

PROJECT ON MANAGING THE ATOM

PREVENTING NUCLEAR TERRORISM

CONTINUOUS IMPROVEMENT
OR DANGEROUS DECLINE?

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MARCH 2016

Project on Managing the Atom
Report

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Matthew Bunn, Martin B. Malin, Nickolas Roth, and William H. Tobey, *Preventing Nuclear Terrorism: Continuous Improvement or Dangerous Decline?* (Cambridge, MA: Project on Managing the Atom, Belfer Center for Science and International Affairs, Harvard Kennedy School, March 2016).

Design & Layout by Andrew Facini

Cover photo:
The "Tunnel Vault" nuclear materials storage facility at Technical Area 41, Los Alamos National Laboratory, as seen in October, 1964. (Los Alamos Archive).

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ACKNOWLEDGMENTS

The authors would like to thank Tom Bielefeld and Rolf Mowatt-Larssen, as well as a number of U.S. government and IAEA officials who provided helpful comments on this paper. The authors are grateful to Josh Anderson, Brett Cox, Andrew Facini, Bobby Kim, and Kate Miller, for their help with the editing and preparation of the report. Research for this paper was supported by grants from the Carnegie Corporation of New York and the John D. and Catherine T. MacArthur Foundation.

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India

India has a relatively small stockpile of nuclear weapons and weapons-usable nuclear material at a limited number of sites, which are believed to be heavily guarded.⁹¹ Unlike Pakistan, India has a civilian plutonium reprocessing program.

India's approach to nuclear security is highly secretive, and little is publicly known about India's nuclear security arrangements. Like the United States and many other countries, India requires facilities to be protected against a set of threats specified in a DBT. In a 2014 survey, the Indian expert participating indicated that nuclear security requirements in India have become much more stringent in the last 15 years, primarily in reaction to incidents within India, and that in particular there have been dramatic changes in the DBT.⁹² A special security agency, the Central Industrial Security Force (CISF), guards both nuclear installations and other especially dangerous or sensitive industrial facilities. Indian experts report that India performs systematic vulnerability assessments in designing physical protection systems for nuclear facilities and makes use of some modern security technologies, including access controls and various types of intrusion detectors.⁹³ CISF leaders, however, reportedly complained about 40 percent cuts from their request in weapons for CISF, 45 percent cuts in training equipment, and low morale.⁹⁴ U.S. officials have reportedly ranked Indian nuclear security measures as weaker than those of Pakistan and Russia, and U.S. experts visiting the sensitive Bhabha Atomic Research Centre in 2008 described the security arrangements there as "extraordinarily low key."⁹⁵

In 2011, the Indian government proposed legislation to replace its existing nuclear safety regulator, the Atomic Energy Regulatory Board (AERB), with a new Nuclear Safety Regulatory Authority (NSRA) that would finally be fully independent of the Department of

91 For a summary of the limited available information, see Rajeswari Pillai Rajagopalan, *Nuclear Security in India* (New Delhi, India: Observer Research Foundation, January 7, 2015), http://www.orfonline.org/wp-content/uploads/2015/02/NUCLEAR_SECURITY_IN_INDIA.pdf (accessed February 5, 2016). Some additional detail was provided in presentations at International Atomic Energy Agency, "IAEA Regional Training Course on Security for Nuclear Installations," (Mumbai, India, May 11–20, 2003).

92 Bunn and Harrell, *Threat Perceptions and Drivers of Change*, pp. 26–31. The reported changes in most other elements of nuclear security were much more modest.

93 Presentations to International Atomic Energy Agency and Bhabha Atomic Research Centre, "IAEA Regional Training Course on Security for Nuclear Installations," Mumbai, India, May 11–20, 2003. Since then, India has hosted IAEA regional training courses almost every year.

94 Draft CSIF report, cited in Adrian Levy and R. Jeffrey Smith, "India's nuclear explosive materials are vulnerable to theft, U.S. officials and experts say," *The Center for Public Integrity*, December 17, 2015, <http://www.publicintegrity.org/2015/12/17/18922/india-s-nuclear-explosive-materials-are-vulnerable-theft-us-officials-and-experts> (accessed February 5, 2016).

95 Levy and Smith, "India's Nuclear Explosive Materials."

Atomic Energy. Despite a scathing legislative report on the AERB in 2012, however, the NSRA legislation has still not been passed.⁹⁶ The AERB only has authority to regulate security at civilian facilities; the organizations managing India's military nuclear activities (where the bulk of India's HEU and separated plutonium reside) regulate themselves.

India has generally refused substantial nuclear security cooperation with the United States. In recent years, however, there have been workshops on the topic at India's Global Centre for Nuclear Energy Partnership (GCNEP) and trainings organized by the U.S. State Department's Partnership for Nuclear Security.⁹⁷

Like Pakistan, India is expanding its nuclear stockpile, continuing to produce both plutonium and HEU. India is expanding uranium enrichment, reportedly plans two new plutonium production reactors, and is building a new reprocessing plant at Kalpakkam. India's prototype fast breeder reactor will be able to produce an estimated 140 kilograms of plutonium annually once it opens.⁹⁸ In the future, India has plans for large-scale breeding, reprocessing, and recycling of plutonium fuels, and eventually breeding of U-233 from thorium.⁹⁹

The threats India's nuclear security systems have to confront appear to be significant—though not as great as the threats that exist in Pakistan.¹⁰⁰ India faces both domestic terrorist threats and threats from attacks by terrorist organizations based in Pakistan. For example, on January 2, 2016, heavily armed members of the Jaish-e-Mohammed terrorist group attacked the Pathankot Air Force base in northern India, killing seven security guards. The attackers were able to infiltrate the base by climbing over a tree that had grown along the side of a security fence in an area where floodlights were not operating.¹⁰¹

96 World Nuclear Association, "Nuclear Power in India" (London: World Nuclear Association, February 2014), <http://www.world-nuclear.org/info/Country-Profiles/Countries-G-N/India/> (accessed March 7, 2014).

97 U.S. Department of Energy, *FY 2016 Congressional Budget Request Volume 1*, DOE/CF-0107 (Washington, D.C.: Department of Energy), p. 531; "PNS Supports Efforts to Include Nuclear Security Curricula in Trainings for Future Technical Nuclear Experts," *Partnership for Nuclear Security News*, February 2015, <https://www.pns-state.net/en-us/news/133-pns-supports-efforts-to-include-nuclear-security-curricula-in-trainings-for-future-technical-nuclear-experts.html> (accessed February 5, 2016).

98 For a summary of India's stockpiles, see *Global Fissile Material Report 2015: Nuclear Weapon and Fissile Material Stockpiles and Production* (Princeton, N.J.: International Panel of Fissile Materials, 2015), <http://fissilematerials.org/library/gfmr15.pdf> (accessed February 9, 2016), pp. 9, 15–16, 26–27, 32–33.

99 World Nuclear Association, "Nuclear Power in India." For a critique of India's plans and practices to date, see M.V. Ramana, *The Power of Promise: Examining Nuclear Energy in India* (New York: Penguin, 2013).

100 For a useful summary of the threat in India, see Rajeswari Pillai Rajagopalan, Tobias Feakin, Jennifer Cole, Rahul Prakash, Wilson John, and Andrew Somerville, *Chemical, Biological, and Radiological Materials: An Analysis of Security Risks and Terrorist Threats to India* (New Delhi: Observer Research Foundation and Royal United Services Institute, 2012).

101 Kamaldeep Sing Brar and Navjeevan Gopal, "Probing Pathankot attack: Fence floodlights that didn't work, gaps in border control, patchy police response," *The Indian Express*, January 8, 2016, http://indianexpress.com/article/india/india-news-india/probing-pathankot-attack-fence-floodlights-that-didnt-work-gaps-in-border-patrol-patchy-police-response/?google_editors_picks=true&sthash.bZHnH3Rp.dpuf (accessed February 10, 2016).

Moreover, there are concerns about insider threats within Indian nuclear facilities. India faces significant insider corruption, though corruption in India is thought to be less severe than it is in Pakistan or Russia.¹⁰² Additionally, in 2014, Vijay Singh, a head constable at the Madras Atomic Power Station at Kalpakkam, shot and killed three people with his service rifle soon after arriving at work.¹⁰³ Although the CISF had a personnel reliability program in place, it was not able to detect Mr. Singh's deteriorating mental health, despite multiple red flags, including his telling colleagues that he was about to explode like a firecracker.

Risk summary and trend: Given the limited information available about India's nuclear security measures, it is difficult to judge whether India's nuclear security is capable of protecting against the threats it faces. Although India has taken significant measures to protect its nuclear sites, recent reports suggest that its nuclear security measures may be weaker than those of Pakistan, though likely adversary threats in India are less extreme. Overall, the risk appears to be moderate, and there is no clear trend, either upward or downward.

Nuclear Security Changes in Other Countries

Beyond these three countries, nuclear security in the other countries with weapons-usable nuclear material varies widely. A recent U.S. Government Accountability Office (GAO) report, for example, indicates that in assessing security at 43 sites with U.S.-origin nuclear materials from 2009 to 2015, U.S. experts concluded that a quarter of the sites—including six with Category I nuclear materials, requiring the highest level of security—still did not have security in place consistent with IAEA physical protection recommendations (which themselves are somewhat basic, specifying, for example, that sites should have fences, vaults, and intrusion detectors, but not how effective any of these security elements should be).¹⁰⁴ Remarkably, the GAO also found that two-thirds of the unirradiated U.S.-origin HEU in foreign countries was at sites whose owners had not allowed U.S. experts to visit in more than 20 years.¹⁰⁵ Some countries—including the Netherlands, and Sweden among others—still have no armed guards at their nuclear facilities, relying on off-site

¹⁰² In 2014, Transparency International ranked India 85th out of 175 states included in its index for the severity of corruption, while Pakistan was ranked at 126th and Russia was ranked at 136th. See Transparency International, *Corruption Perceptions Index 2014* (Berlin: TI, 2014), www.transparency.org/cpi2014 (accessed January 25, 2016).

¹⁰³ Levy and Smith, "India's Nuclear Explosive Materials."

¹⁰⁴ GAO, *DOE Made Progress*, pp. 26–27.

¹⁰⁵ GAO, *DOE Made Progress*, p. 25.