

Global Threat Reduction Program

The Program's goal is to prevent the acquisition of nuclear and radiological materials for use in weapons of mass destruction or other acts of terrorism.

What it's all about

In the post-9/11 world, nonproliferation and threat reduction efforts are expanding and accelerating to prevent nuclear and radiological materials from falling into the hands of terrorist groups. Of particular concern are the thousands of civilian sites where nuclear and radiological materials are used for legitimate and beneficial commercial, industry, medical, and research purposes.

In 2004, former U.S. Secretary of Energy Spencer Abraham unveiled the Global Threat Reduction Initiative (GTRI) to respond to the growing international concern for the proper handling and security of these high-risk nuclear and radiological materials worldwide.

As a principal contributor to the GTRI, Pacific Northwest National Laboratory (PNNL) provides critical expertise to key program areas under the National Nuclear Security Administration's Office of Global Threat Reduction through its Global Threat Reduction Program (GTRP). PNNL is responsible for program integration, project implementation, international contracting, and technical and management support.

"The greatest threat to our national security is the possibility of terrorists acquiring the materials needed to construct and use a nuclear or radiological weapon of mass destruction."

– William H. Tobey, Deputy Administrator Defense Nuclear Nonproliferation, National Nuclear Security Administration

PNNL is successfully implementing threat reduction activities on a global scale through bilateral cooperation with host countries on five continents and through cooperation with domestic agencies and facilities in the United States. PNNL is also working actively with industry partners to address cross-cutting global threat reduction issues and participates multilaterally with donor countries and the International Atomic Energy Agency (IAEA) to establish regional partnerships focused on reducing the threat of nuclear and radiological terrorism.



Tackling the challenges

GTRP provides a comprehensive programmatic approach for achieving GTRI's principle mission objectives – convert, remove, and protect – by denying terrorists access to nuclear and radiological materials as a first line-of-defense for addressing global threat reduction. Specific program areas have been established under the GTRP to directly respond to GTRI's strategic mission and programmatic outcomes.



REMOVE Reactor Disablement and Spent Fuel Removal

The objective of the Reactor Disablement and Spent Fuel Removal program is to develop and maintain a capability to rapidly de-nuclearize comprehensive nuclear development programs while supporting verification efforts. Projects under this program include:

- Establishing Rapid Response Teams to ensure GTRI is able to respond quickly and efficiently to emerging global threats.
- Supplying technical support and oversight to develop a permanent disposition pathway for spent fuel, including containerization, removal, transportation, and final disposition.
- Actively providing leadership in the disablement of nuclear facilities in the Democratic People's Republic of Korea (DPRK).
- Providing program integration, project management, and technical leadership to the BN-350 Spent Fuel Removal Project to provide long-term safe and secure storage of highly attractive weapons-grade materials in Kazakhstan.

PROTECT International and Domestic Security Programs

The objective of the International and Domestic Security Programs is to reduce and protect vulnerable nuclear and radiological materials located at civilian sites worldwide that could be used for malicious purposes in the assembly of a radiological dispersal device (RDD) or improvised nuclear device (IND). Critical activities under this program area include:

- Safely identify, secure, remove, and facilitate the disposition of nuclear and high-risk vulnerable radioactive materials that pose potential worldwide threats.
- Provide sustainable physical security solutions to facility owners without adversely impacting facility operations.
- Support the creation and strengthening of national regulatory infrastructures.
- Provide remote monitoring and orphan source search and recovery capabilities to support national efforts to strengthen the control and accountability of high-risk nuclear and radiological materials
- Provide technical support and training to the international community to promote security awareness
- Promote industry partnerships to address cross-cutting threat reduction initiatives.



CONVERT Fuel Fabrication Capability Development

PNNL is providing critical project management oversight and technical support for the establishment of a Fuel Fabrication Capability to support GTRI's Convert mission. In this capacity, GTRP provides specialized project management tools and capabilities to support the scoping, design, construction, and start-up of this fuel fabrication capability in full compliance with DOE Order 413.3A.



Additional program support

In addition to supporting GTRI's three mission goals, GTRP also incorporates a management approach focused on achieving cost-effective and timely results. PNNL program management works closely with U.S. Department of Energy headquarters (DOE-HQ) in the planning and execution of the program. Within this capacity, PNNL has developed a fully integrated management system for managing, tracking, and reporting metrics and program performance. As the lead integrator for the GTRI program, PNNL:

- Fulfills critical management and operation functions by providing DOE-HQ direct support in the implementation and oversight of the program.
- Ensures consistent implementation of program requirements.
- Manages plans, technical guidance documents, training curriculums, and review committees.

PNNL contributions

- Principle contributor and lead Laboratory for site protection activities in 45 countries.
- Completed security upgrades at 370 facilities worldwide, representing 80% of all high-risk radiological sites secured to-date.
- Lead Laboratory for emerging reactor disablement and spent fuel removal projects.
- Leader in the development of national regulatory infrastructures worldwide to address the security and control of high-risk radioactive materials.
- Program management integrator for GTRI Office and protection activities.

GTRP: a national asset

PNNL's GTRP is a vital part of the U.S. strategy to address the evolving terrorist threats by preventing their acquisition of nuclear and radiological materials. Each kilogram or curie of this dangerous material that is removed reduces the risk that a terrorist's weapon or bomb of mass destruction will detonate. The management and oversight in support of the Program's goals embody the critical role that the GTRP plays in achieving national and global security objectives.

About PNNL

Pacific Northwest National Laboratory is a U.S. Department of Energy Office of Science research facility that delivers breakthroughs in the areas of national security, environment, energy, fundamental science, and health. Battelle, based in Columbus, Ohio, has operated PNNL since 1965. The Laboratory is also involved in research and development supporting mission objectives for both the U.S. Department of Defense and the U.S. Department of Homeland Security. PNNL is located in Richland, Washington. Additional web resources are at <http://www.pnl.gov>.



A PNNL researcher examines surface oxidation of spent nuclear fuel samples to advance the cleanup of radiological and hazardous wastes and aid the processing and disposal of nuclear fuels.

GTRP Mission:

Reduce and protect vulnerable nuclear and radiological materials located at civilian sites worldwide. This is accomplished by three mission goals:

- **CONVERT** reactors from the use of WMD-usable highly enriched uranium (HEU) to low enriched uranium (LEU)
- **REMOVE** or dispose of excess WMD-usable nuclear and radiological materials
- **PROTECT** at-risk WMD-usable nuclear and radiological materials from theft and sabotage

The detonation of a crude nuclear weapon or radiological dirty bomb would result in significant loss of life, economic hardship, and psychological effects that would forever change the world."

– William H. Tobey, Deputy Administrator Defense Nuclear Nonproliferation, National Nuclear Security Administration

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