

# The Four Faces of **Nuclear** Terrorism



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## FOREWORD

When we launched the Nunn-Lugar Cooperative Threat Reduction program thirteen years ago, we understood the threat posed by the potential nexus of nuclear proliferation and international terrorism.

As this excellent volume by Bill Potter and his colleagues at the Center for Nonproliferation Studies at the Monterey Institute of International Studies makes clear, the threat of nuclear terrorism comes in many forms. The most destructive but least likely nuclear terror scenarios involve the theft or purchase by terrorists of a nuclear weapon from the arsenals of the United States, Russia, or other nuclear powers. This is the least likely, but not impossible. Major international efforts, including the Nunn-Lugar Cooperative Threat Reduction Program and the G-8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction, have helped make this worst-case scenario less probable. However, much work remains in Russia and in other nuclear weapons states, including the United States.

The gravest danger, however, and the one requiring the most urgent attention is the possibility that terrorists could obtain highly enriched uranium (HEU) or plutonium for use in an improvised nuclear device (IND). This book correctly highlights the priority of securing, consolidating, and eliminating HEU, while maintaining rigorous security around plutonium. It is here that the G-8 Global Partnership Against the Spread of Weapons and Weapons Materials must focus its diplomatic and fiscal resources. It is here that all nations must join the fight against catastrophic terrorism.

The huge quantities of weapons-usable fissile material in Russia; the smaller but terrorism-significant stocks remaining in Ukraine, Belarus, Uzbekistan, and other former Soviet and Eastern European states; and the unknown amounts of HEU and plutonium in North Korea and other countries greatly increase the risk of nuclear terror. The nuclear

smuggling network set up by A. Q. Khan and his international partners demonstrates the relative ease by which nuclear material and technology can be obtained illicitly.

The Proliferation Security Initiative is an important measure to interdict shipments of weapons of mass destruction (WMD) and goods that could be used to create WMD, but it alone cannot prevent terrorists from acquiring dangerous materials, such as HEU. Combating nuclear terrorists is a battle that must be fought on all fronts. Current efforts to reduce the quantity of weapons-usable material in all countries and to move Soviet-origin material to safer storage in Russia or elsewhere must be accelerated.

Less destructive but more likely terrorism dangers come from attacks on nuclear facilities that use or process nuclear material. While most of these facilities were designed with security in mind, many reactors were not designed to resist the level of terrorist threat that materialized on September 11th. The standards for security of nuclear facilities must be revised, implemented, and realistically tested against likely terrorist threats. Means to protect spent fuel pools, research reactors, and other facilities with weaker levels of or nonexistent containment structures must also be developed and implemented.

The ease with which terrorists could build and detonate radiological dispersal devices—“dirty bombs”—or use radioactive material for other harmful purposes and the accessibility of potent radioactive sources make this kind of nuclear terrorist attack especially concerning. Because radioactive sources are used for a wide variety of beneficial purposes in medicine, science, and industry, the amount of radioactive material potentially available to terrorists is very large. Unfortunately, our system for keeping track of these radioactive sources is not adequate, and many remain unaccounted for—“orphaned.” While most of these orphan sources would not make powerful dirty bombs, explosion of any radioactive device could cause damage and serious psychological shock, and their presence underscores the need to strengthen regulatory controls further and to dispose of disused sources safely and securely.

For better or worse, the world has entered a new nuclear age in which we face very different nuclear threats. This thought-provoking and well-

researched book points to specific, prioritized steps, which, if implemented in a timely manner, could block many of the pathways by which terrorists might unleash nuclear or radiological attacks. It builds on the tradition of outstanding scholarship the Center for Nonproliferation Studies is known for and should be read by policy makers and anyone interested in a better understanding of the threats we face today.

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