United States Environmental Protection Agency

Homeland Security Research Program

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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.

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HS Research Program Mission

To conduct research and develop scientific products that improve the capablity of the Agency to carry out its homeland security responsibilities

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Clients of the HS Research Program

Primary Clients

EPA Office of Water

responsible for carrying out water sector-specific lead agency duties

EPA Office of Solid Waste and Emergency Response

broad responsibilities in response to indoor and outdoor areas incidents of national significance

Other important stakeholders

EPA Office of Homeland Security

EPA Regions

EPA Office of Prevention, Pesticides and Toxic Substances

EPA Office of Air and Radiation

States and local authorities

Water utilities

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Homeland Security Research Program Long Term Goals

Long Term Goal 1: The Office of Water, water utilities and other clients use homeland security research program products and expertise to improve protection from and the capability to respond to terrorist attacks on the nation's water and wastewater infrastructure.

Long Term Goal 2: The Office of Solid Waste and Emergency Response and other clients use homeland security research program products and expertise to improve the capability to respond to terrorist attacks affecting buildings and the outdoor environment.

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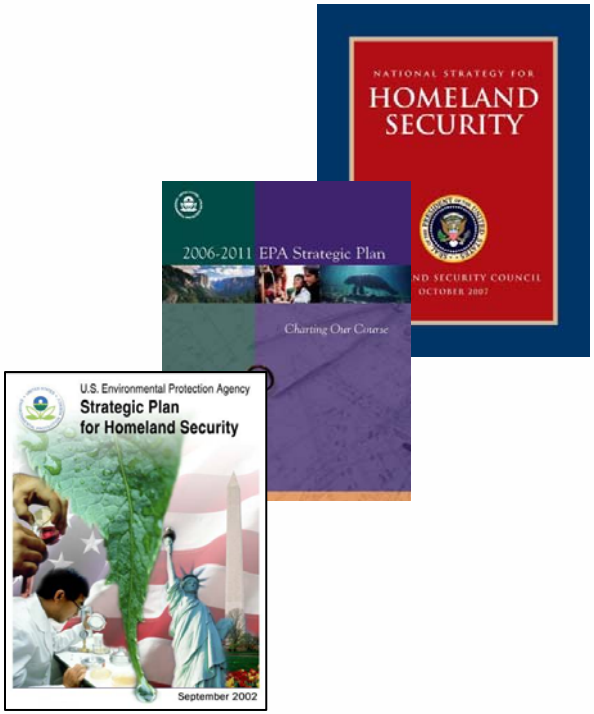
Homeland Security Research

Establishing Strategic Directions



- Strategic plans
  - National Homeland Security Strategy
  - EPA Strategic Plan
  - EPA Homeland Security Strategy
- Administration priorities
- DHS threat analyses
- Client needs
- External expert advice
  - SAB
  - BOSC (May 2008): *"The general quality of the research being conducted is quite high and directed by a well organized MYP. "*
  - National Research Council

EPA Responsibilities Responding to Terror Events and Research Themes

Event Chronology	**Water Infrastructure** To provide the EPA response community and water/wastewater utilities guidance, methods and tools so that they may effectively:	**Outdoor and Indoor Areas** To provide the EPA response community guidance, methods and tools so that they may effectively:
Protect against attacks	√	
↓		
Monitor, detect, and confirm CBR attack	√	
↓		
Minimize exposure of the public to the contamination	√	√
↓		
Characterize the nature and extent of contamination	√	√
↓		
Assess the risk to human health and establish cleanup goals	√	√
↓		
Clean up the site	√	√

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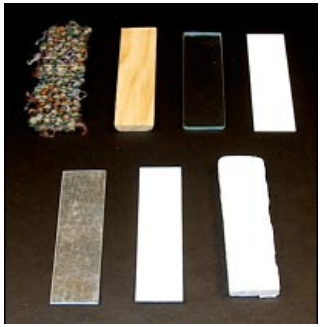
Recent major program accomplishments

- **Developed Provisional Advisory Levels** (PALs) for exposure to over 30 high priority hazardous chemicals and chemical warfare agents in air and drinking water.
- **Sixteen Instruments Tested** to Determine Their Capability to Screen Samples Submitted to All Hazards Receipt Facilities prior to a full analysis, helping protect responders, workers, and others from potential injury. AHRFs were developed to prescreen for chemical, radiochemical, and explosive hazards in samples collected during suspected terrorist attacks.
- Chosen as one of six international finalists vying for the 2008 prestigious **Franz Edelman Award** for work on modeling and distribution systems, “Reducing Security Risks in American Drinking Water Systems.”
- **Developed and licensed a ultrafiltration-based concentrator** for microbial water samples to support rapid microbial analysis and licensed the technology to a private company for marketing.
- **Determined the efficacy of decontaminating** toxic industrial chemicals and chemical warfare agents on building materials using chlorine dioxide fumigant and liquid oxidants



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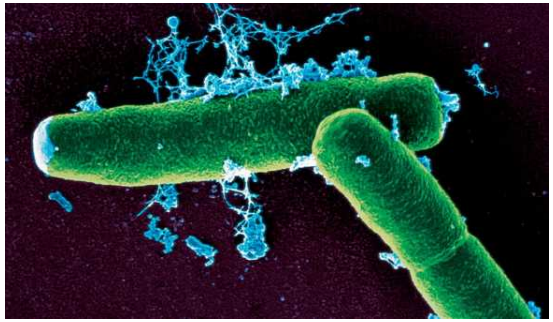

2010 – 2014 Strategic Directions

Based on needs and guidance from the White House Homeland Security Council, our primary clients, SAB and NAS, the major strategic direction 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, clean up strategies
- **Responding to the detonation of a radiological dispersion device** (RDD) – sampling and analytical methods, 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, treatment of contaminated water
- **Developing sampling and analytical methods** for chemical, biological and radiological materials that may be used as weapons of mass destruction.

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Anticipated, near-term major program accomplishments

- Strategies to decontaminate water infrastructure when intentionally contaminated with chemical, biological or radiological materials
- A non-zero, risk-based cleanup goal for anthrax
- Development and testing of decontamination methods to address wide-area anthrax and radiological contamination
- Verified and validated analytical methods for chemical warfare and biological agents (esp. anthrax) in water, air and on surfaces (in collaboration with OSWER and OW).
- Increased understanding of how to communicate risk and risk management decision to the public.
- Publication of the HS Research Multi-Year Plan

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Relationship to other Programs

- ORD research closest relatives
  - **Drinking Water Research Program**
  - Land Research Program
  - Human Health Risk Assessment Research Program
- Interagency research coordination
  - **DoD** and **DHS** science and technology programs via “Tri-Agency workgroup” and several MOUs
  - **CDC** collaboration on microbial risk assessment
- Others
  - Water Research Foundation
  - Water Environment Research Foundation
  - International collaborations (UK, Australia, Russia)