

Homeland Security Research Program

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Ongoing Threat

"Unless the world community acts decisively and with great urgency, it is more likely than not that a weapon of mass destruction will be used in a terrorist attack somewhere in the world by the end of 2013."

***World at Risk** : The Report of the Commission on the Prevention of WMD Proliferation and Terrorism (2008)*

"We assess that many of the countries pursuing WMD programs will continue to try to improve their capabilities and level of self-sufficiency over the next decade."

Statement for the Record on the Worldwide Threat Assessment of the U.S. Intelligence Community for the Senate Select Committee on Intelligence, James R. Clapper, Director of National Intelligence, February 16, 2011

EPA Homeland Security Drivers and Responsibilities

Drivers

Bioterrorism Act (2002)

Homeland Security Presidential Directives (2003-2008)

National Response Framework (revised 2008)

Elements of:

- Comprehensive Environmental Response, Compensation and Liability Act
- Emergency Planning and Community Right-to-Know Act
- Clean Water Act
- Safe Drinking Water Act
- Oil Pollution Act
- Clean Air Act



Responsibilities

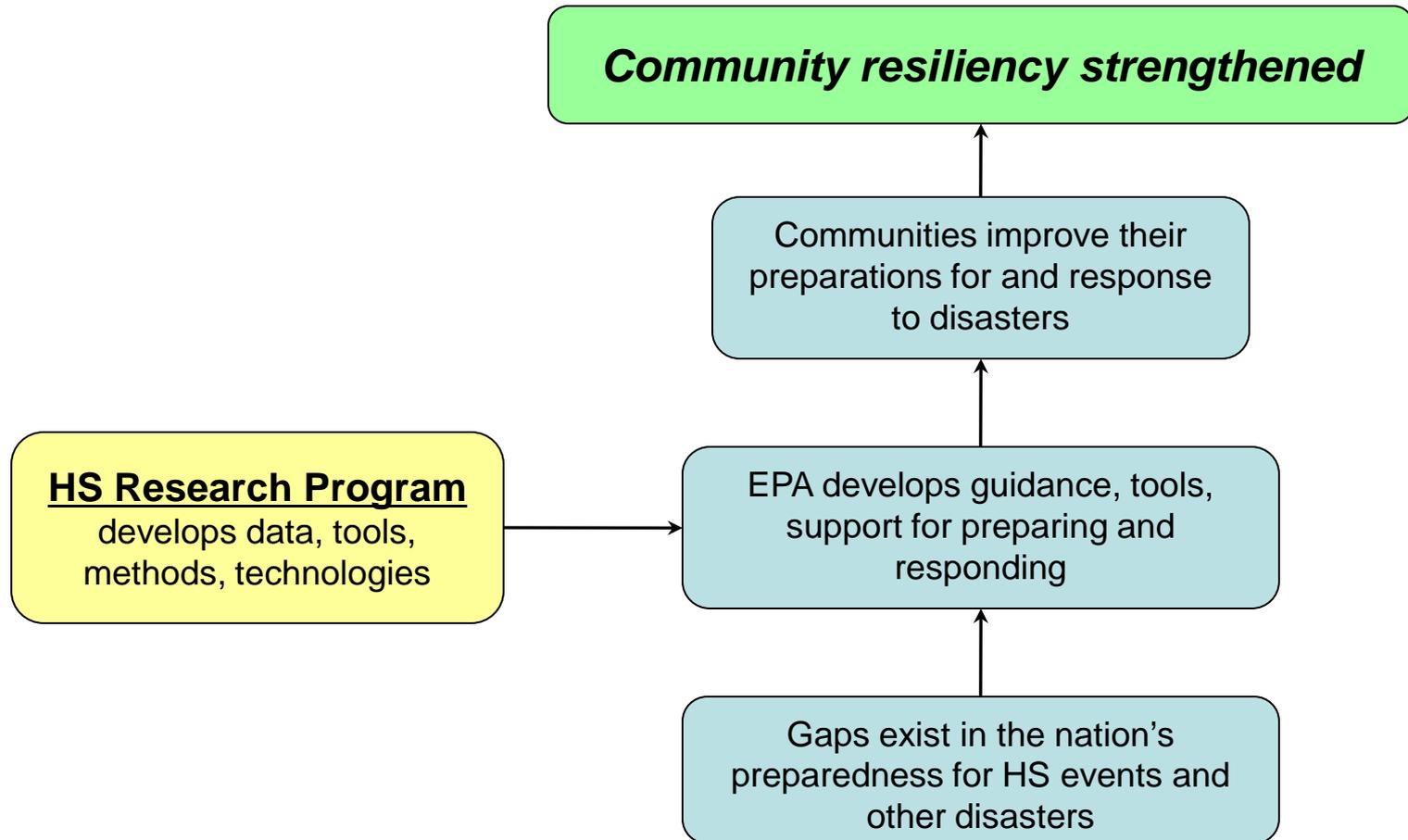
- **Protect water systems from attacks and for detecting and recovering from successful attacks** affecting water systems by leading efforts to provide States and water utilities guidance, tools and strategies. *EPA is the federal government Sector Specific Agency (SSA) lead for water infrastructure.*
- **Decontaminate buildings and outdoor areas** impacted by a terrorist attack by leading efforts to establish clearance goals and clean up.
- **Develop a nationwide laboratory network** with the capability and capacity to analyze for chemical, biological and radiological agents for routine monitoring and in response to a terrorist attacks.

**Food Safety
Modernization Act of 2010**



“provide support for, and technical assistance to, State, local, and tribal governments in preparing for, assessing, decontaminating, and recovering from an agriculture or food emergency”

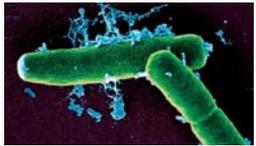
Helping Build Community Resiliency



Strategic Directions

Based on needs and guidance from the White House Homeland Security Council, our primary clients, SAB and NAS, the major strategic directions identified and to be addressed include:

- **Responding to a wide-area anthrax attack** – dose-response, clean up goals, sampling and analytical methods, risk assessment and communication, and clean up strategies
- **Responding to the detonation of a radiological dispersion device (RDD)** – sampling and analytical methods, and clean up strategies
- **Responding to an attack on a water distribution system** – modeling tools to contain the spread of contamination and locate the source, risk assessment and communication, decontamination of infrastructure, and treatment of contaminated water
- **Developing sampling and analytical methods** for chemical, biological and radiological materials that may be used as weapons of mass destruction
- **Multiple Use Solutions** – While addressing EPA mission with respect to CBR terrorism, build scientific products that can address a breadth of disasters



Inter-Agency Cooperation



- DoD
 - DTIC
 - DTRA
 - Army
 - ECBC
 - TSWG
 - ACE/ERDC
- USDA
- USGS
- CIA
- EPA
- DOE
 - ORNL
 - SNL
 - LLNL
 - ANL
- CDC
 - NIOSH
- DHS
 - S&T
 - University Programs

Major Accomplishments



- **Water contamination detection tools** developed and integrated into OW's Water Security Initiative, in use in several large cities
- **Liberty RadEx (national exercise, 2010)** – rad research used in planning and down-selection of technologies
- **EPA Biostrategy Guide (draft)** – incorporates research results on sampling/analytical methods, resuspension, clean up goals, remediation approaches, waste management.
- **Selected Analytical Methods** – adopted by EPA's lab network, many State labs
- **Provisional Advisory Levels** (over 100 for air/water matrices)
- **R&D 100 Awards:**
 - 2009: Mobile water sample concentrator
 - 2010: CANARY event detection software tool
- **Technical assistance to Regions**
 - Natural anthrax contamination – responders used our advice and research results to help choose clean up approach
 - 2007-8: Danbury, CT
 - 2009-10: Durham, NH
 - Mustard gas canisters, New Bedford, MA – consulted on analytical methods, cleanup options



FY 2012 Program



Water Security

- Developing real-time modeling and decision tools for contamination mitigation and containment
- Building water infrastructure decontamination and treatment strategies
- Decreasing emphasis on contamination detection tools

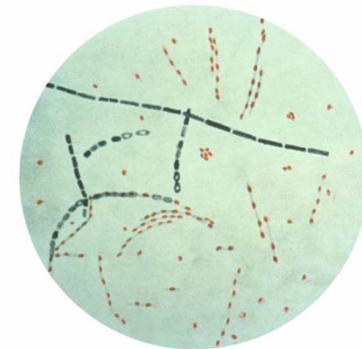
Methods

- Developing microbial risk assessment methodologies
- Advancing our understanding of anthrax health effects
- Completing high priority biological, chem analytical methods development
- Improving risk communication approaches

Indoor/Outdoor Decontamination

- Developing decontamination approach for wide areas
- Assessing green approaches to decontamination
- Studying the fate of agents in the environment (resuspension)
- Developing waste management strategies

FY 2012 Key Accomplishments



Water Security

- Update and commercialization of contamination warning systems software tools (TEVA-SPOT and CANARY)
- Efficacy of various detectors for online monitoring of water contamination
- Data and strategies for decontamination of water and wastewater systems

Methods

- Microbial risk assessment framework for remediation decisions
- Low-dose health effects data *B. anthracis*
- Analytical methods for chem and rad agents
- Results from risk communications studies

Indoor/Outdoor Decontamination

- Results from the full-scale facility biological decontamination test at INL
- Evaluation of radiological clean up approaches for wide areas
- Effects of decontamination on sensitive equipment (computer, medical equipment)



FY 2011 Capstone Field Study Results in FY2012

Bio-Response Operational Testing and Evaluation (BOTE) Project

Full-scale building decon at Idaho National Laboratory

Objectives:

- To conduct and evaluate field-level facility remediation studies
- To evaluate the effectiveness of waste/washwater collection, decontamination, and disposal procedures
- To determine the total cost of applying the selected decontamination technology (i.e., including sampling, waste handling and treatment)



Multiple Uses of HS Research Products

Examples

HS Research Products	Other Uses
Water contamination detection tools	Routine distribution system monitoring
Analytical methods	Broad use
Microbial risk assessment methods	Other pathogen issues
Decontamination of buildings	Mold, chem cleanup
Waste management tools	Most disasters
Provisional advisory levels	Industrial releases, spills

FY 2012 Budget Highlights

(FY2010 Enacted \$35.0M, FY2012 PB \$26.7M, Change -\$8.4M)

- The Homeland Security budget reflects the difficult choices made to redirect resources into ORD's highest priority areas
- Research that is completed, or close to completion, and which accounts for approximately \$4M in reduction includes:
 - Planned completion of research needed for developing approaches to decontamination of buildings (Safe Buildings - \$2M)
 - A reduced need for new water contamination detection tools as the EPA's Water Security Initiative completes its mission (\$1M)
 - Completion of a large extramural grant to develop methods of microbial risk assessment (\$1M)
- An disinvestment will come from support to EPA's Environmental Response Laboratory Network and will reduce our capacity to address new threat agents (\$3.5M)