection technologies but in a broad counter-terrorist effort, ranging from intelligence and other operations to target high-capability terrorist groups to addressing the anti-American hatred that makes recruiting and fund-raising easier, and makes it more difficult for other governments to cooperate with the United States. In particular, the United States should work with governments and non-government institutions in the Islamic world to build a consensus that slaughter on a nuclear scale is profoundly wrong under Islamic laws and traditions (and those of other faiths)—

potentially making it more difficult for those terrorists wanting to pursue nuclear violence to convince the people they need to join their cause.

Impeding terrorist recruitment of nuclear personnel. President-elect Obama should maintain existing programs focused on redirecting nuclear weapons scientists to civilian work, but should reform them to use a broader array of tools and to focus on a broader array of threats, including not only top weapons scientists but workers with access to nuclear material, guards who could help steal nuclear material, and people who have retired from nuclear facilities but still have critical knowledge. The United States is not likely to have either the access or the resources to carry out this broader mission itself, but must work closely with partner countries to convince them to take most of the needed actions themselves. President-elect Obama should also work with countries around the world to monitor and stop recruitment attempts at key sites, such as physics and nuclear engineering departments in countries with substantial Islamic extremist communities.

Preventing nuclear terrorism must become a central priority for U.S. diplomacy—an item to be addressed with every country with stockpiles to secure or resources to help, at every opportunity, at every level, until the job is done.

Prevent and Deter State Transfers

Hostile states are highly unlikely to consciously choose to provide nuclear weapons or the materials needed to make them to terrorist groups, for such a step would risk retaliation that would end their power forever. Nevertheless, the risk of such transfers is not zero—and more states with nuclear weapons would mean more sources from which a nuclear bomb might be stolen. President-elect Obama must engage with North Korea and Iran, working with other states to put together an international package of carrots and sticks large enough and credible enough to convince these governments that it is in their national interest to verifiably end their nuclear weapons efforts (and, in North Korea's case, to give up the weapons and materials already produced, if that can be achieved). At the same time, the global effort to stem the spread of nuclear weapons should be strengthened significantly. The United States should also put in place the best practicable means for identifying the source of any nuclear attack—including not just nuclear forensics but also traditional intelligence means—and announce that the United States will treat any terrorist nuclear attack using material consciously provided by a state as an attack by that state, and will respond accordingly. This should include both increased funding for R&D and expanded efforts to put together an international database of material characteristics. Policymakers should understand, however, that nuclear material has no DNA that can provide an absolute match: nuclear forensics will complement other sources of information, but will rarely make clear where material came from by itself.

Interdict Nuclear Smuggling

Most of the past successes in seizing stolen nuclear material have come from conspirators informing on each other and from good police and intelligence work, not from radiation detectors. President-elect Obama should work with other countries around the world to intensify police and intelligence cooperation focused on stopping nuclear smuggling, including additional sting operations and well-publicized incentives for informers to report on such plots, to make it even more difficult for potential nuclear thieves and buyers to connect. The United States should also work with states around the world to ensure that they have (a) units of their national police forces trained and equipped to deal with nuclear smuggling cases, and other law enforcement personnel should be trained to call in those units as needed; (b) effectively enforced laws on the books, and making any participation in real or attempted theft or smuggling of nuclear weapons or weapons-usable materials, or nuclear terrorism, crimes with penalties comparable to those for murder or treason, and (c) standard operating procedures,

routinely exercised, to deal with materials that may be detected or intercepted.

President-elect Obama should develop an approach that offers a greater chance of stopping nuclear smugglers at lower cost than the current mandate for 100 percent scanning of all cargo containers. This approach should focus on an integrated system that places as many barriers in the path of intelligent adversaries attempting to get nuclear material into the United States by *any* pathway as can be accomplished at reasonable cost, and work with Congress to get the modified approach approved. (In particular, it is important to understand that neither the detectors now being deployed nor the Advanced Spectroscopic Portals will have any substantial chance of detecting HEU metal with even modest shielding.) The Proliferation Security Initiative will certainly be one element of such a strategy—but it is likely to be much more effective in stopping transfers of large, readily identifiable items such as centrifuges and ballistic missiles than of nuclear material that can fit in a suitcase.

The fundamental key to success will be convincing political leaders and nuclear managers around the world that nuclear terrorism is a real and urgent threat to their countries' security, worthy of a substantial investment of their time and money.

Forge Global Cooperation and Commitment

All of these steps will require cooperation from dozens of countries around the world. Forging that cooperation must become a central priority for U.S. diplomacy—an item to be addressed with every country with stockpiles to secure or resources to help, at every opportunity, at every level, until the job is done.

A maze of political and bureaucratic obstacles must be overcome—quickly—if the world's most vulnerable nuclear stockpiles are to be secured before terrorists and thieves get to them. This will require sustained focus and leadership from President-elect Obama and others throughout his administration—and from other governments around the world. Several steps will be critical to overcoming the obstacles to expanded and accelerated progress in reducing the risk.

Building the sense of urgency and commitment worldwide

The fundamental key to success will be convincing political leaders and nuclear managers around the world that nuclear terrorism is a real and urgent threat to *their* countries' security, worthy of a substantial investment of their time and money—something many of them do not believe today. If the Obama administration succeeds in building that sense of urgency, these officials and managers will take the actions that are needed; without that sense of urgency, they are not likely to do so.

Some of this case is already being made, especially in the context of the Global Initiative to Combat Nuclear Terrorism and in discussions between key U.S. intelligence officials and their foreign counterparts, but much more needs to be done. Clear and compelling statements from President-elect Obama will help convince the world that the nuclear terrorism issue was not just a misplaced fear of the Bush administration, but a real and lasting concern that must be addressed.

In addition, several other steps should be taken to build the needed sense of urgency and commitment, including: (a) *joint threat briefings* at upcoming summits and high-level meetings with key countries, where experts from both the United States and the country concerned would outline the very

real possibility that terrorists could get nuclear material and make a nuclear bomb; (b) *nuclear terrorism exercises* with policymakers from key states, which can sometimes reach officials emotionally in a way that briefings and policy memos cannot; (c) *fast-paced nuclear security reviews,* in which leaders of key states would pick teams of security experts they trust to conduct fast-paced reviews of nuclear security in their countries (with U.S. advice and technical assistance if desired), assessing whether facilities are adequately protected against a set of clearly-defined threats (as the United States did after 9/11, revealing a wide range of vulnerabilities); (d) *realistic testing of nuclear security performance,* in which the United States could help countries conduct realistic tests of their nuclear security systems' ability to defeat realistic insider or outsider threats; and (e) *preparing shared databases of threats and incidents,* including unclassified information on actual security incidents (both at nuclear sites and at non-nuclear guarded facilities) that offer lessons for policymakers and facility managers to consider in deciding on nuclear security levels and particular threats to defend against.

Fulfilling U.S. arms reduction obligations

The Bush administration's failed approach to the Nonproliferation Treaty (NPT), rejecting all the United States' past commitments to arms reduction progress, has soured the atmosphere for cooperation with the non-nuclear-weapon states on a broad range of nonproliferation issues. A renewed U.S. commitment to the vision of a world free of nuclear weapons, coupled with early action on matters such as building support for ratification of the Comprehensive Test Ban Treaty and seeking rapid and substantial reductions in U.S. and Russian nuclear forces could significantly increase the chances for effective global support for countering nuclear terrorism.

Organize to Prevent Nuclear Terrorism

Putting someone in charge

The actions needed to prevent nuclear terrorism cut across multiple cabinet departments, and require diplomacy and cooperation in highly sensitive areas with countries around the globe. This work requires sustained effort, day-in and day-out, from the highest levels of the U.S. government—and other governments. Yet today, there is no one in the U.S. government with full-time responsibility for overseeing and coordinating efforts that are essential to preventing nuclear terrorism. As a result, while issues such as Iran and North Korea force themselves on to the front pages and the top of the agenda, the less visible dangers posed by unsecured nuclear stockpiles scattered across the globe get pushed to the back burner, receiving only intermittent high-level attention. Diplomatic roadblocks and interagency disputes fester unresolved, sometimes for years at a time. There is no overarching perspective across agencies with the power to direct strategy, policy objectives, programs, resources, and implementation to focus on the highest priority efforts to reduce the risk.

To resolve these issues, President-elect Obama should appoint a senior White House official whose sole responsibility will be to wake up every morning thinking "what can we do today to prevent a nuclear terrorist attack?"

Leading a comprehensive, prioritized effort. This single official would be responsible for conceiving, articulating, and coordinating a comprehensive, prioritized, government-wide strategy to reduce the risk of nuclear terrorism, linking that prioritized strategy to programs and resources, defining agency roles in executing or supporting that strategy, holding agencies accountable for delivering outcomes that achieve the strategy—and keeping this issue on the front burner at the White House every day. This official would take charge of setting priorities among competing objectives, seizing opportunities for synergy, and eliminating gaps and overlaps A key focus would be to find and fix internal and external obstacles to accelerated and expanded progress.

A senior figure. This official should be a senior figure who can command respect from the cabinet departments; someone who everyone understands is speaking and acting on behalf of the president. The position needs to be sufficiently senior so that the person has a seat at the table when high-level decisions about diplomatic and security priorities with other governments are being made. President-elect Obama should give this official the access needed to walk in and get a presidential decision whenever needed to resolve an issue.

Located in the National Security Council (NSC). This position must be in the White House rather than in any one cabinet department, because (a) this agenda can only succeed if it is clearly a presidentially-driven priority, and (b) critical efforts to prevent nuclear terrorism are ongoing in the departments of Energy, Defense, State, and Homeland Security, along with the nation's intelligence and law enforcement agencies. The position should be part of the National Security Council—probably a Deputy National Security Advisor—to ensure that the mission of preventing nuclear terrorism is fully integrated with U.S. national security and foreign policies.

A budget role. The NSC traditionally does not implement programs or allocate budgets itself. But experience indicates that when presidential priority is clear, strong NSC staff can work with the Office of Management and Budget (OMB) to ensure that agencies' budgets are aligned with strategy—and this would be a key role for this Deputy National Security Advisor. President-elect Obama should direct OMB to prepare a crosscut of all budgets related to preventing nuclear terrorism, and put those under a single budget examiner, to ease problems of coordination.[2]

A focused mission. While many aspects of nonproliferation and arms reduction are related to preventing nuclear terrorism, this senior official should not be charged with managing all of them. Issues such as the nuclear programs in Iran and North Korea, or arms reduction negotiations with Russia, already receive sustained high-level attention, and can and should be managed with existing structures. Adding them to this senior official's mission would inevitably force him or her to devote most of the available time to managing them, and the problem of insufficient senior-level White House attention focused on overcoming the obstacles to preventing nuclear terrorism would likely not be resolved.

President-elect Obama should appoint a senior White House official whose sole responsibility will be to wake up every morning thinking "what can we do today to prevent a nuclear terrorist attack?"

To ensure that the priority of preventing nuclear terrorism is adequately addressed, the senior official should have a voice in deliberations over policies toward Russia, Pakistan, North Korea, and every other country with a major role to play in preventing nuclear terrorism—but he or she should not be in charge of managing these policies.

Keeping the mission focused on direct measures to prevent nuclear terrorism might require Congressional approval, as the legislation to implement recommendations of the 9/11 Commission passed in 2007 calls for the establishment of a White House coordinator for all nuclear, chemical, and biological nonproliferation and counterterrorism.[3]

There are arguments both for and against having the same official be responsible for preventing and preparing for biological terrorism as well. On the one hand, biological weapons are the principal

[2] For this and other useful suggestions for aligning strategy and resources in this area, see Cindy Williams and Gordon Adams, *Strengthening Statecraft and Security: Reforming U.S. Planning and Resource Allocation* (Cambridge, Mass.: MIT Security Studies Program, June 2008), pp. 45-56.

[3] This is the mandate established in the *Implementing Recommendations of the 9/11 Commission Act of 2007*, P.L. 110-53, Subtitle D, Section 1841.

other technology that could conceivably allow terrorists to commit atrocities on a scale that could threaten international order, and efforts to prevent and prepare for biological terrorism suffer from a similar lack of sustained high-level attention to implementing a comprehensive strategy. On the other hand, biological and nuclear weapons have little else in common—the technologies, the industries, the national and international institutions, and the optimum strategies and responses involved are all vastly different.

A Senate-confirmed position? The 2007 legislation creates a Weapons of Mass Destruction Coordinator that would be a Senate-confirmed position, giving Congress a greater role in the process. In the past, the National Security Advisor and the NSC deputies and staff have typically not been Senate-confirmed, serving at the sole discretion of the president. As already noted, to give nuclear terrorism prevention the central place in decisions over diplomatic and national security priorities that it requires, the senior official leading the effort must be integrated into the NSC. There is, however, precedent for Senate-confirmed officials serving on the NSC staff. The Associate Directors of the Office of Science and Technology Policy, for example, are Senate-confirmed by statute, and in the Clinton years the Associate Director for National Security and International Affairs was dual-hatted as an NSC Senior Director. If, however, President-elect Obama preferred not to have this position Senate-confirmed, it is very likely that Congress would be willing to accommodate that choice.

A small staff. Whatever the specifics of the job description, this official will need at least a small staff to be able to rapidly find and fix key obstacles slowing progress, identify and seize new opportunities, develop modified approaches, and the like. The legislation Congress passed in 2007 appropriately recognizes that reality.

Similar officials in other countries. Once he has appointed an official to lead U.S. efforts to prevent nuclear terrorism, President-elect Obama should seek to convince Russia and other key countries to do the same. The designation of such an official would be a clear signal that a country understood the urgency of the nuclear terrorism threat and was ready to cooperate to address it.

Developing a comprehensive, prioritized plan

Today, the U.S. government has dozens of programs focused on pieces of the problem of preventing nuclear terrorism, each of which has its own plan for its own piece—and no comprehensive, prioritized plan. There is no systematic mechanism in place for identifying the top priorities or where there may be gaps, overlaps, or inefficiencies. One of the first priorities of the senior official dedicated to preventing nuclear terrorism must be to put in place a comprehensive, prioritized plan—and then continuously modify it as circumstances change.

Assigning adequate resources

Nuclear security is affordable: a level of security that could greatly reduce the risk of nuclear theft could be achieved for all nuclear stockpiles worldwide for an initial investment of roughly one percent of annual U.S. defense spending for a single year. President-elect Obama and the U.S. Congress should act to ensure that lack of money does not slow or constrain any major effort to keep nuclear weapons and the materials needed to make them out of terrorist hands. In particular, since new opportunities to improve nuclear security sometimes arise unexpectedly, and difficult-to-plan incentives are sometimes required to convince facilities to give up their HEU or convert a research reactor, President-elect Obama should seek, and Congress should provide, an appropriation in the range of $500 million, to be available until expended, that can be spent flexibly on high-priority actions to reduce the risk of nuclear theft as they arise. Such a flexible pool of funds would give the new administration the ability to hit the ground running with an expanded and accelerated effort. There should, of course, be notification and full accountability to Congress concerning how this money is spent.

Providing information and analysis to support policy

Good information and analysis on where the greatest risks, opportunities, and obstacles to progress lie will be crucial to preventing nuclear terrorism. President-elect Obama should act to ensure that U.S. and international policies and programs to reduce the risk of nuclear terrorism are informed by the best practicable information, from intelligence, other information collection, and analysis—including independent analysis and suggestions from non-government institutions. The highest-leverage area for information collection and analysis is likely to be supporting the design and implementation of programs to improve security for nuclear stockpiles—answering questions ranging from which sites have particularly large and vulnerable stockpiles, to which nuclear facilities have poorly paid staff or corrupt guards, to which research reactors are underutilized, underfunded, and might be convinced to shut down with a modest incentive package. In particular, President-elect Obama should continue the Nuclear Materials Information Program (NMIP), and ensure that it develops to provide a continuously updated assessment of all the sites and transport links worldwide where the U.S. government believes nuclear weapons or their essential ingredients exist; the quality and quantity of weapons or materials at each of these; the effectiveness of the security and accounting measures in place; and the scale of threats that those security measures must cope with. These factors together can provide an overall assessment of which sites and transport links pose the highest risks of nuclear theft.

A focused interagency group

President-elect Obama should establish a Deputies Committee under the leadership of the Deputy National Security Advisor for preventing nuclear terrorism, charged with coordinating implementation of the government-wide strategy to prevent nuclear terrorism.

In this effort, it will be important to make sure the right agencies have a voice. Traditionally, the Departments of Defense and State have been the key national security agencies of the U.S. government. Today, however, in the critical area of locking down nuclear weapons and materials around the world, it is the Department of Energy (DOE) that is doing most of the heavy lifting. In all discussions related to nuclear weapons and nuclear materials around the world, DOE must be considered a co-equal national security agency, and must have a place at the table.

Unified authority within departments

President-elect Obama should direct the Departments of Energy, State, Defense, and Homeland Security each to put all their efforts to secure nuclear weapons and materials around the world under a single official—or explain in detail why it is better to leave those efforts split. Today at DOE, for example, one office is charged with improving security for nuclear weapons and materials in the former Soviet Union, China, Pakistan, and India (though no cooperation with India is yet underway); another is charged with improving security at research reactors in developing and transition countries around the world (but not in developed countries); another is charged with making sure that recipients of U.S.-origin nuclear material follow at least minimal security measures; another is charged with collecting and analyzing detailed information on nuclear security worldwide; another is charged with working to strengthen IAEA recommendations on nuclear security; and so on. Much the same is true at the State Department. Pulling these efforts together would greatly ease the task of coordinating them.

Putting the United States' Own House in Order

The most urgent nuclear security vulnerabilities are largely in other countries. But there is much more that can and should be done within the United States itself as well, as recent incidents in the U.S. Air Force make clear. Convincing foreign countries to reduce and consolidate nuclear stockpiles, to put stringent nuclear security measures in place, or to convert their research reactors from HEU to LEU fuel will be far more difficult if the United States is not doing the same at home.

Fixing U.S. nuclear security weaknesses

DOE should continue providing funding to convert U.S. research reactors to LEU. Congress should provide funding for DOE to help HEU-fueled research reactors, or research reactors that pose serious sabotage risks, to upgrade security voluntarily. At the same time, Congress should direct the NRC to phase out the exemption from most security rules for HEU that research reactors now enjoy, and provide funding for DOE to help these reactors pay the costs of effective security. Congress should also insist that NRC bring its rules for protecting HEU into line with recent studies which make clear that the level of radiation considered "self-protecting" in current Nuclear Regulatory Commission (NRC) standards would pose little deterrent to theft by determined terrorists. At the same time, the NRC's requirements for protection of potential nuclear bomb material should be strengthened to bring them roughly in line with DOE's rules for identical material (particularly since the NRC-regulated facilities handling this material are doing so mainly on contract to DOE in any case, so DOE will end up paying most of the costs of security as it does at its own sites). Congress should also provide incentives to convert HEU medical isotope production to LEU, without in any way interfering with supplies, by imposing a roughly 30 percent user fee on all medical isotopes made with HEU. Using the funds to help producers convert to LEU would give producers a strong financial incentive to convert. Since the isotopes are a tiny fraction of the costs of the medical procedures that use them, this would not significantly affect the costs or availability of these life-saving procedures.

President-elect Obama should seek an appropriation in the range of $500 million, to be available until expended, that can be spent flexibly on high-priority actions to reduce the risk of nuclear theft as they arise.

Preparing for the worst

Finally, no matter what is done to prevent nuclear terrorism, it is essential that the United States get better prepared should such a catastrophe nevertheless occur. While some steps have been taken to prepare for the ghastly aftermath of a terrorist nuclear attack, a comprehensive plan and approach is needed. The United States needs a rapid ability to assess which people are in the greatest danger and to tell them what they can do to protect themselves. Better capabilities to communicate to everyone, when TV, radio, and cell phones in the affected area may not be functioning properly are also needed, as are much better public communication plans for the critical minutes and hours after such an attack. The U.S. government needs to do a much better job encouraging and helping people to take simple steps to get ready for an emergency. The United States also needs to put in place a better ability—including making use of the military's capabilities—to treat many thousands of injured people, along with more effective plans to keep the government and economy functioning while taking all the steps that will be needed to prevent another attack. (In particular, Congress has not yet acted to put a plan in place for reconstituting itself should most members of Congress be killed in a nuclear attack.) Many of these steps would help respond to any catastrophe, natural or man-made, and would pay off even if efforts to prevent a terrorist nuclear attack succeeded.

Steps for the Transition and the Opening Weeks

President-elect Obama should take several key steps during the transition and in the opening weeks of his administration:

1. **Appoint a full-time senior official for efforts to prevent nuclear terrorism.** President-elect Obama should appoint this official and decide on the official's job description early in the transition, so

that he or she can be working to prepare a strategy and hit the ground running when the new administration takes office.

2. **Issue a directive making clear that preventing nuclear terrorism will be a top priority for U.S. national security policy and diplomacy.** On taking office, President Obama should quickly make clear that this will be an issue driven relentlessly by presidential priority, a central agenda item with every country with stocks to secure or resources to help.

3. **Clearly enunciate the priority of preventing nuclear terrorism in the inaugural address.** In his inaugural address, President-elect Obama should highlight the danger of nuclear terrorism and call on all countries to work together to prevent it, putting in place stringent security measures for all nuclear weapons or materials they may have. This should come as part of a larger context recommitting to the vision of a world free of nuclear weapons, and near-term practical steps in that direction.

4. **Invite leaders to a summit on preventing nuclear terrorism.** President-elect Obama has pledged to hold a summit on preventing nuclear terrorism. This should be an early initiative, to communicate the priority he places on this effort. But the effort should also be carefully designed and prepared, to ensure that it results in real progress—particularly on rapid improvements in security for nuclear materials in the participating countries.

5. **Establish interagency "tiger teams" to develop approaches to overcoming the obstacles to progress for each major country with stockpiles to secure—and for developing global nuclear security standards.** The obstacles to gaining cooperation for nuclear security upgrades or removals of nuclear material in many key countries are difficult and complex. It will take creativity and the use of the capabilities of many agencies to find the packages of incentives and disincentives needed to overcome these obstacles. The same is true of gaining agreement on effective standards for nuclear security—a difficult problem where past efforts have largely failed. President-elect Obama and his senior official for preventing nuclear terrorism should immediately establish interagency teams to develop new approaches to getting these jobs done. These teams should bring together people with the vision for rapid action and people with practical experience of the obstacles and sensitivities, to avoid falling into the pitfall of making demands that only slow progress.

6. **Seek an appropriation in the range of $500 million, to be available until expended, that can be spent flexibly on high-priority actions to reduce the risk of nuclear theft.** Congress will have to pass a new budget for the remainder of FY 2009 by March 6, when the current continuing resolution expires, and the new president should seek to include this funding in that new budget.

Coping with the danger of nuclear terrorism will pose one of the fundamental challenges President Obama and the new Congress will face. With a sensible strategy, adequate resources, and sustained leadership, the risk of nuclear terrorism can be dramatically reduced during the next president's first term.

KEY RESOURCES ON NUCLEAR TERRORISM

Graham Allison, *Nuclear Terrorism: The Ultimate Preventable Catastrophe* (New York, N.Y.: Henry Holt & Company, 2004).

> A highly readable and alarming account of how terrorists might get, smuggle, and use nuclear weapons and materials, and what might be done to stop them.

Graham Allison (ed), "Confronting the Spector of Nuclear Terrorism," special issue of *The Annals of the American Academy of Political and Social Science*, Vol. 607, September 2006.

> An assessment of the strategies, tactics, ideologies, and technologies of nuclear terrorism, from authors including, among others, Graham Allison, Matthew Bunn, Robert Gallucci, Siegfried Hecker, Andrei Kokoshin, Sam Nunn, William Perry, and Stephen van Evera.

Matthew Bunn, *Securing the Bomb 2008* (Cambridge, MA and Washington, D.C.: Project on Managing the Atom, Harvard University, and Nuclear Threat Initiative, November 2008).

> The most comprehensive, up-to-date assessment of what has been done to secure nuclear stockpiles around the world, with an action agenda for next steps. Full text and hundreds of pages of supporting information available at http://www.nti.org/securingthebomb.

Ashton Carter, Michael May and William Perry, *The Day After: Action in the 24 Hours Following a Nuclear Blast in an American City* (Cambridge, MA: Preventive Defense Project, 31 May 2007).

> An overview of what would need to be done in the hours and days after a nuclear attack on a U.S. city, emphasizing the need for action to prevent a second or third attack, and for well-planned and exercised capabilities to limit deaths among those not killed in the initial blast. Available at http://belfercenter.ksg.harvard.edu/files/dayafterworkshopreport_may2007.pdf.

Charles D. Ferguson and William C. Potter with Amy Sands, Leonard S. Spector, and Fred L. Wehling, *The Four Faces of Nuclear Terrorism* (New York, N.Y.: Routledge, 2005).

> An overview of the 'four faces' of nuclear terrorism: the theft of a nuclear weapon; the theft or purchase of fissile material; attacks against and sabotage of nuclear facilities; and the acquisition of radioactive materials for a dirty bomb. Includes a careful exploration of what motivations would lead terrorists to pursue or not to pursue nuclear terrorism.

Michael Levi, *On Nuclear Terrorism* (Cambridge, MA: Harvard University Press, 2007).

> An account of the risk of nuclear terrorism that holds out substantial hope for reducing the risk through an integrated system of defenses, creating multiple opportunities to stop terrorist nuclear plots.

ABOUT THE PROJECT ON MANAGING THE ATOM

The Project on Managing the Atom (MTA) is the Harvard Kennedy School's primary group focused on reducing the risks of nuclear and radiological terrorism, stopping nuclear proliferation and reducing nuclear arsenals, lowering the barriers to safe and secure nuclear-energy use, and addressing the connections among these problems. The MTA project has been engaged since 1996 in research and analysis, public and policy-maker education, the development of policy proposals, and the training of pre- and post-doctoral fellows.

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