

SRNL Fast Facts

- > National Laboratory for DOE
Office of Environmental Management
- > Supporting customers at SRS,
DOE and other federal agencies
nationally and internationally
- > Applied research, development and
deployment of practical, high-value
and cost-effective technology
solutions in the areas of national
security, clean energy and
environmental stewardship
- > Operated by Battelle Savannah River
Alliance for the U.S. Department
of Energy

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Defense Nuclear Nonproliferation Research and Development

Putting Science to Work for a Nation

The goal of the National Nuclear Security Administration's (NNSA) Defense Nuclear Nonproliferation Research and Development (R&D) is to create innovative technologies for the detection of nuclear and radiological materials, and to keep these materials from getting into the wrong hands.

The Savannah River National Laboratory (SRNL) plays an instrumental role in detecting and deterring illicit transfers of weapons-usable materials and equipment, preventing the spread of sensitive nuclear weapons technology and developing cutting-edge nuclear detection technologies.

Security through Innovation

SRNL scientists have “hands-on” experience with nuclear production facilities. Collection technologies used and developed by our researchers have transitioned from the laboratory to security agencies and are widely used in the field, bridging the gap between technology creation and utilization.

Analysts at SRNL evaluate samples for trace radionuclides and interpret sample analysis data. Other vital research includes transport and process modeling, and ground truth and modeling for remote sensing applications.

SRNL offers a cradle-to-grave structure for many programs and is actively engaged in collaboration with multiple government agencies, universities, and other Department of Energy laboratories.



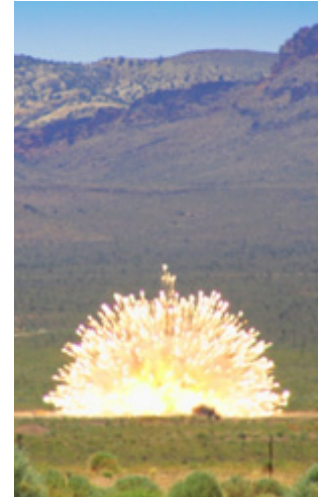
Air samples being collected.

Security through Experience

With over 50 years of experience supporting the Savannah River Site's (SRS) nuclear operations, scientists at SRNL have a solid background in support of SRS nuclear operations, including performing environmental sample collections and trace analytical measurements. SRNL has extensive experience supporting nonproliferation R&D and transitioning that technology to security agencies in order to meet nonproliferation, counterproliferation and counterterrorism responsibilities.

SRNL Nuclear Nonproliferation R&D has four primary areas of focus:

- Nuclear Weaponization and Material Production Detection
 - Uranium and plutonium production processes
- Nuclear Weapons and Material Security
 - Special Nuclear Materials detection and characterization
 - Special Nuclear Materials safeguards and accountability
- Enabling Capabilities for Nonproliferation and Arms Control
 - Science-based model development for remote sensing
- Nuclear Detonation Detection and Nuclear Forensics
 - Analysis and identification to distinguish characteristics and potential origins of nuclear material



Field test experiments.

Security through Research and Development

Nuclear Weaponization and Material Production Detection

SRNL develops and tests new collection and analysis methodologies to detect, locate, and characterize weaponization and materials production facilities. Cutting-edge research on nuclear materials and processes is conducted to develop and characterize unique signatures and to develop trace analytical measurement techniques. In many cases, SRS is used to field-test new technologies, leveraging the atmospheric technology transport and dispersion modeling expertise at SRNL.

Nuclear Weapons and Material Security

SRNL's extensive involvement in SRS nuclear operations includes reactor operations, plutonium and tritium processing, and spent fuel reprocessing. Combined with the International Atomic Energy Agency, this forms the foundation for research in radiation detection and Special Nuclear Materials safeguards and accountability.

Enabling Capabilities for Nonproliferation and Arms Control

SRNL utilizes its expertise in simulation, algorithms and modeling for research into radionuclide signature source terms and transport. Modeling and measurement technology is developed to characterize nuclear facility operations and SRS is often used for ground truth testing in this research.

Nuclear Detonation Detection and Nuclear Forensics

SRNL supports the National Nuclear Security Administration and other federal agencies such as the Department of Homeland Security, in nuclear forensics R&D. SRNL's unique facility capabilities allow a full range of nuclear forensics activities - from highly radioactive materials handling using remote shielded cells, to ultra-low level counting in our shielded, underground facility, to high sensitivity isotopic analysis in clean rooms.



Sample collection device deployed in the field.