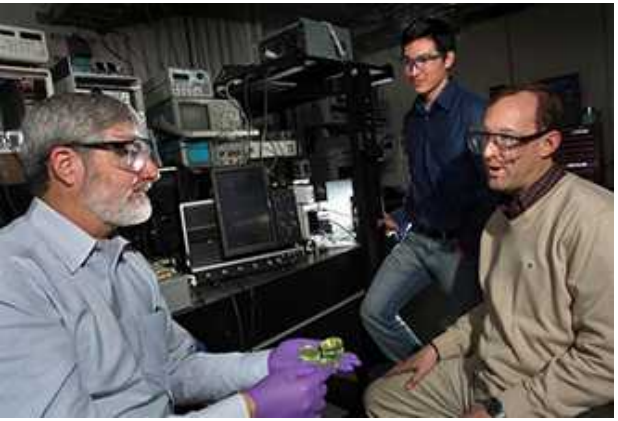
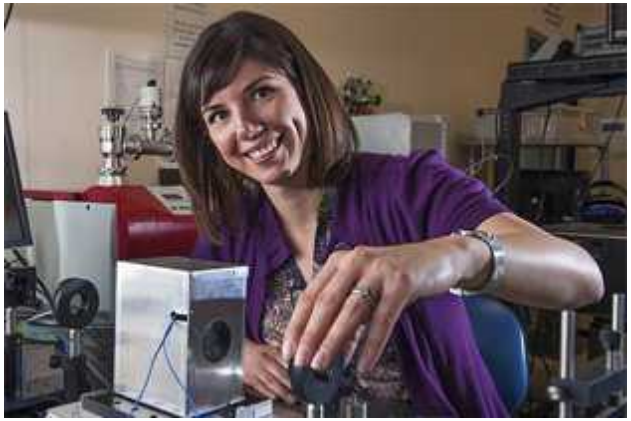
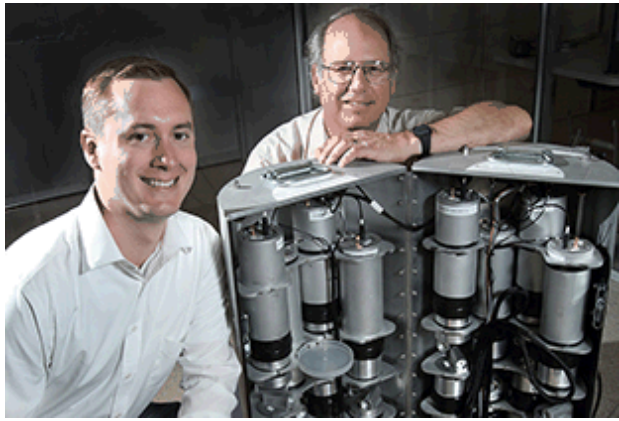
SAND2015-2167PE

Exceptional service in the national interest

Sandia National Laboratories

26 March 2015

Nonproliferation and Nuclear Security
Nuclear Nonproliferation Treaty Transparency Visit

Jill Hruby, Vice President
International, Homeland, and Nuclear Security

U.S. DEPARTMENT OF ENERGY | NNSA National Nuclear Security Administration

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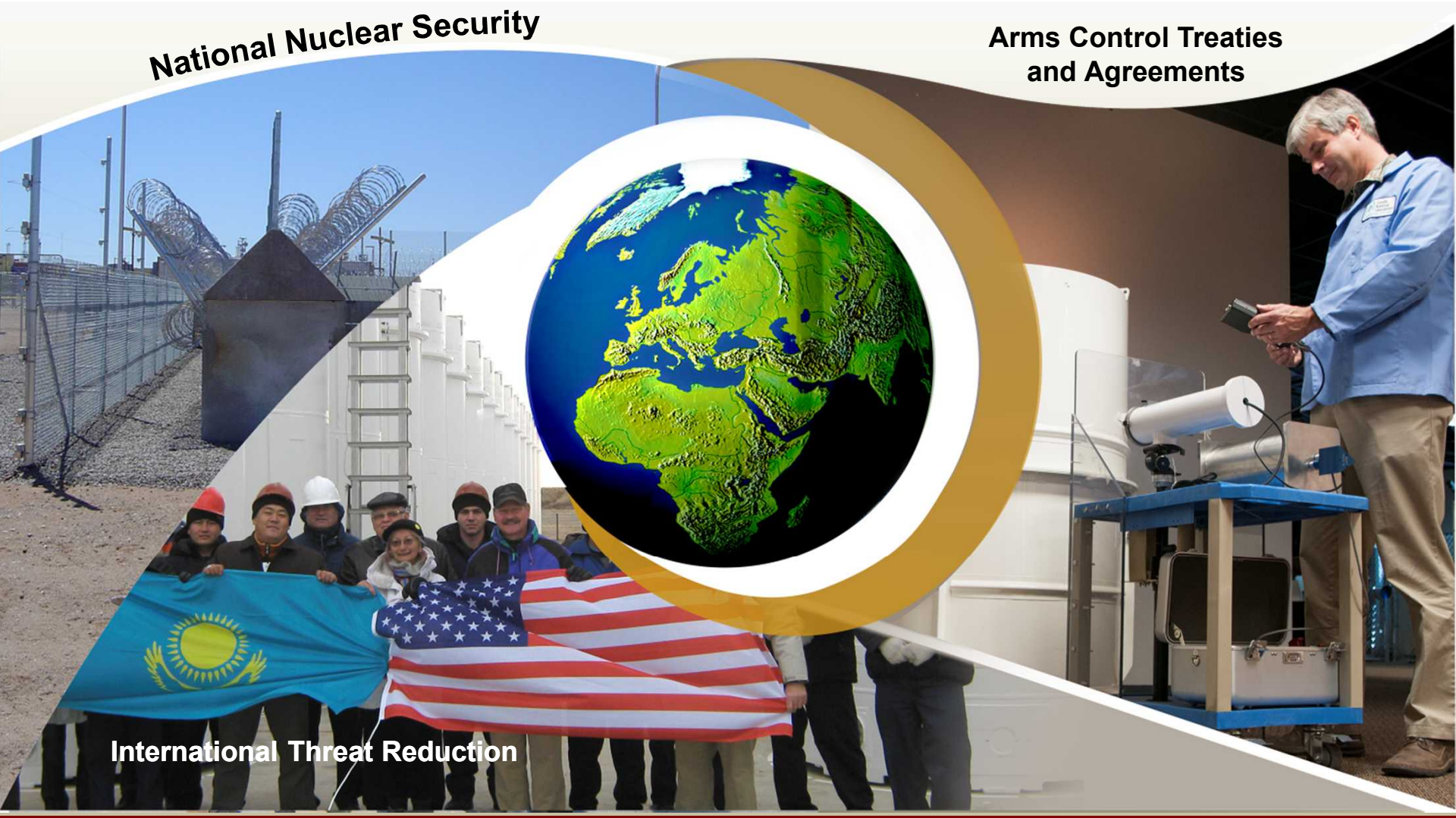
Sandia's systems approach generates science and technology solutions to nonproliferation and nuclear security



National Nuclear Security Systems

Sandia provides engineering support to ensure safety and security of US Nuclear Weapons

Sandia National Laboratories

Design of secure ground transporters

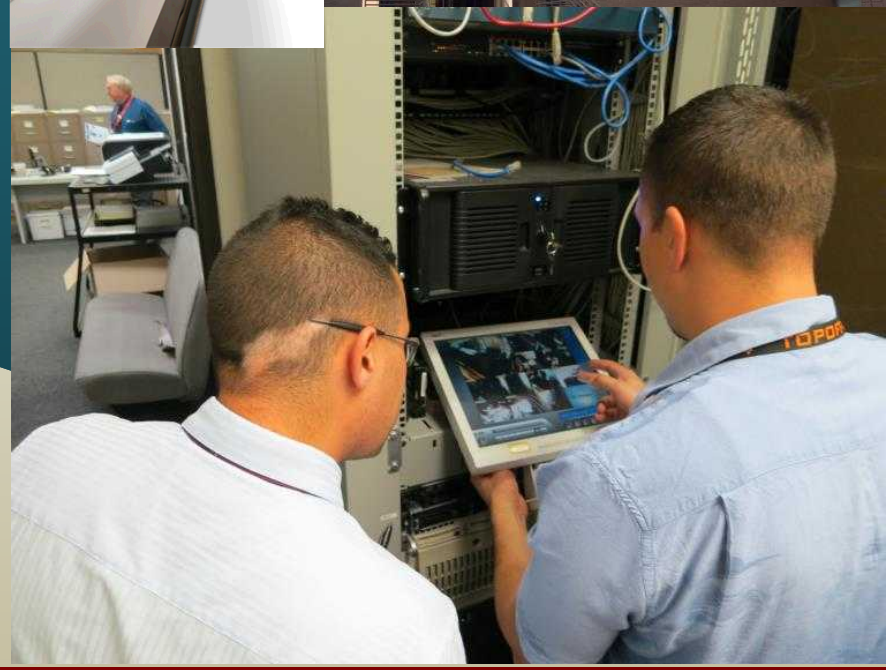
- Containers
- Tractor-trailers

Long history designing perimeter detection and alarm systems for fixed sites

Sandia provides systems solutions to improve security of radioactive sources in the US

Isotope Protection and Delay
Medical systems
Industrial systems
Research sources

Functional alternatives
to isotopic sources

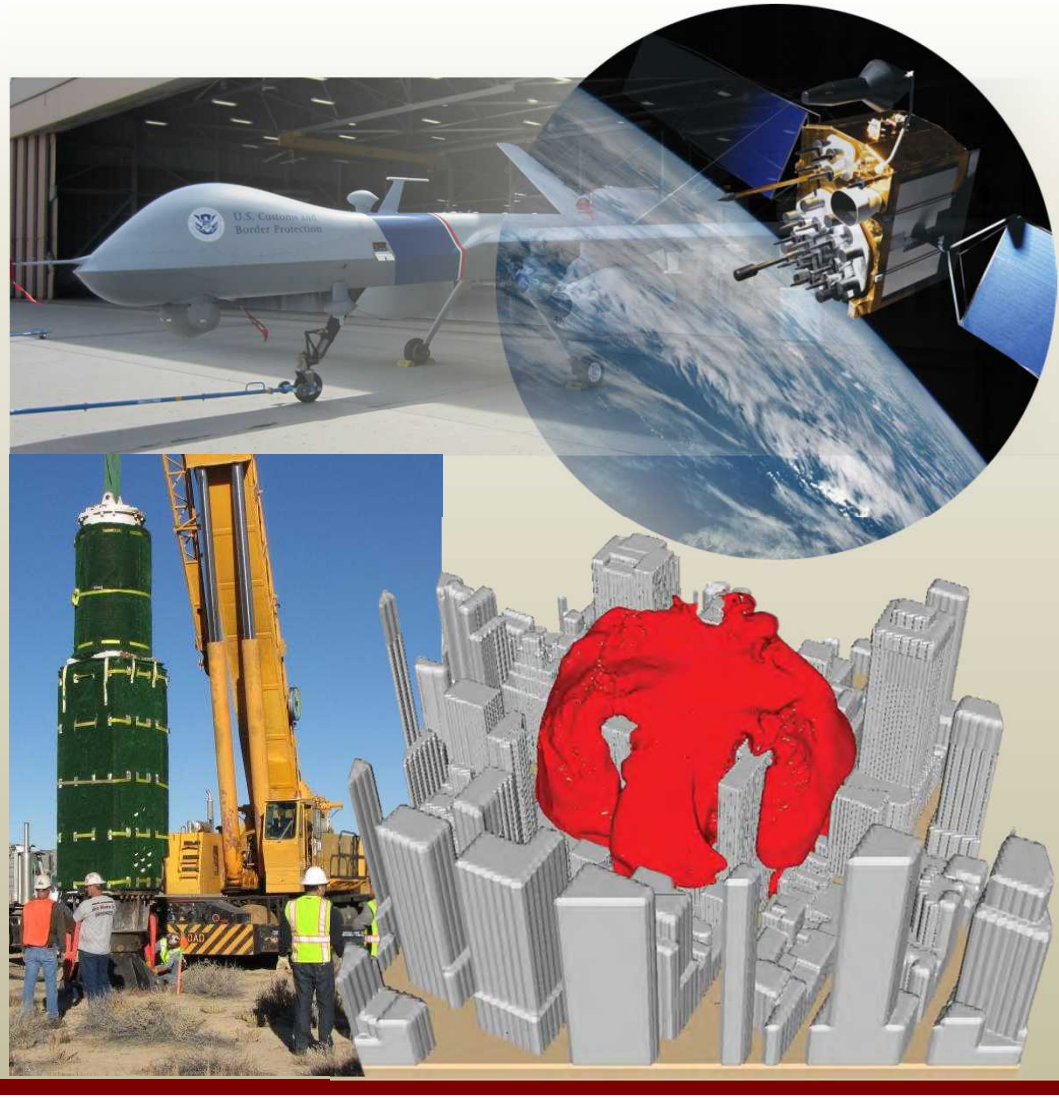


Sandia supports national systems for detection and response

US systems to observe, detect, and characterize nuclear events

- Space
- Airborne
- Land

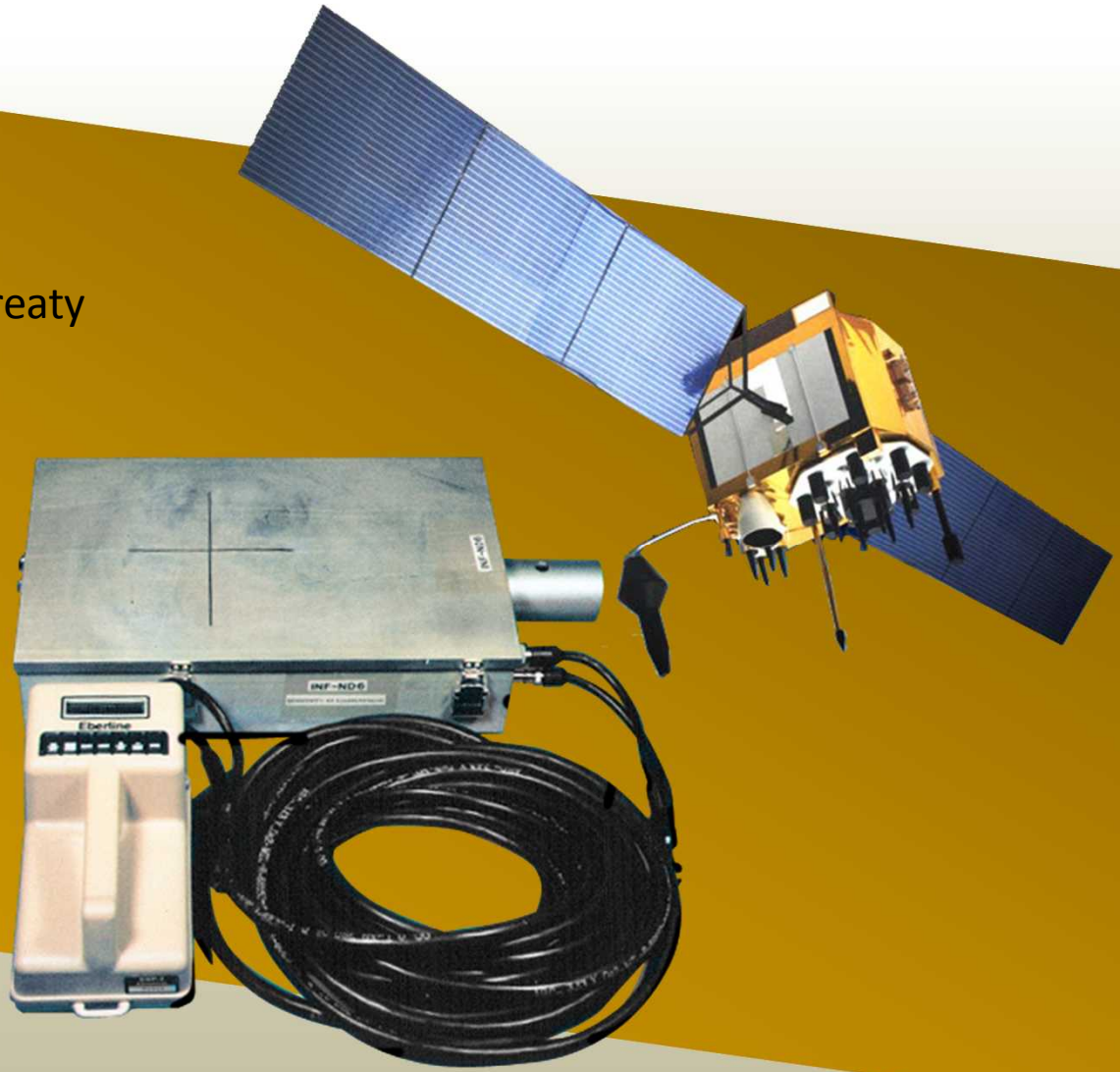
To aid in response and attribution if an event occurs against US interests



Arms Control Treaties and Agreements

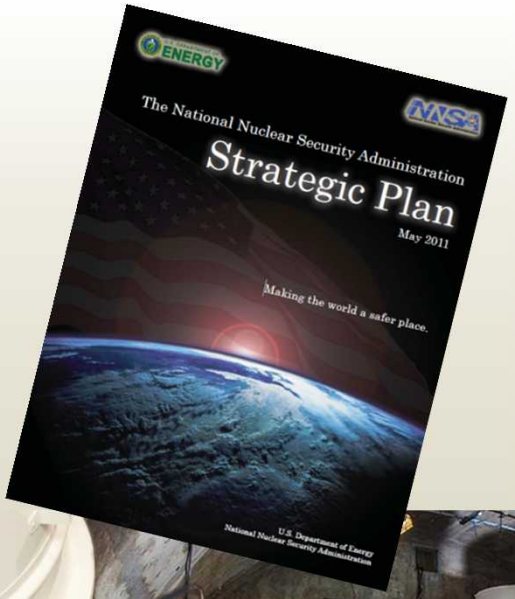
Sandia developed and maintains tools for arms control treaties with monitoring provisions

Partial Test Ban Treaty
Intermediate Nuclear Forces Treaty
START
New START



Sandia supports technology development of monitoring approaches to enable potential treaties

- Warhead monitoring
  - Isotopic ID
  - Chain-of-custody
- Integrity of containers
  - Tags
  - Seals



"…develop warhead monitoring and chain-of-custody capabilities for end-to-end field demonstrations in support of new arms control commitments."

Sandia's technical support for CTBT continues to mature

Support data center computing infrastructure

New seismic monitoring approaches

International exercises

Operation Centre

FACT site

On-site Inspection

Sandia National Laboratories

International Threat Reduction

Over 25 years Sandia has supported securing weapons grade materials

Sandia National Laboratories

Former Soviet Union

Material Protection, Control and Accounting (MPC&A)

Warhead Dismantlement Transparency

Safety and Security Technologies for Russian Warheads

- Former Soviet Union
  - Improved security at 110 Russian NW and material sites
- Extended to Other Countries
  - South Africa— physical security for quarter-ton of HEU
  - Kazakhstan— secured enough material for 775 weapons

South Africa

Kazakhstan

We also support securing civilian source material around the world

Sandia National Laboratories

South America

Egypt

We have a growing interest in the responsible expansion of nuclear power

- Systems engineering, education, and training in nuclear power safeguards and security
  - Physical and cyber
  - Regulatory framework
  - Response requirements
  - Waste disposition
- Physical protection systems

Gulf Nuclear Energy Infrastructure Institute (GNEII)

China COE

We cooperate internationally in nuclear incident response

- Consequence management
  - Exercises
  - Real-world response
- Radiological assistance training

Fukushima

U.S.-Japan Exchange Best Practices on Nuclear Emergency Response

Press Release

Mar 17, 2015

Washington D.C.--The Department of Energy's (DOE) National Nuclear Security Administration (NNSA) led a three day meeting with U.S. and Japan emergency preparedness and response experts to exchange ideas on enhancing nuclear emergency preparedness and response capabilities, both on- and off-site. The meeting is the latest cooperative effort between the two countries as part of the U.S.-Japan Bilateral Commission on Civil Nuclear Cooperation.

I-RAPTER emergency response training, Czech Republic

We work to reduce global nuclear dangers through research

Sandia National Laboratories

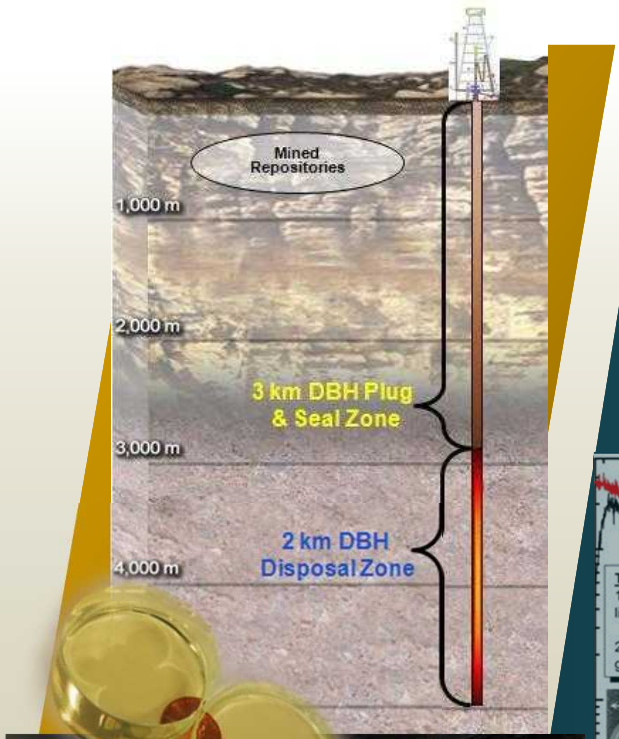
Improving radiation detection
- Advanced materials
- Signal processing
- Standoff detection
- Precision location

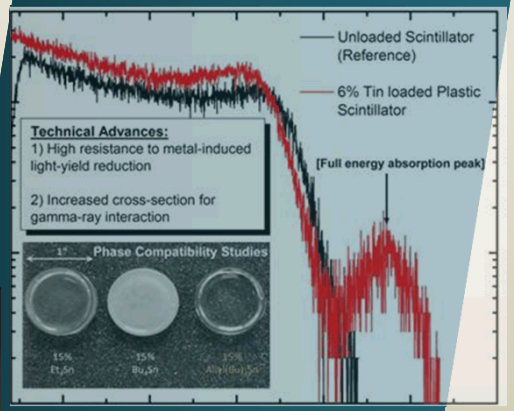
Nuclear waste repository science

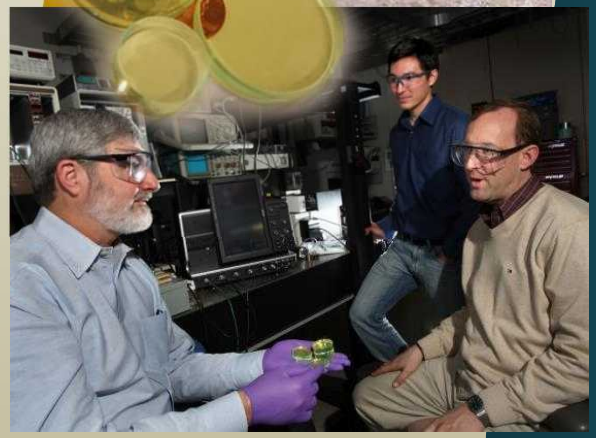
Lower cost/more effective perimeter security

Consequence management for public safety

Information barriers for warhead monitoring







2014 R&D 100

We view nuclear dangers holistically