

NUCLEAR AND RADIOLOGICAL MATERIAL PROTECTION



GTRI DOMESTIC SECURITY ENHANCEMENTS

The Global Threat Reduction Initiative (GTRI) is part of the Department of Energy's National Nuclear Security Administration (DOE/NNSA). With partners in more than 100 countries, GTRI's mission is to reduce and protect vulnerable nuclear and radiological material located at civilian sites worldwide.

This is a "first line of defense" program that works to prevent terrorists from acquiring materials that could be used in a weapon of mass destruction, a crude nuclear bomb, a radiological dirty bomb, or other acts of terrorism.

NNSA's efforts, which aim to remove unneeded nuclear and radiological materials or secure those materials still in use, are voluntary and federally-funded. GTRI achieves its mission through three goals:

- CONVERT** research reactors and isotope production facilities from the use of highly enriched uranium (HEU) to low enriched uranium (LEU).
- REMOVE** and dispose of excess nuclear and radiological materials.
- PROTECT** high priority nuclear and radiological materials from theft.

GTRI's domestic security enhancements program is one element of the overall NNSA mission.

MATERIALS OF CONCERN

There are thousands of civilian sites where nuclear and radiological materials are used for legitimate and beneficial commercial, medical and research purposes. Materials of concern are found in soft targets such as hospitals and universities, which are open environments that often lack armed on-site guards. A Radiological Dispersal Device (RDD), deployed with amounts of material found in normal use, could result in radioactive contamination that could require relocation, prohibit the use of that area pending cleanup, and cause economic impacts in the billions of dollars.

DOMESTIC SECURITY ENHANCEMENT PROGRAM

In the United States, NNSA's GTRI further enhances the protection of nuclear and radiological materials at civilian sites through voluntary security enhancement efforts that include:

- Removal** — recovery of unwanted radioactive sources.
- Detection** — installation of remote monitoring systems, access control devices, motion detection sensors, and cameras.
- Delay** — deployment of in-device delay (IDD) mechanisms, tie downs, and hardened doors/rooms.
- Response** — delivery of alarm response training and table top exercises for first responders.

These voluntary security enhancements complement but do not replace Nuclear Regulatory Commission (NRC) and Agreement State increased control requirements. They are federally-funded, sound, cost-effective, and prudent best practices that further improve security above regulatory requirements.



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REMOVAL

Every year, NNSA's Off-site Source Recovery Program removes thousands of sources that are disused and unwanted in the United States. To learn more and to register unwanted sealed sources visit the website <http://osrp.lanl.gov/>.

DETECTION

Through GTRI, NNSA offers voluntary security enhancements to prevent and detect unauthorized actions.

Detection upgrades include:

- Biometric access control devices
- Door alarms
- Motion sensors
- Cameras
- Radiation sensors
- Electronic tamper indicating seals
- Area radiation monitors
- Remote monitoring systems



Electronic seal



Iris Reader

Remote Monitoring Systems

Through GTRI, NNSA also offers Remote Monitoring Systems (RMS) which are critical to addressing the insider threat and improving alarm communication and local law enforcement response. The RMS integrates critical alarms (e.g., irradiator tampering, radiation, communication/power loss) with video images in a tamper-indicating housing with battery back-up. The RMS encrypts the video and alarm data and sends it simultaneously to on-site security and off-site local law enforcement to prevent single-point failure in alerting armed responders to a potential theft. The RMS can also be monitored by off-site commercial monitoring companies.



GTRI RMS unit

Monitoring Centers

NNSA provides support to regional, state, and local organizations that are interested in monitoring the nuclear and high-activity radioactive materials within its boundaries. This enables first responders to have additional situational awareness about any attempted attack at nuclear or radiological material sites.



Monitoring Center



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DELAY

Through GTRI, NNSA provides delay enhancements that impede an adversary's progress to access nuclear materials and radiological sources. By increasing delay, first responders have more time to interrupt the adversary before they can remove and then steal these materials.

These delay systems include:

- Device tie downs and security cages
- Security grating
- Hardened doors/rooms
- Bullet proof glass
- In-Device Delay kits

In-Device Delay Kits

In cooperation with NRC and the Department of Homeland Security, NNSA partnered with cesium irradiator manufacturers to develop In-Device Delay (IDD) kits for the most widely used models of cesium chloride (CsCl) blood and research irradiators.

Through GTRI, NNSA currently funds the installation of IDD kits for Best Therotronics (Nordion) Gammacell 40, 1000, 3000; JL Sheppard Mark I 68, 68A; and Pharmalence (CIS) IBL473 at volunteer facilities.

IDD enhancements add a set of protection hardware, including hardened security plates and tamper resistant fasteners to the irradiator which greatly increases delay times without affecting normal operation, use, and maintenance.



Security cage on a blood irradiator



Irradiator eligible for GTRI IDD kit

RESPONSE

NNSA's GTRI provides site personnel and first responders with specialized tools and training to respond to a security incident at civilian sites with nuclear and radiological materials. This response support includes:

- Enhanced radio systems and repeaters
- Personal radiation detectors (PRDs)
- Central alarm station hardening
- RMS alarm review stations
- Alarm Response Training
- Table Top Exercises

Alarm Response Training

NNSA offers a three-day course, which is held at the NNSA Y-12 National Security Complex in Oak Ridge, Tennessee. This training:



Students at GTRI's hands-on alarm response training

- Teaches site security and local law enforcement how to protect themselves and their communities when responding to alarms indicating possible theft of civilian nuclear and radioactive materials.
- Includes realistic scenarios using radioactive sources, irradiators and security equipment.
- Provides classroom instruction and hands-on exercises.

The course is certified by the Department of Homeland Security. Through GTRI, NNSA pays for all attendee costs except for salary (e.g., travel, lodging, car rental, and per diem).

Table Top Exercises

NNSA and the Federal Bureau of Investigation (FBI) sponsor no-fault, site-specific scenarios where officials can exercise their response to terrorist acts involving nuclear and radioactive materials. The exercises:

- Promote cross-sector communication, cooperation, and team building among federal, state, local, and private sector first responders.
- Examine newly developed tactics, techniques, and procedures resulting from GTRI voluntary security enhancements.
- Offers a one-day exercise in near real-time game play customized to the specific site with realistic events based on FBI threat information, and video injections with mock-media involvement for fast-paced action.



Attack simulated during GTRI Table Top Exercise

DOMESTIC SECURITY ENHANCEMENTS SUMMARY

- Voluntary program for civilian sites with nuclear and radiological materials and their first responders.
- Federally-funded security enhancements including minimum three year warranty and maintenance.
- Assistance provided in nuclear and radiological material removals, detection, delay, and response.
- Alarm Response Training course at the NNSA Y-12 National Security Complex.
- Table Top Exercises that involve no-fault, site-specific scenarios.

ADDITIONAL INFORMATION

NRC Policy Issue Information, "Update on Staff Efforts to Work with Federal Partners on Voluntary Security Initiatives for Radioactive Materials" (March 30, 2010); <http://www.nrc.gov/reading-rm/doc-collections/commission/secys/2010/secy2010-0036/2010-0036scypdf>.

NRC Regulatory Information Summary 2010-02, "The Global Threat Reduction Initiative (GTRI) Federally Funded Voluntary Security Enhancements For High-Risk Radioactive Material" (January 21, 2010); http://adamswebsearch2.nrc.gov/idmws/doccontent.dll?library=PU_ADAMS^PBNTAD01&ID=100250174.

GTRI prepares radioactive source for transport to permanent disposal site.

