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Nuclear Terrorism: Are We Prepared?

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ABSTRACT

There has been significant discussion regarding federal and state preparedness for nuclear terrorism within the United States. This is a very broad and complex public policy issue. The efforts of federal agencies provide a sense of the framework and capacity of the US government to prevent, protect, respond, and recover given the scenario of a terrorist group's use of an improvised nuclear device. There are numerous federal programs supporting prevention and protection actions, with somewhat lesser development of response and recovery actions. However, it remains difficult to assess whether these actions are adequate or if more needs to be done, because the overall metrics for success have not been determined. A public policy approach to evaluating preparations for a nuclear terrorist event is required to allow decision makers to evaluate and better implement these efforts.

INTRODUCTION

Of the original National Planning Scenarios developed in the mid-2000s, the first involved the threat of terrorists employing a 10-kiloton improvised nuclear device in a large metropolitan area.[1] Using highly enriched uranium stolen from another country, an unnamed group builds its own nuclear weapon and drives to the center of a city to detonate the device. In addition to wrecking havoc on the city, the nuclear weapons effects – heat, blast, radiation, and EMP – create significant challenges to the immediate area around the explosion. The scenario depicts hundreds of thousands of injured people and more than a million displaced persons. This scenario is offered to state and local emergency managers as a basis to plan for how they are going to deal with this possibility – a scenario that mandates involvement by the federal government because of the catastrophic scope of the damage.

I can't answer the question as to whether state and local emergency responders across the nation are prepared for this scenario. What I can offer is that the problem isn't as challenging or as hopeless as one might believe. This scenario is not a certainty, nor is it nearly as probable an event as many other natural disasters or other deliberately caused incidents. But many planners fixate on this particular scenario as if the threat was imminent. Fortunately, the United States government (USG) has been working to reduce the threat of nuclear terrorism to the public for some time. This article will discuss the federal government's approach to the potential threat of a sub-state group planning to use a nuclear weapon against a US city. In particular, I will discuss the general threat; identify what the federal government is currently doing to reduce the threat; what the state/local emergency managers can do; and finally, the issue of whether the USG is doing enough. In this examination, I will use a public policy framework.

Public policy analysis provides a sound methodology to understand anything that the USG decides to do, or not do, in executing an effort in response to the public's needs. I prefer to use a book by Charles Jones titled *An Introduction to the Study of Public Policy* to provide a framework for this analysis.[2] Jones outlines a general process for how public policy is executed and discusses the roles of four sets of actors involved in any public policy discussion. He identifies four types of participants who vary in the roles they play in the policy process, the values they seek to promote, the source of goals for each, and their operating styles. This model can also group the main participants within each category of actors with regards to a discussion of responding to nuclear terrorism threats.

Rationalists include those people who employ reasoned choices about the desirability of adopting different courses of

action in resolving public problems, identifying the mission, and determining what it would take to accomplish stated objectives. The top policy makers in the Department of Defense (DoD), Department of Homeland Security (DHS), Department of Health and Human Services (DHHS), Department of State (DoS), Department of Energy (DoE), Department of Justice (DoJ), and Director of National Intelligence (DNI) are in this group.

Technicians implement policy, focused on specialized work associated with particular stages of decision-making. They are generally expected to use their professional training to meet specific annual targets that are defined by others. In this case study, this includes the Federal Emergency Management Agency (FEMA), Customs and Border Protection (CBP), Domestic Nuclear Detection Office (DNDO), Federal Bureau of Investigation (FBI), National Nuclear Security Administration (NNSA), DoE National Labs, US Northern Command and US Special Operations Command, the Bureau of International Security and Nonproliferation, and the National Counterproliferation Center and National Counterterrorism Center.

Incrementalists include the politicians who enable the policy to be executed, but do not believe that comprehensiveness and rationality are possible in the real world. As a result, they are satisfied with working at the margins, building from a base. This includes Congressional representatives as well as state and local politicians who fund policy initiatives, often in increments with limited objectives rather than in the full amount expected by policy makers.

Last, the reformists are those who believe that the urgency of the problem demands more sweeping measures to successfully achieve certain policy objectives. They do not usually care about limitations of money, power, or ability when advocating for a particular solution. In this case, we see the "Global Zero" movement, Nuclear Threat Initiative, arms control advocates, missile defense advocates, industry vendors, and think tanks such as the Harvard University Belfer Center, CSIS Project on Nuclear Issues, and the Ploughshares Fund.

The agenda for any political issue shifts according to which actor's agenda is most powerful or in play at any given moment. This can shift over time, and these actors can ally with each other or act against others. Each actor has strengths and weaknesses that complicate the discussion. These dynamics create a natural tension that can result in inefficiencies and challenges that set a particular pace of government action (or inaction). Understanding this process can aid in understanding to what extent the government is successfully addressing public concerns. This issue in particular is too broad and complex to be addressed in something less than a heavy book. There are many executive branch agencies with policy and decision makers determining the level of effort and what programs ought to be funded to address this threat. Similarly, Congress has an important role in the oversight and annual funding of these efforts. There may be some benefit to focusing on the role of the "technicians," as they have to implement government policy through particular projects to prevent, protect against, respond to, and recover from the threat of an unconventional nuclear weapon.

FORMALIZING THE NEED FOR ACTION

In April 2010, President Obama said, "The single biggest threat to US security, both short-term, medium-term and long-term, would be the possibility of a terrorist organization obtaining a nuclear weapon."[3] This concern over the threat of nuclear terrorism is not new. For decades, policy makers and analysts alike have worried that increased global access to nuclear materials and public knowledge of how nuclear weapons work would certainly lead to a nuclear terrorist incident. In the 1970s, the concern focused on the vulnerability of nuclear power plants; in 1997, it was Russian "suitcase nukes." Today, it's the concern that al Qaeda will obtain one of Pakistan's nuclear weapons and move it to the United States. Over the last decade in particular, the rise of transnational terrorism and growth of nuclear technology have increased concerns that the event will happen sooner rather than later (hence the saying, "it is not a matter of if, but when"). Many believe we are overdue

for such an event. For instance, in 2005, nearly two thirds of a group of nonproliferation experts believed that the probability of a nuclear attack somewhere in the world before 2015 was between 10 and 50 percent.[4]

While there has been no public confirmation that a terrorist group has ever obtained, is about to get, or currently has a nuclear weapon, anxieties over that end-state have been converted into conclusions. We do know that a nuclear weapon detonation would have catastrophic effects on a city. We do see the steady rise in transnational terrorist incidents. As a result, the federal government believes it has a responsibility to protect the American public from the threat of nuclear weapons.[5] Based primarily on the potential (theoretical) impact of a tactical nuclear weapon on a city and the increased availability of information on nuclear science and technology, the USG has decided to make this low probability/high consequence event a top national priority. Prior to understanding whether the response is appropriate, we need to better understand what the actual threat is and how it would emerge.

There are a number of threats that can be considered under the category of "nuclear terrorism." At the less probable end of the spectrum, a sub-state group could construct a small-yield nuclear weapon. People like to use the figure "10 kiloton" because that is seen as the minimal yield of a plausible improvised nuclear device using 25 kilograms of highly enriched uranium or eight kilograms of plutonium. Others suggest a sub-state group might steal or purchase a nuclear weapon from a "rogue state." On the more probable side are attacks on commercial nuclear facilities, either to take radioactive material or cause an accident to release radioactive contamination, and the theft of commercial radiological isotopes to create a "dirty bomb" or radiological dispersal device (RDD). Some people believe in the scenario of a terrorist-induced electromagnetic pulse (EMP) that could wipe out the nation's electronic grid.[6] For the purposes of this discussion, I am going to focus on the threat of a nuclear device being used by a sub-state group on a city within the United States.

The source of the threat is important to this discussion, even more so than the specific nature of the threat. By merely stating their intent to obtain "weapons of mass destruction" and their presence in Pakistan, a nuclear weapon-owning state, al Qaeda has caused the USG to attribute the group with nearly apocalyptic power to successfully attack the United States with a nuclear weapon.[7] Most USG literature on the topic of WMD terrorism does not talk about al Qaeda specifically; rather, the general term "terrorist groups" or even more generic term "non-state actors" is used. I prefer the term "sub-state groups" to describe these organizations. The phrase "non-state actor" can apply to a large cast of characters, including private security firms, paramilitary units, criminal organizations, drug cartels, "lone gunmen," and vigilantes, as well as terrorists and insurgents – basically anyone who is using violence as a method of persuasion outside of the government's authority. We are mostly concerned about those foreign violent extremist groups who aspire to transnational activities.

The popular assumption is that terrorists are actively working with "rogue nations" to exploit WMD materials and technology, or bidding for materials and technology on some nebulous global black market. They might be buying access to scientists and engineers who used to work on state WMD programs. The historical record doesn't demonstrate that. An examination of any of the past annual reports of the National Counterterrorism Center reveals that the basic modus operandi of terrorists and insurgents is to use conventional military weapons, easily acquired commercial (or improvised) explosives, and knives and machetes.[8] It is relatively easy to train laypersons to use military firearms, such as the AK-47 automatic rifle and the RPG-7 rocket launcher. These groups have technical experts who develop improvised explosive devices using available and accessible materials from the local economy. Conventional weapons have known weapon effects and minimal challenges in handling and storing. Terrorists get their material and technology where they can. They don't have the time, funds, or interests to get exotic. It's what we see, over and over again.

Military chemical/biological (CB) warfare agents, radiological material, and nuclear weapons are not easily obtained, outside of government laboratories. Nation states invest large amounts of people and funds to develop and test specific unconventional weapons, and if they were to give or sell these weapons to terrorists, one of two things could happen – either the weapons would be traced back to them, or the weapons might be used someplace where the nation-state really didn't want those weapons used. In theory, scientists recruited by sub-state groups could develop small quantities of military CB warfare agents, but the lack of access to fissile material would frustrate any ambitious engineer trying to build an improvised nuclear device.

There are other hypotheses as to why sub-state groups have been unable to obtain nuclear weapons and/or fissile material on the "global market." It could be that, despite the available information about nuclear weapons, these groups haven't developed the expertise, skills, or experience to design a nuclear weapon. It takes time, resources, and a secure facility to successfully develop such a weapon, and international efforts to combat terrorism may have been successful in stopping such efforts. It could be that the scientists and engineers who are attracted to sub-state groups are not capable of designing weapons. It is a particularly challenging task to take a particularly hazardous material, developed in a laboratory, and turn it into a reliable military weapon of mass destruction. Last, it could be that sub-state groups have been frustrated by the numerous black-market scams and intelligence sting operations, in which fraudulent persons claimed to have nuclear material.[9]

Sub-state groups are interested in chemical, biological, radiological, and nuclear (CBRN) hazards, however, because senior political leaders and military leaders publicly state, over and over again, how dangerous a release of these materials would be to the American public. So of course terrorists are interested in CBRN hazards, but they don't have the expertise to produce the specialized military warfare agents, they don't have any training in handling or storing them, and they don't understand how to deliver the agents to their targets with any degree of effectiveness. So one might see some attempts to steal chlorine gas cylinders from water treatment sites, some occasional attempts to produce ricin toxin from castor beans, stories about a few grams of radioactive material stolen from a facility – these are not materials that cause mass casualty events. But the fear persists, and so government leaders spend billions every year to reduce the already minute possibility that some sub-state group does develop or steal a nuclear weapon for the purposes of employing it against the United States. This leads to our public policy discussion: to understand how effectively the USG is performing in this case.

IMPLEMENTING THE POLICY

The federal government uses a combination of nonproliferation, counterproliferation, and combating terrorism tactics in its strategy to counter terrorist WMD threats.[10] There are significant challenges to the government's strategy, including developing intelligence on sub-state groups and nuclear material sources, securing fissile material and other radiological hazards, detecting and interdicting the transportation of nuclear material, rendering the nuclear device harmless, and determining where the nuclear device/fissile material came from. These challenges require significant technical expertise, and may require engagement with and active support from other nations to be successful. Since we cannot guarantee the perfect collection of intelligence, the continuously ready military assets for global interdiction, and quick attribution of the perpetrators, one requires an emphasis on nonproliferation activities to frustrate sub-state actors from acquiring fissile material in the first place.

The federal government uses the terms "prevent, protect, respond, and recover" (which probably sound very familiar to the homeland security professional) to describe the general tenets of this strategy. The definitions of these mission areas are found in the Presidential Decision Directive (PPD) 8, *National Preparedness*.[11] This is a linear approach that attempts to eliminate the chance of a successful terrorist WMD

incident in the United States by applying multiple layers of effort in a "defense in depth" approach. It involves a host of government agencies, most of which address conventional terrorism as well as WMD terrorism.

For the purposes of this discussion, I am not going to address the mission area of "mitigation." The current definitions of "prevent" and "protect" in PPD-8 appear to be focused on terrorism as a primary threat. It's unclear why mitigation was broken away from the "protection" mission area, other than perhaps to allow some focus on actions that the state or local governments might take to reduce the damage caused by natural disasters. The "National Mitigation Framework" is still a work in progress. But at least for this discussion on what actions the federal government undertakes with regard to nuclear terrorism, there does not appear to be a clearly defined set of activities for "mitigation."

The first mission area, *prevention*, includes those capabilities required to prevent sub-state groups from developing a WMD capability, including efforts to stop the illicit acquisition and movement of special nuclear material and associated technology. These measures include intelligence and law enforcement activities, supported by military counter-terrorism and technical response units, and also nonproliferation activities that would impede transfer of technical information or materials to sub-state groups. Under the Atomic Energy Act, the FBI is the lead federal agency for investigating all illegal activities involving the use of nuclear materials within the United States, including terrorist threats involving special nuclear materials. The FBI has its WMD Directorate, which investigates any known cases involving the illicit procurement and intended use of WMD materials.

The DoE Nuclear Emergency Search Team is a well-established asset that supports "render safe" procedures in addition to providing capability to search large areas for radiological and nuclear sources. The State Department would oversee any US government support to a radiological or nuclear terrorist incident in another nation (similar to its recent role in Operation TOMODACHI).[12] The Army's 20th Support Command and US Special Operations Command support domestic and international law enforcement activities (respectively), as well as providing capabilities to state/local requests for federal assistance in a pre-detonation situation.

There is a National Counterterrorism Center and a National Counterproliferation Center. While the two communities use similar intelligence sources and may be looking at similar regions in the world, they are fundamentally different. The counterproliferation community largely focuses on nation-states and means of producing WMD materials and technology. The counterterrorism community focuses on the people who may be seeking WMD materials and technology. Both communities are looking for WMD, but from different perspectives, using different agencies and different funding. Because of the classified nature of intelligence and law enforcement activities, there is not a great deal of detail that can be discussed here, other than their broad missions and objectives.

There are several arms control measures that attempt to reduce the proliferation of weapons and/or technology to other non-weapon states. These include the Global Initiative to Combat Nuclear Terrorism (with eighty-two nations as members), G8 global partnership (focusing on nonproliferation and combating terrorism topics), United Nations Security Council Resolution 1540 (which obligates UN members to enforce laws against WMD terrorism), and Global Threat Reduction Initiative and Global Research Reactor Security (both administered by the NNSA) programs. These programs all require the willing consent of partner nations to allow US agencies into their countries and to undertake the necessary changes in their own laws and regulations to secure nuclear material and technologies.

The DoD has a Cooperative Threat Reduction (CTR) program that aims to increase security at former Soviet Union nuclear, biological, and chemical weapon sites and to support destruction of said weapons. The Nuclear Nonproliferation Treaty (NPT) attempts to reduce the number of nuclear weapon-owning states by encouraging nations not to start nuclear weapon programs, and to encourage the

nuclear weapon-owning states to decrease their stockpiles. However, the CTR program and NPT measures do not directly address the threat of nuclear terrorism, other than to further limit the access of nuclear weapons to sub-state actors.

The second mission area – *protect* – includes those capabilities necessary to secure the homeland against acts of terrorism. There are specific measures designed to interrupt the flow of special nuclear material that might be transported along international trade routes. Probably the most well known is the Proliferation Security Initiative, a DoS-led effort that relies on existing national and international laws to interdict international transportation of weapons and material. Currently, the US Navy leads the sea-borne interdiction exercises and operations, but there is the concept of air and ground interception capabilities as well. The Global Nuclear Detection Architecture (GNDA) is a DNDO-led effort to place radiological monitors at every border crossing point, airport, seaport, and major city. The CBP runs the Container Security Initiative, which works with partner nations to put radiological monitors and processes at major overseas trading ports. In addition, the NRC works within the United States and with other nations to foster nuclear security at reactor sites.

The GNDA attempts to develop a multi-layered, international system that offers multiple opportunities to detect and intercept illicit trafficking of radiological and nuclear material. The desire is to intercept the material close to or at the "point of origin" instead of when the weapon is in transit or at its eventual destination. This effort includes support from DoD, DoS, DoE, DHS, and NRC. Because it is a "system of systems," it is difficult to determine the success of the overall process based on its parts. Similar to the nonproliferation activities, GNDA requires the willing participation of US partners to be effective.

The DoE Second Line of Defense program aids in establishing capabilities to detect nuclear and radiological materials in foreign countries at ports of entry, border crossings, and other designated locations. The DoS Export Control and Related Border Security Assistance Program undertakes similar efforts to provide radiation detection capabilities at border crossings, in particular in Eastern Europe. The CBP uses both handheld and portal-based radiation monitoring to detect nuclear and radiological materials entering the United States (Container Security Initiative and the Secure Freight Initiative). DOE leads the Megaports Initiative (addressing US-bound cargo from other nations' ports of departure).

The challenge in executing this ambitious effort is the ability to sustain such a massive architecture and to employ state-of-the-art instruments that can detect small amounts of special nuclear material, even if it is shielded or not accessible to visual inspections. DNDO has had some technical challenges with the sensitivity of its current detectors, but developing and deploying more sophisticated detectors has significant financial implications. In addition, while DHS has been successful in addressing the flow of cargo through most border crossing points and major seaports, there are many, many other avenues by which a determined sub-state group could move radiological material into the country.[13]

The most significant question is this: at what point do the federal government's attempts to interdict radiological and nuclear material become cost-prohibitive? When is the risk-based resourcing decision made that a certain level of preparedness is good enough? And is that level acceptable to Congress and the public? Those partner nations who have major seaports and airports that move cargo to the United States are very sensitive about the impact of any additional regulatory process on their economy. Inspecting every cargo ship sailing to the United States for radiological material costs money. On the other hand, some congressional politicians have demanded 100 percent screening of all in-bound US cargo and personnel to eliminate any chance of moving a nuclear weapon past the ports.

The third mission area is *response* to the threat, including those capabilities necessary to save lives, protect property and the environment, and meet basic human needs after an incident has occurred. I probably do not need to go into great detail here, as many are familiar with the National Response Framework (NRF) and the role of the federal

government here. The NRF has a special annex to address roles and responsibilities for responding to nuclear/radiological incidents.[14] If a nuclear weapons event were to occur, there would be considerable damage as a result of the explosive blast and thermal energy, in addition to the radioactive release. DHS/FEMA would coordinate the incident response, with DoE and DoD providing technical expertise, special capabilities, and logistics support. NASA gets involved if the response is for an incident involving the failure of a USG satellite that is powered by a nuclear reactor. DHHS would be supporting all medical response to any radiological or nuclear incident with its Strategic National Stockpile and other assets.

Within its "CBRN Response Enterprise," DoD has more than 18,500 personnel in National Guard and active duty units across the nation, ready to deploy in support of the federal response to a domestic CBRN incident. In addition, there would be a focused effort on determining the origin of nuclear material through technical forensics, not only to attribute the blast to a particular agent but also to attempt to identify and interdict any possible additional nuclear threats following the first incident. Both DoE and DoD have nuclear forensics capabilities. DoE supports nuclear forensics missions prior to a terrorist nuclear detonation, while DoD focuses on the post-detonation assessment. Other federal agencies, including the DHHS, EPA, and FBI would be heavily involved in any response to a radiological or nuclear incident, all as outlined in the NRF.

Everyone recognizes that the impact of a 10-kiloton nuclear device would be significant, and that the state/local emergency responders would be, for all practical purposes, instantly overwhelmed. Much of the needed support would not be technical; rather, there would be a great demand for medical response, security, and logistics capabilities. Certainly radiological and nuclear technical experts would be required. However, it may be that the real "value-added" by federal agencies would be from the more generic support units, similar to what would arrive in response to a major natural disaster event. DoD, in particular, would play a significant role given its ability to move and command large numbers of personnel in a very short period of time. The scale of destruction of any nuclear detonation would certainly require that intense application of manpower.

The last mission area – *recovery* – addresses those capabilities necessary to assist communities affected by an incident to recover effectively over the long-term. This step, identified as Emergency Support Function #14 in the NRF, is not specific to nuclear or radiological events, but certainly in such an event, the USG would address many issues required to restore a community back to pre-incident status. Perhaps the most significant issue of a nuclear or radiological event would be the time required to fully recover from the radiological contamination, which could take decades, depending on the particular isotopes involved. As an example, we can certainly look at the Japanese efforts in responding to the challenges involving the recent Fukushima reactor melt-down and envision similar steps with regard to an American response to any nuclear detonation within its borders.

Overall, the state/local role in the response to a nuclear terrorist incident is not remarkably different in nature than any other disaster or incident response. The "all-hazards" model presents an effective framework by which to exercise this capability, with the obvious need to understand exactly what technical challenges this specific hazard presents. It's not as if the physiological nature of radioactivity – specifically, alpha, beta, and gamma radiation – has changed within the last sixty years. But the desired balance between the long-term threat of radiological hazards and ever-present political desires to minimize public risk need to be clearly defined and addressed.

The real challenges for state and local emergency managers include directing resource allocation and prioritization, working with the federal government, and managing expectations. The Government Accountability Office has noted that, in particular, recovery planning is a responsibility of the state and local authorities, but it's a safe bet that the states and local communities are not thinking about or putting aside funds for long-term recovery after a nuclear terrorist incident.[15] It is vitally

important that state/local authorities work with the federal government on what measures would be required to address these issues in the event of such an incident.

In April 2010, more than 700 personnel from federal, state and local agencies and the private sector participated in a five-day homeland security exercise in Philadelphia. The EPA-sponsored exercise, called Liberty RadEx, was the largest drill of its kind to test the country's capability to clean up and help communities recover from a dirty bomb terrorist attack. The Pennsylvania Department of Environmental Protection and City of Philadelphia co-sponsored the drill. The participants thought it was a great experience, considering the size and scope, the diversity of agencies, and skills of players. It offered an opportunity for the state and city to gain valuable experience on recovery operations, and several areas of improvement were identified. This could be a great example for other states and cities to develop their recovery process prior to the involvement of federal agencies.

EVALUATING THE POLICY

Despite the repeated warnings of a nuclear terrorist incident "within the next three to five years," there have in fact been no nuclear incidents. There have been no reported "loose nuclear weapons." There are no known attempts by terrorist groups to build a nuclear weapon. One of the reasons for this current state of affairs is that *having the intent* to become a nuclear-weapon-owning state is not the same thing as *having the capability* to build and use nuclear weapons. This statement applies to terrorist organizations even more than nation-states seeking to develop nuclear weapons.

It is not easy to obtain or build a nuclear weapon, to determine how to employ a nuclear weapon, and then transport the device across the oceans without discovery and successfully detonate it within a city.[16] There are a number of significant steps in which the terrorist group has to be successful in order to obtain, move, and use a nuclear weapon. As the complexity of these steps increases and more people are involved, the footprint of these groups increases in visibility. This allows the USG a number of opportunities to intercept and defeat any group attempting to obtain these weapons. The more sophisticated the terrorists get and the more casualties they want to cause, the easier it is to catch them. But since there's always a very slim possibility that an unconventional nuclear event could happen, the US government has developed a plan to respond to that contingency.

It's clear that the US government does have a strategy to counter unconventional nuclear weapons use in the United States. There are numerous federal agencies involved in the preparation for such a contingency, and probably billions of dollars spent each year on their individual projects. But the important part of public policy is evaluating the overall success of efforts to determine whether changes are necessary or whether the effort is no longer needed. In this case, the actual metrics of success are unclear, if anyone is in fact trying to assess the effectiveness of the strategy at all. Part of the difficulty is that it is difficult to identify the actual scope of and monetary investments made in each area of the federal efforts, so it is difficult to state whether federal preparations are in fact adequate to address this particular challenge.

Another challenge is that it is very unclear what the measures of success are. Some will state that the measure of success is "zero nuclear detonations," but it becomes difficult to relate specific federal programs to that measure. That is to say, were there no terrorist incidents because all sub-state group efforts were interdicted, or were there no terrorist incidents because no sub-state groups were really trying? What is the baseline, if there are in fact no terrorist groups actively attempting to gain a nuclear capability? How do you determine which projects are performing well and whether others are not value-added? Do we really need to equip every mile of US border, every port of entry, and every city with radiation monitors? We cannot afford a "Fortress America" approach that relies on numerous monitors and cargo searches to stop nuclear terrorism.

As national energy programs become more stressed by competition for oil resources, many countries will look to

nuclear technologies for relief, a practice permitted under the Nuclear Nonproliferation Treaty, as long as those countries aren't looking for weapons technologies and as long as they allow international inspections. While in the past we have focused on nuclear weapon-owning states and sub-state groups, countries building nuclear reactors become increasingly important potential targets to monitor as well.[17] This complicates the evaluation of the process. And at the end, the question isn't just "how is the federal government doing against nuclear terrorist threats?" it is "how is the federal government serving the public in its efforts to protect and respond to all hazards?" It becomes a question of cost/benefit.

It's difficult to say what we as a country, at the federal and state levels, should be doing better. It all depends on the level of effort desired. In 2003, the Congressional Research Service noted that there is a need to balance the amount of funding that would be required to increase security in an effort to ensure "zero nuclear attacks" against the diversion of security personnel and resources from other, more likely threats. On the other hand, not paying enough attention to the threat will have political costs.[18] There probably is a middle ground somewhere, but it is difficult to articulate what that middle ground is (due to differences of opinion between interested policy makers, technicians, politicians, and advocates). For instance, in 2007, the Defense Science Board made a series of recommended actions to reduce vulnerabilities to weapons of mass destruction that offered very high payoff at relative low cost. Its report noted, "despite the high payoff and low cost, the task force found no evidence that these efforts are being aggressively pursued."[19]

As an example of the need to manage limited resources against many threats, let's examine the DHS-sponsored "Securing the Cities" initiative that started with a pilot project with the New York City's police department.[20] Its state and city emergency managers believe they are at an increased level of risk from attack by terrorists, including the potential detonation of a nuclear weapon. Because the city lacked the funding and expertise to address this kind of threat, DHS funded the design, development, and deployment of sensitive radiological monitors and cameras throughout the city and tested them in several exercises. If this pilot project were successful, it would be exported to other cities.

And there's no question, when one deploys sensitive radiation monitors all over the city and trained operators are actively looking for trace detections of radiological material during an exercise, one can track vehicles that may be carrying unshielded radioactive material and intercept them. The theory is sound, but it is also costly, assuming the desire is to maintain this capability 24/7 throughout the year. And one should understand that DHS paid for the monitors and the exercises, not New York City. So after a three-year effort, probably due to the exorbitant cost of the project,[21] the decision was made to terminate the program after 2010 and not expand it to other cities.

Now there may be a more modest effort that could be sustainable, where the city emergency responders could deploy this gear for special security events, such as inaugurations or specific holidays such as New Year's Eve. But sustaining this extensive capability throughout the year does not appear to be an affordable proposition, considering the need to address other existing and more probable threats. However, in 2011, Rep. Peter King (R-NY) sponsored a provision to continue and expand the effort. The White House has included a request for $27 million for this program in the fiscal year 2012 budget,[22] but there are many other demands on DHS along with projected cuts in its budget. It remains unclear what the future of this initiative will be and when (if) it will eventually end.

CONCLUSION

In his book *Will Terrorists Go Nuclear?* Brian M. Jenkins points out how the threat of nuclear weapons has been exaggerated by nuclear weapon analysts and political officials. He suggests that there has not been much attention paid to the reality that terrorists are not obtaining nuclear capabilities, even though they might have "intent." He believes the media

sensationalizes the story rather than being skeptical and looking for more rational discussions on the topic. In his book, he admits to have focused as a defense analyst on the relative threat of nuclear weapons and terrorism in the 1970s, instead of the absolute threat of nuclear terrorism in comparison to other, more probable public dangers. He suggests that the public's fear of nuclear terrorism is not an isolated case, that the American public in particular is susceptible to concerns over the general decline and eventual doom of the larger community. Because of the nature of nuclear weapons (cataclysmic, massively destructive) and general fear of terrorism, people give into their fears and expect the worst to occur.[23]

As a result of expectations that the federal government should protect the public against the threat of unconventional nuclear attacks, there is a federal strategy in place. This strategy was developed by a number of policy makers across several government agencies, and is implemented by specific federal agencies with directed agendas and budgets. Congress has an inherent role in deciding how much money goes to this effort, in its review of all government activities. There are numerous advocates for developing additional measures to reduce the threat of nuclear terrorism, with varied levels of influence. Further studies of these actors would highlight additional issues and challenges to how the federal government addresses this public policy issue.

The federal government uses a model of "prevent, protect, respond, and recover" to implement its counter-nuclear terrorism strategy. Federal efforts within prevention and protection are probably more extensive than the response and recovery, perhaps because the public (and Congress) expects the US government to prevent nuclear terrorist incidents from happening, rather than allocating large amounts of resources for responding to a nuclear terrorist incident. In addition, the prevention/protection efforts require more technical skills and expertise to address special nuclear material and activities of sub-state groups, while the response/recovery phases, being more general in nature (because of the all hazards approach), are already in place at the state and local level.

There is a significant challenge in trying to protect every aspect of US territory from terrorists obtaining or transporting special nuclear material, largely due to the sheer size of the United States and continued growth of nuclear technologies across the globe. There have been no specific metrics identified to state what exactly the US goals are and if they are on track or even achievable. This is not a unique problem – developing a resource-based strategy with measurable goals is difficult, and yet no one wants to be accused of doing nothing. So yes, there is a significant federal effort in place, but is it adequate? The challenge, as it is with all public policy discussions, is identifying the actors and their motivations, developing an agenda and legitimizing the program, getting the program funded and executed, and finally evaluating the program to determine whether it is meeting its goals. Only then can we determine whether the policy has been successful and whether more needs to be done.

ABOUT THE AUTHOR

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