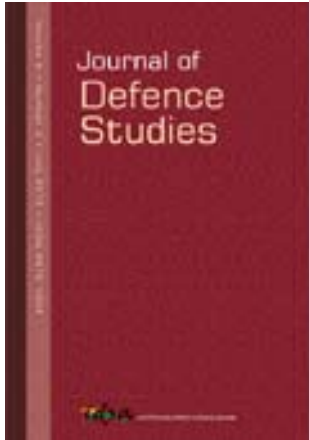


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Nuclear Terrorism Inevitable But Preventable?

*Raj Shukla**

The phenomenon of nuclear terrorism has been the subject of intense debate as also much hype. This article seeks to cut through the hype and examine the real portents of the threat in terms of event possibilities. In doing so, it calls for sobriety and balance in discussion, emphasizes the need to guard against ignoring numerous scientific facts and real difficulties along the way, and cautions against embracing unduly alarmist overtones. It further emphasizes the need to be resolute with regard to incident occurrence because the potential consequences of a nuclear terrorist attack are so devastating as to outweigh the very low probability of event occurrence.

If current approaches towards eliminating the threat of nuclear terrorism are not replaced with a sense of urgency and resolve, the question will become not if, but when, and on what scale the first act of nuclear terrorism occurs.

—Extracted from the US–Russia Joint Threat Assessment on
Nuclear Terrorism, May 2011

Terror is not in the bang but in the anticipation of it.

—Alfred Hitchcock

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INTRODUCTION

Threat Anatomy

The spectre of nuclear terrorism is often discussed across the strategic, defence, academic and media communities, with commentators conjuring the prospect of a nuclear 9/11, on the premise that it is as just as probable or improbable as 9/11 was before the terrorists piloted aircraft into the World Trade Centre with fatal consequences.¹ It may be useful to dissect the threat further in terms of the real capacities which define nuclear terrorism and the related paradigm of imagination and anticipation (threats, boasts, perceptions, leveraging of the virtual medium, media hype and academic debates) which contribute to the phenomenon of nuclear terror. The latter, many experts believe, has propelled the al Qaeda to the status of the world's first nuclear power without nuclear weapons.² Is 'nuclear terror', therefore, a bigger bug than 'nuclear terrorism'? Is the complex web of the 'imagery of terror' the bigger worry than 'credible capacities'? Has, as Alfred Hitchcock suggests, the 'anticipation' become the bigger problem than the 'nuclear bang'? Has mere 'theory' (what terrorists could possibly do) become the 'imminent threat'? Given the multi-layered complexities and grim consequences of occurrence, the subject of nuclear terrorism merits deeper investigation and analysis—albeit with some calm intellection and no-nonsense realism.

Aim

Nuclear terrorism in India may, as of now, only be a worst case scenario, a low probability, high consequence event, but the phenomenon of nuclear terror could push it to some kind of a baseline assumption. While in the state-on-state world of nuclear weapons credibility is central to deterrence, in the universe of non-state actors the terror created seems to exceed credible capacities. It is this proposition that this article seeks to investigate; in doing so, it tries to separate 'fears' from what 'we might reasonably expect'. While resolute steps must be taken to prevent nuclear terrorism at all costs, it must concurrently be endeavoured that India does not fall prey to the associated phenomenon of nuclear terror.

THE GLOBAL NARRATIVE

The fount of worry in the global narrative on nuclear terrorism revolves around certain well documented facts—stories about A.Q. Khan's private

nuclear black market network, Russia's missing suitcase nukes,³ reports of officials willing to sell nuclear material to crime/terror syndicates, attempts by terror networks to recruit Russian/Pakistani scientists, the demonstrated capacity of the Chechen mafia to craft a dirty bomb, international trafficking in nuclear material, actions of Japanese cultist Aum Shinrikyo which sought to buy an atomic weapon, the mystery of red mercury (a chemical compound, which it was widely advertised would enable terrorists to construct a miniature nuclear device), and bin Laden's discussions with Pakistani physicists and documents found at al Qaeda training camps in Afghanistan. While each of the afore stated incidents/attempts is well known and factually true, deeper investigation reveals that none of them made significant headway. Intent does not seem to have translated into credible capacity. Yet, perhaps the most important consequence of nuclear proliferation (symbolized by the afore stated exhibits) is the effect it could have on the prospect of a nuclear terrorist attack.⁴ The global narrative with regard to nuclear weapons of mass destruction (WMD), therefore, begs further study. In doing so, the activities of four actors, namely the Aum Shrinkyo Cult, the Chechen Rebels, al Qaeda and Iran reveal interesting facts.

The Aum Shrinkyo Cult

As far back as 1992, cult members contacted Russian officials seeking access to advanced weapon technologies and even tried to buy a nuclear weapon reportedly for US \$15 million.⁵ The cult recruited two Russian scientists and purchased land in Australia to mine uranium to be shipped back to Japan for enrichment by Aum's scientists and subsequent use in a nuclear device. The group also resorted to computer hacking to obtain information about nuclear facilities in Russia, Ukraine, China, South Korea and Taiwan. Nominated front companies sought to collect information about Japanese nuclear and research facilities to include names of participating scientists. None of these attempts, however, reached a stage wherein the cult was in a position to successfully detonate a nuclear device.

Chechen Rebels

In November 1995, a group of Chechen rebels planted a dirty bomb in Ismailovsky Park in Moscow—a 70 pound device composed of Cesium 137 (a compound with radioactive properties which is widely used for cancer treatment) and dynamite with potential to kill a few hundreds and injure thousands more. Significantly, the rebels seemed to be interested mainly in

creating panic while taking a conscious decision not to detonate the device. According to Brian Michael Jenkins, the rebels did not detonate either because they knew that the device would not work or that it would have little actual effect—it was far more useful as an instrument of terror.⁶ The planting of the device was more in the nature of a threat, a calling attention to the cause and not one of actual use.

al Qaeda

While the al Qaeda has deep-seated nuclear ambitions, there is no evidence of demonstrated success as yet. It was in the 1990s that it first began to explore ways and means to buy a nuclear weapon, acquire fissile material and recruit nuclear expertise. In 1992, Osama bin Laden transferred funds to Sudan's National Islamic Front, seeking laboratory assistance to develop advanced weapons. Laden's pointsman on nuclear weapons, Mandoub Mahmud Salim, reportedly offered \$1.5 million to purchase enriched uranium in 1993, but was conned with the sale of low-grade reactor fuel instead.⁷ In 1996, the organization tried to recruit a Russian weapons expert without success; in 2001, it successfully recruited two Pakistani scientists to its cause. After the al Qaeda was forced to flee Afghanistan in November 2001 (consequent to Operation Enduring Freedom), a treasure trove of documents revealing its nuclear intent were recovered from al Qaeda camps: diagrams, manuals, schematics, target folders, and records of meetings, among others.⁸ A detailed examination of the documents, however, revealed, that critical steps in the schematics were missing and that they were not credible weapon designs. Recent writings from the top al Qaeda leadership are focused on justifying the mass slaughter of civilians, including the use of weapons of mass destruction, and are intended to provide a formal religious justification for nuclear use.⁹ In sum, however, deep ambitions, some technical knowledge and a lot of fantasy is perhaps the best description of the al Qaeda effort. Interestingly, even within organizations like the al Qaeda, there is evidence of leaders debating the futility of indiscriminate carnage, thereby suggesting that even supposed madcaps impose discrete limits on their indiscretion.

Iran

There are others who opine that Iran, not al Qaeda, is in the vanguard of nuclear terror. Sometime in 2002–03, Iran allegedly masterminded a terrorist operation to crash an aircraft into the Seabrook nuclear reactor and destroy Boston.¹⁰ A terror cell with such plans underwent pilot training in

Canada, practised flying over a Canadian nuclear reactor and made ground visits to the reactor. The effort came to nought because the cell was busted by the Canadian police leading to arrests in Toronto in August 2003.¹¹

PATHWAYS

A nuclear device is much more than a can of plutonium wrapped with explosives: the challenges to surmount are issues of access to sufficient quantities of high grade nuclear fuel, weapon design, availability of specialist equipment, scientists, physicists, metallurgists and explosive experts as also the difficulties in actualizing critical mass. While theoretically terrorists could overcome these challenges, in practice the difficulties are huge. The conclusion, therefore, that terrorists today are nuclear capable is at best a surmise. It remains, of course, a dangerous possibility albeit with uncertain outcomes. It will be pertinent to examine the various pathways available to terrorists to put together a nuclear device.

Crude Bomb

Making a crude bomb is not easy, but is potentially within the capability of a technically sophisticated terrorist group.¹² A few persons with access to weapons grade material—about 20 kg of plutonium oxide/highly enriched uranium and a substantial amount of chemical high explosive could, within months, design a crude fission bomb of 1/10 kiloton (KT) yield. While being far less potent than the 13 KT device used in Hiroshima/Nagasaki in 1945, its impact will be sufficient to bring down a sky scraper, though not enough to bring down the entire city. The consequences will undoubtedly be horrendous, but not so ghastly so as to make the entire city unliveable. It will not, as some would like us to believe, kill everyone inside the city—certainly not all the heads of all branches of the government, the entire cabinet and the service chiefs; the leadership chain will survive. The central issue is this—terrorists do not have the capacity to fabricate nuclear devices in the 10 KT range and a 1/10 KT device, despite the horrific consequences, can be dealt with; in fact, with proper preparation and training, thousands of lives can be saved and the affected city and the nation will still surely survive.

Uranium Bomb

Should terrorists be able to lay their hands on highly enriched uranium (wherein the percentage of the U235 isotope is greater than 20 per cent),

they would be able to make a uranium bomb. This could be a preferred option because the design requirements are much simpler. The problem lies in actualizing the critical mass which would necessitate a trade-off between purity and quantity—the lower the percentage of U235, the greater the quantity of uranium would be needed. For example, while the critical mass for uranium with 90 per cent U235 content is 20 kg, that for uranium with 20 per cent U235 content is 400 kg. For terrorists seeking to put together a nuclear device, miniaturization requirements will make critical mass an elusive goal unless the uranium is sufficiently enriched. It is also significant that, while the quantities of uranium required to make a nuclear device are in the region of a couple of hundred kilograms, nuclear thefts/losses from nuclear/research reactors have never exceeded a couple of milligrams—access to nuclear fuel by terrorists, therefore, remains a significant challenge.

Plutonium Bomb

This is a greater possibility in nuclear powered economies since plutonium availability is more widespread. Even if the bomb does not explode but merely fizzles, the radiological dispersal (a dirty bomb banks on radiological dispersal and partial detonation—a couple of batteries and some sticks of dynamite with radioactive material would suffice to make one) would cause a radiological mess and, therefore, be a major terrorist event. This is especially because radioactivity from plutonium is far more persistent and deadly than that from uranium.

Sabotage

Terrorists could seize and sabotage a nuclear reactor, causing a meltdown and the consequent release of radioactive material. This would, however, require those terrorists to have an intimate knowledge of nuclear reactor operations, expertise which is not easily available. While a mere rocket attack would cause the nuclear reactor to automatically shut down, the consequences of a large commercial airliner crashing into a nuclear reactor are debatable (it may be useful here to recall that in 1972, hijackers threatened to crash a hijacked airliner into the nuclear reactor at Oak Ridge, Tennessee, USA).

Stolen Nuclear Device

It will be extremely difficult for terrorists to manufacture their own fissile material. State sponsorship is also unlikely because of the grim international consequences of discovery. There is widespread speculation, therefore, about the possibility of terrorists detonating a stolen nuclear device. In today's

awakened world, with measures like the Nunn-Lugar initiative¹³ and those initiated consequent to the Nuclear Security Summit in Washington in April 2010, the possibility of theft of nuclear devices has reduced significantly. Even if such thefts were to occur, detonating a stolen nuclear weapon would be difficult for terrorists since most modern nuclear weapons are equipped with technical safeguards such as electronic locks known as Permissive Action Links or PALs.¹⁴

Bogus Nuclear Device

A bogus nuclear device lies at the top of the possibility pile. Such a device composed of conventional explosives laced with radioactive material could be used to create the signature mushroom cloud of a nuclear bomb, thus causing significant panic.

EVENT POSSIBILITIES

Opinions on the occurrence of nuclear terrorism vary from those that dismiss it as 'virtually impossible' to others that opine that it is 'inevitable' if not 'imminent'. While it would be unwise to dismiss a nuclear event as 'virtually impossible', it would be prudent to embrace steps to prevent the 'inevitable' from becoming 'imminent'. More importantly, the discourse needs to be sober and balanced; we must guard against ignoring the evident scientific facts—difficulty of access to sufficient quantities of weapons grade material to achieve critical mass and the huge design challenges and difficulties—the improbability of collusivity between terror cells and nuclear scientists going undetected—and refrain from embracing unduly alarmist overtones. At the same time, we must be resolute with regard to incident occurrence because the potential consequences of a nuclear terrorist attack are so devastating as to outweigh the very low probability of occurrence of such events.¹⁵

While considering the possibility of nuclear terrorism, it appears that a radiological fizzle will be the more likely occurrence. The detonation of a crude bomb of 1/10 KT yield by terrorists may be within the realm of possibility, but is a difficult proposition. Similarly, while a bogus nuclear device—more of a panic inducing event rather than a significant nuclear occurrence—and the possibility of an aircraft crashing into a nuclear reactor are within the realms of possibility, detonation of a stolen nuclear device seems rather unlikely. It may be prudent, therefore, to focus on the more likely proposition of weapons of 'mass disruption' rather than 'mass destruction'—that is, a radiological or dirty bomb. Michael A. Sheehan,

former New York City Deputy Commissioner for Counter Terrorism and later Ambassador at Large for Counter Terrorism at the US Department of State, in his book *Crush The Cell—How To Defeat Terrorism Without Terrorising Ourselves*, mentions the existence of radical terror cells in New York City with the education and professional experience to acquire nuclear material and transform them into terrorist weapons.¹⁶ Sheehan warns of the possibility of such terror cells linking up with a medical technician or radiologist (with access to Cesium-137 in a cancer treatment hospital) or a construction engineer (with access to radioactive isotopes such as cobalt 60¹⁷) and putting together a hit team to set off a radiological device in a densely populated area of a city. The author also recounts the exploits of Abu Issa al Hindi, an Indian national with strong jihadi credentials who fought in Kashmir against India. Hindi apparently conducted reconnaissance of Wall Street, the Citigroup Centre in mid-town Manhattan and other targets in Newark, New Jersey and Washington DC in 2000 with a view to plant a nuclear device. One of the 'stars' of al Qaeda, Hindi, however, did not move beyond the talking phase of the operation.¹⁸ The worry in the Indian context is the possibility of Kashmir-based terrorists taking a leaf out of the Hindi book, pushing their imagination and setting off a nuclear device in an Indian city.

THREAT IN THE INDIAN CONTEXT

The al Qaeda, if and when, it embarks on a nuclear venture, is more likely to pursue targets in USA/Europe.¹⁹ The threat in the Indian context, therefore, flows principally from the prospect of 'loose Pakistani nukes' or a homegrown cell in India setting off a radiological device or a crude bomb of 1/10 KT yield in the manner alluded to earlier in the article. How real is the threat from 'loose Pak nukes'? While the widespread view is that Pakistan's nuclear arsenal is reasonably secure, recent terrorist attacks on the Mehran and Kamra bases have renewed concerns. If the country's key military installations are vulnerable to penetration through force, stealth and the exploitation of insider information, so could the country's nuclear weapons.

There are a few reassuring features, however, about the Pakistani nuclear system. It is reliably learnt that not only are Pakistan's nuclear warheads demated from the delivery systems, the warheads themselves are disassembled.²⁰ Base security at nuclear installations or military bases housing nuclear material is three-tiered, under the command of the Strategic Plans Division (SPD) and qualitatively superior. The first level (or inner ring) is managed by the SPD whose directorate in charge of nuclear security is led by a two-

star general and is endowed with its own counter-intelligence teams. The second level is physical to include electronic fencing, a web of sensors, and so on. The third level (or outer ring) consists of surveillance and monitoring of suspicious activities around the sites, with ISI involvement. The SPD has set up a 'Special Response Force' to deal with nuclear incidents; it has a system of sensitive material control and accounting which involves regular and surprise inspections. It has adopted inventory systems to track individual components of warheads even as the vehicles and containers used for storage and transportation are theft and tamper-proof. Additionally, the Pakistan Nuclear Regulatory Authority (PNRA) was created in 2001 and has on its roster 200 experts who are in charge of the physical security of fissile material and radioactive sources. The military is intimately involved and the SPD's director general is a member of the PNRA. A five-year Nuclear Security Action Plan, designed to enhance the safety and security of nuclear material and radioactive sources, has also been put into place by the PNRA since 2006.²¹ Screening checks of personnel associated with nuclear weapons/installations are stringent—personnel are screened every two years, with less than 5 per cent passing the screening process. Screening procedures have been set up to ensure the loyalty and mental balance of personnel serving in the most sensitive positions. Two different programmes exist: a Human Reliability Programme for civilian personnel and a Personnel Reliability Programme for those from the military. The SPD plans to extend these programmes to 10,000 personnel (nuclear scientists, engineers and military personnel) with access to sensitive information.²² Modern security safeguards do appear to be in place since Pakistan's nuclear weapons are controlled by a 'code-lock' system and a viable authentication process. Further, it is extremely unlikely that the Pakistani state would deliberately provide a terrorist group with a nuclear weapon since it would run the risk of being discovered and suffer the very grim consequences.

Concurrently, however, there are a few worries. The first and foremost of these is the radicalization of the lower ranks of the military and the prospect of insider collusion. The second is the well-known embrace of certain anti-India terror groups by the Pakistan Army/Inter Services Intelligence (ISI). If, by quirk of circumstance, insider collusion by radicalized elements leads to a well resourced and well planned terrorist attack on a nuclear related facility, particularly when Pakistan has mated and readied its nuclear assets, the outcome could be dangerous. Even so, both collusion and physical assault are unlikely to yield a usable nuclear device or manipulable fissile material and the small nucleus of individuals able to collude would be

unlikely to cut across every tier of security. There are reports to suggest that Pakistan's black marketeers have sold 'nuclear starter kits', including advanced centrifuge components, blueprints for nuclear warheads, uranium samples sufficient for a small bomb, and even personal consulting services to assist nuclear development.²³ While this is a worrying development meriting close monitoring and attention, experts such as Brian Michael Jenkins are of the view that such an enterprise is ambitious in the extreme; the huge design challenges associated with successful detonation and the likelihood of detection of collusivity (between terror cells and nuclear scientists) will prevent it from attaining fruition.

A NUCLEAR INCIDENT AND RESPONSE DILEMMAS

One estimate suggests that if a 10 KT nuclear weapon were to be detonated at the Grand Central Station in New York City, the explosion would kill more than half a million people almost immediately.²⁴ By similar analogy, if terrorists were to implode a crude nuclear device of 1/10 KT yield (which is the maximum yield that the terrorists seem to be technically capable of as of date) in Connaught Place, New Delhi (a symbolic target for a spectacular attack), a back-of-the-envelope estimate would indicate fatalities in the range of over 1 lakh. What we are likely to witness is a huge explosion, intense fireballs and blast waves, lots of brilliant yellow light, strong waves of heat with temperatures soaring to tens of million degrees centigrade, massive thundering and a huge mushroom cloud. A couple of high-rise buildings would vanish in a vaporous haze and clouds of smoke would be seen pouring out of the city even as significant radioactivity would be detected.

A number of difficult questions would stare the political leadership in the face, posing severe response dilemmas.²⁵ How should the authorities that be, discriminate between a possible nuclear attack from Pakistan and a terrorist-driven nuclear attack, especially if no terror group claims responsibility? Should the political leadership itself stay or leave the city? What advisories need to be issued based on the drift of the radioactive plume? What measures need to be initiated to prevent a panic exodus from the affected and other cities? How should the government deal with the adverse psychological impact—fear, scare, panic and confusion—that will most certainly disrupt civic life? What should be the response of the fire and rescue crews—how should they evacuate the stranded; how should they respond to people jumping to their death? Other questions include whether we consider acts of nuclear terrorism as being tantamount to war.

What should be the nature of our military response? If we do not respond militarily to such a diabolical attack, will absence of action not be seen as supine cowardice on the part of the government of the day? How should the government wrestle with the non-attributive nature of the attack—if persuasive proof of the origins of the attack are a prerequisite to action, should the government take no action at all? Whom does the government take action against given the fact that nuclear terrorists have no ‘return address’? Would the answer be Pakistan, on the assumption that it is the most probable abettor? Should the government launch air strikes? Against what targets? How should it maintain communal calm? What would the role of the National Security Guard (NSG) be? What should the Prime Minister say in his address to reassure the country?

None of these questions have easy answers and all of them need to be thought through carefully by institutions like the National Security Council (NSC), the Crisis Management Group (CMG) and the Cabinet Committee On Security (CCS). This must be done now, in the calm of today, rather than in the immediacy of the crisis.

RECOMMENDATIONS

Response Framework

As mandated by the Disaster Management Act of 2005 and the Union War Book, the National Disaster Management Authority (NDMA) has formulated a set of guidelines to deal with nuclear events that could lead to nuclear disasters. The span of focus—use of nuclear weapons on our soil by adversaries, acts of nuclear terrorism, and a major nuclear accident in a nuclear facility—however, is too wide and the number of stakeholders (National Security Advisor, Chairman Atomic Energy Commission, Home Secretary and Chairman CMG, Chairman Atomic Energy Regulatory Board, Director Bhabha Atomic Research Centre, the Armed Forces and the NDMA) are far too numerous to enable the formulation of an actionable response. Such guidelines, while being laudable as an initial first step, appear to be perfunctory and not sufficiently literate to deal with the frightening realities of the threat. The subject of nuclear terrorism/terror is far too complex and layered to be broad brushed in this manner. We need to anoint an Ambassador at Large/Commissioner for Nuclear Terrorism (backed up with a suitably tailored organization and resident investigative and domain experts) to address the issue of nuclear terrorism/terror with the assistance of relevant stakeholders in a well thought through and

focused manner. The Commissioner may be assigned the sole mandate of prevention/pre-emption and efficient consequence management of acts of nuclear terrorism; ensuring synergy between all stakeholders; ensuring dialogue with the Nuclear Command Authority (NCA) and NDMA to develop discrimination capacities/mechanisms to distinguish between an adversary launched and a terrorist-driven nuclear attack; reducing leadership uncertainties as also putting in place the tenets of an effective disaster management and recovery system in the public domain. The latter may decrease terrorist motivation for use and reduce chances for panic creation. A suggested framework/blueprint for adoption is shown in Figure 1.

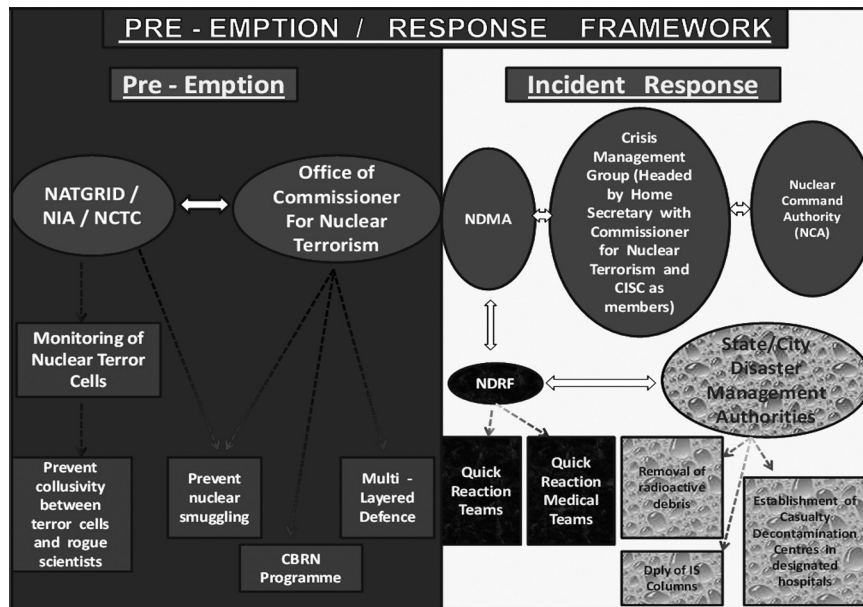


Figure 1 Pre-emption/Response Framework

Blueprint

The nation, first and foremost, needs to put in place a concrete action plan to prevent the occurrence of a nuclear event (followed up with resolute implementation), while concurrently developing a response philosophy for a range of possibilities across the probability spectrum: a bogus nuclear device, an aircraft crashing into a nuclear reactor, a radiological fizzle, and detonation of a crude nuclear device of 1/10 KT yield. It may also be pertinent to point out that the threat of nuclear terrorism is not limited to megapolis

like New Delhi or Mumbai. Tier II cities like Nagpur or Chandigarh are just as vulnerable. The response plan, therefore, must at the very least, cover all Tier I and possibly Tier II cities in the country. Cities like Varansi, Amritsar and Haridwar, which are vulnerable due to their visible religious profile, also need coverage. It may also be reasonable to conclude that given the gravity of an act of nuclear terrorism, the widespread belief that such an act would be Pakistan-sponsored and the war hysteria that would inevitably ensue, it will almost certainly lead to mobilization/deployment of the Indian Armed Forces. The primary responders, therefore, will not be available to respond to the crisis, the handling of which will fall entirely on the shoulders of the NDMA/Civil Administration, an aspect which needs to be factored into the response plans.

The National Disaster Response Force (NDRF) Battallions of the NDMA assigned for nuclear disasters must, therefore, undergo significant upgradation in training and capacity and be able to deploy Quick Reaction Teams (QRTs) suitably equipped to detect and identify sources of contamination, diagnose/monitor radiation hazard levels, man control points to prevent entry into contaminated areas, and assist in evacuation of the exclusion zone. Concurrently, capacity-building of fire and rescue crews and deployment of sufficient internal security columns to maintain peace and calm must also be ensured. It may also be wise to test our real response capacities through conduct of annual mock exercises/drills.

CBRN Pre-emption Programme

There is a need to develop an intense chemical, biological, radiological and nuclear hazards (CBRN) programme to obviate the occurrence of a nuclear event. The nation needs to focus less on the remote possibility but high consequence event (the nuclear bomb) and more on fortifying the obstacles to acquisition or fabrication of nuclear weapons by terrorists. We must, therefore, take resolute and precise measures to develop the sophisticated metrics required to recognize, intercept and prevent attempts by terrorists to acquire a nuclear device, institute background checks, anoint undercover agents, use informants, wiretaps, searches, preventive detentions and sophisticated interrogation techniques to prevent collusivity between terror cells and rogue specialists as also unearth possible nuclear terror plots. A significant upgrade in our clandestine intelligence capacities with the mandate to operate in the precincts of rogue/sponsor states is needed if we are to bust nuclear terror cells before they become ominous. Such a programme may be developed under the aegis of the recently established

National Intelligence Grid (NATGRID) with inputs from the office of the proposed Commissioner for Nuclear Terrorism.

Wargaming

It may also be useful to conduct a Table Top Exercise involving the politico-military leadership, key appointments from the strategic establishment, the NDMA, and domain experts to war game the occurrence of a possible nuclear event, think through the various response dilemmas discussed above and formulate a comprehensive and credible response.

Nuclear Smuggling

A resolute effort must also be made to nip the prospect of nuclear smuggling in the bud. The recently established/proposed NATGRID/National Investigation Agency (NIA)/National Counter Terrorism Centre (NCTC) may be tasked to monitor the same and launch police stings to apprehend nuclear smugglers. Concurrently, we must establish nuclear device detectors at airports, ports, harbours, border crossings, scrap metal yards and around critical facilities in order to facilitate early detection. A mechanism must also be developed to ensure stringent accounting and control of radioactive isotopes across prospective sources of such leaks—nuclear installations, cancer hospitals, research centres and construction agencies. We must also invest in acquisition of modern technologies with abilities of ‘fine discrimination’ to detect presence of potential ‘dirty bombs’.

Multi-layered Defence

A multi-layered defence capability to include acquisition of equipment to detect radiation exposure as also capacities to clean up radioactive debris must also be put in place. To preclude the possibility of insider sabotage in our nuclear facilities, enhanced surveillance, screening and cyber policing needs to be ensured. Such a defence must also include specific measures to secure air space in the vicinity of nuclear reactors to obviate the possibility of a hijacked airliner being crashed to create a nuclear incident. Quick reaction medical teams must be trained to decontaminate affected sites and plans to set up decontamination centres in designated hospitals must also be effected.

CONCLUSION

It may be reasonable to conclude that while a nuclear 9/11 (terrorists detonating a nuclear device) is technically, psychologically and politically

plausible there are as of now, no visible signs of sufficient terrorist capacity. The manifestation of nuclear terror, if at all, is a more likely possibility in the American/European context; the threat to India from 'loose Pakistani nukes' or even a radiological dispersal device, given the various difficulties associated with the enterprise, is low. We must, however, keep a close watch on developing events and strengthen both our prevention and response capacities so as to effectively stymie the occurrence of a nuclear incident and in the event of occurrence respond with purpose and precision. The nation needs to work towards both catastrophe prevention and adroit management of a possible nuclear event. If our policymakers sit up, take notice and embrace a focused, actionable plan, nuclear terrorism is entirely preventable; if they don't, a nuclear terrorist attack may become inevitable.

Acknowledgement

The article has been influenced profoundly by the writings of Brian Michael Jenkins. The author would like to acknowledge the same.

NOTES

1. In fact, experts like Graham Allison argue that 9/11 has raised the bar for future terrorist spectaculars and perhaps brought us closer to a terrorist driven nuclear attack. See Graham Allison, *Nuclear Terrorism: The Risks and Consequences of the Ultimate Disaster*, London: Constable & Robinson Ltd, 2004, p. 3.
2. Jenkins, Brian Michael, *Will Terrorists Go Nuclear?*, New York: Prometheus Books, 2008, p.13.
3. In 1997, the then Russian National Security Adviser, Alexander Lebed claimed that the Russian Military could not account for over one hundred suitcase nukes. For details see Evan Braden Montgomery, 'Assessing the Threat and Developing A Response', *Strategy For the Long Haul*, Washington DC: Centre for Strategic and Budgetary Assessments, 2009, p. 47.
4. Montgomery, Evan Braden, 'Assessing the Threat and Developing A Response', *Strategy For The Long Haul*, Washington DC: Centre for Strategic and Budgetary Assessments, 2009, p. 15.
5. Jenkins, *Will Terrorists Go Nuclear?*, n. 2, p. 75.
6. *Ibid.*, p. 81.
7. *Ibid.*, p. 86.
8. *Ibid.*, p. 86.
9. 'The US–Russia Joint Threat Assessment on Nuclear Terrorism', Cambridge MA: The Belfer Centre for Science and International Affairs and the Institute for US and Canadian Studies, May 2011, p. 10.

10. Weldon, Curt, *Countdown To Terror*, Washington DC: Regenery Publishing Inc., 2005, p.12.
11. Ibid.
12. 'The US–Russia Joint Threat Assessment on Nuclear Terrorism', n. 9, p. 10.
13. Steps taken as a consequence of an initiative launched by American Senators Sam Nunn and Richard Lugar to help the Russian government reduce, consolidate and secure Russia's nuclear arsenal as also provide alternative employment to Russian scientists.
14. 'The US–Russia Joint Threat Assessment on Nuclear Terrorism', n. 9, p. 10.
15. Montgomery, 'Assessing the Threat and Developing A Response', n. 4, p. 5.
16. Sheehan, Michael A., *Crush The Cell:How to Defeat Terrorism Without Terrorising Ourselves*, New York: Crown Publishers, 2008, p. 196.
17. Ibid.
18. Ibid., pp. 196–7.
19. Tufail Ahmad, Director, South Asia Studies Project at the Middle East Media Research Institute, Washington DC, in an article in the *New Indian Express* of 12 October 2012 warns us of al Qaeda's shift of focus to India. The article however alludes to conventional terror capacities only, there is no reference to any strain of nuclear terror. See 'Al-Qaeda's India Focus', article available at <http://newindianexpress.com/opinion/article1295412.ece>, last accessed on 4 January 2013.
20. Tertrais, Bruno, 'Pakistan's Nuclear and WMD Programmes: Status, Evolution and Risks', Non-Proliferation Paper No. 19, Brussels: EU Non-Proliferation Consortium, July 2012.
21. Ibid., p.10.
22. Ibid., p.11.
23. Allison, Graham, *Nuclear Terrorism: The Risks and Consequences of The Ultimate Disaster*, n. 1.
24. Montgomery, 'Assessing The Threat and Developing A Response', n. 4, p. 31.
25. For a gripping account of the possible dilemmas, see Brian Michael Jenkins, *Will Terrorists Go Nuclear?*, an essential read to understand the prospect of nuclear terror.