

US EPA ARCHIVE DOCUMENT

# **“All Hazards” Science to Build Resilience**

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**EPA Homeland Security Research Program**

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# EPA's Activities Related to Response and Recovery from Disasters

Sampling and Analysis

Containment and Mitigation



Decontamination

Waste Management

Determining a Clean Up Goal

Research

Site Specific Research

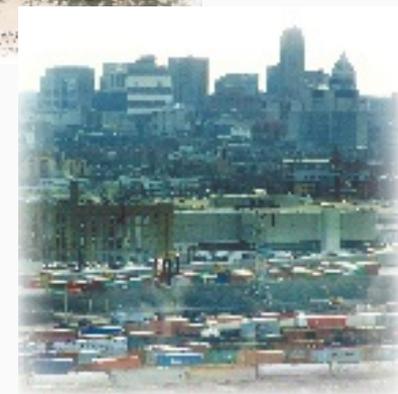




# Homeland Security Research Program

*Mission: to conduct research and develop scientific products that improve the capability of the Agency to carry out its homeland security responsibilities*

**ADVANCING  
OUR NATION'S  
SECURITY  
THROUGH  
SCIENCE**



# HSRP Research Themes

## Securing and Sustaining Water Systems

Supporting WSi (sensors, software tools, technical assistance)

Infrastructure decontamination

Water treatment

Innovative system designs and management



## Characterizing Contamination and Determining Risk

Sampling, analytical methods

Sampling strategies

Determining risk, clean up goals

Microbial risk assessment methodologies



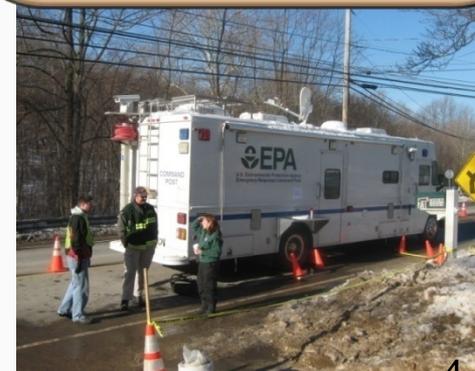
## Remediating Indoor and Outdoor Environments

Efficacy, optimization of cleanup technologies

Fate of contamination, resuspension

Wide area cleanup

Waste management





# Research Planning, Execution, and Delivery

- Applied Research and Technical Support (*Oriented to Solutions*)
- Customer and Stakeholder Responsiveness (*Focused on Needs/Gaps*)
- High Quality Scientific and Technical Data (*More Informed Decision Making*)





## *Making the pieces fit:* EPA's "All Hazards" Science Builds Resilience

Supporting Community Resiliency



Filling "All Hazards" Science and Technology Gaps to Support EPA  
Response and Recovery Capability

**Response time: 1 to 3 years**

**Response time: hours/months**

### Homeland Security Research Program

- Emphasize multiple benefits
- Conduct new research

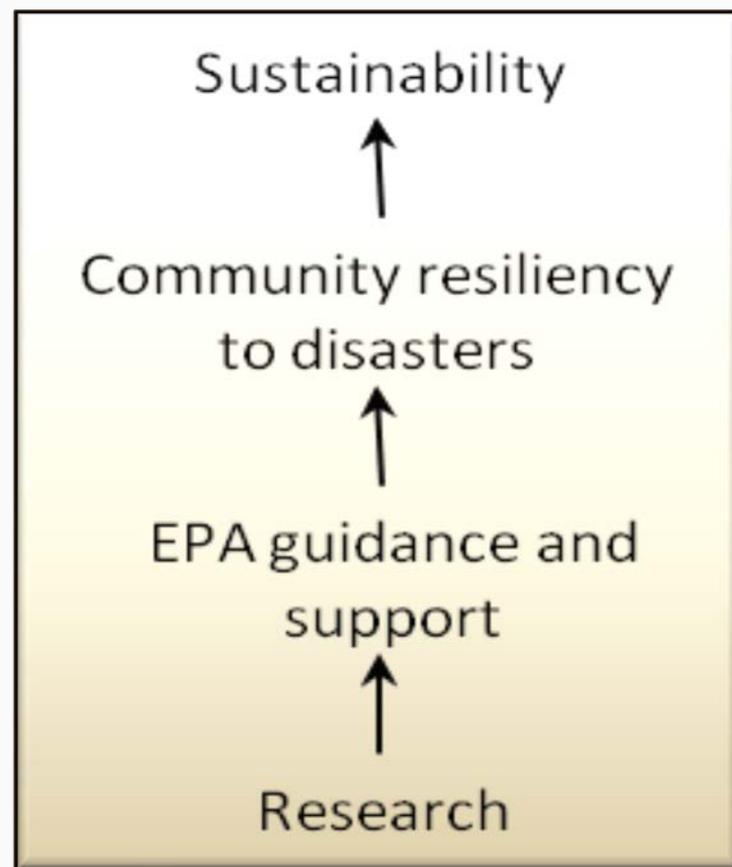
### Science and Technical Reachback Support

- Provide technical advice
- Conduct short-term studies



# Resilience

- **Resilience is HSRP's role in sustainability!**
- Sustainability of our communities requires resilience to disasters.
- HSRP incorporates criteria for planning or prioritizing research projects that include sustainability and resiliency principles:
  - systems-thinking,
  - benefit-cost analysis, and
  - the multi bottom line.





## “Resilience requires the capability to anticipate risk, limit impact, and bounce back rapidly in the face of turbulent change”

(Community and Regional Resilience Institute)



The Breezy Point neighborhood at the tip of the Rockaway Peninsula in Queens, N.Y., where more than 100 homes were consumed by fires during Superstorm Sandy.

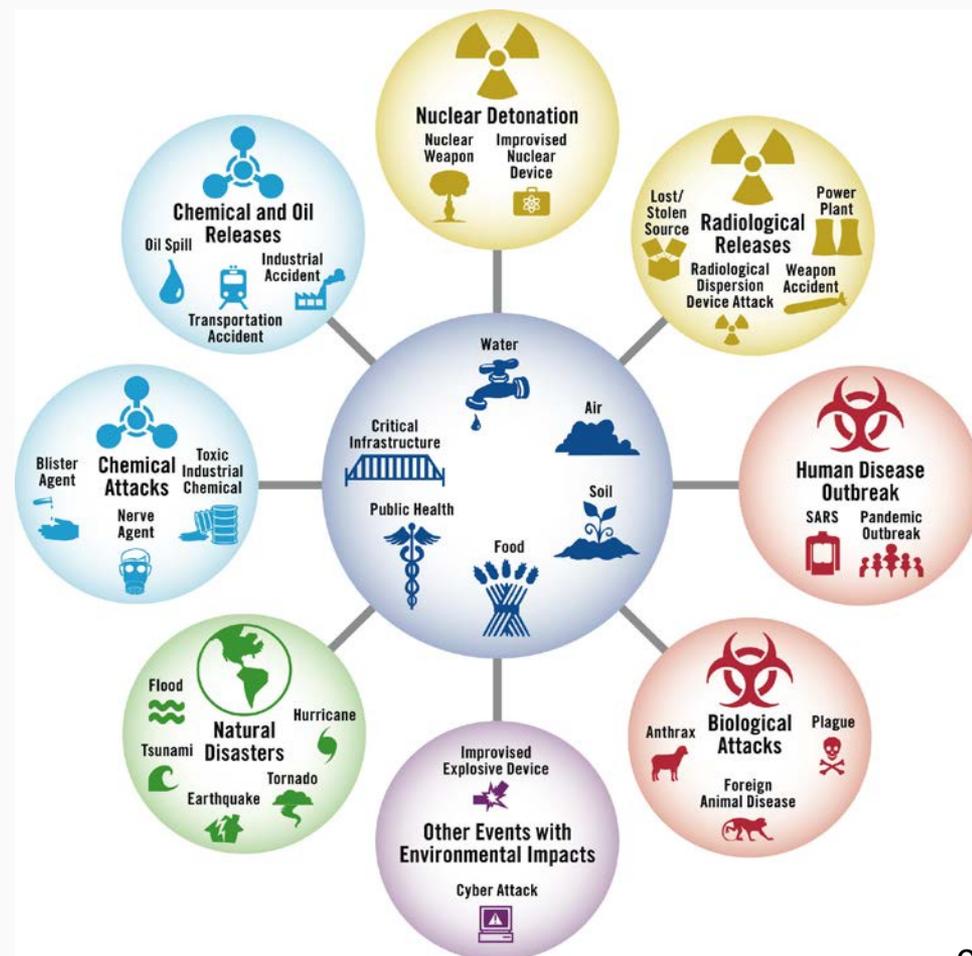
**Anticipating risk** – HSRP develops data and methods to characterize and communicate information on risks to human health and to infrastructure

**Limiting impacts** – HSRP develops new mitigation strategies, including detection technologies, analytical methods, decontamination techniques, safe disposal strategies, and exposure and risk assessments

**Bouncing back rapidly** – HSRP develops capacity and capability for sampling and analysis, water and infrastructure decontamination and disinfection protocols, decontamination and waste management techniques, decision support tools based on solid scientific data, and science to inform clearance decisions.



# EPA's "All Hazards" Universe



*Refining EPA's Approach to Homeland Security, Office of Homeland Security (2011)*



# “All-Hazards”

**EPA Office of Homeland Security Approach:** “EPA will take an “all-hazards” approach towards preparedness that allows us to respond effectively to all types of incidents, whether natural, accidental, or deliberate in origin. We will maintain flexible, scalable operational capabilities in preparation for small events and large catastrophes.”

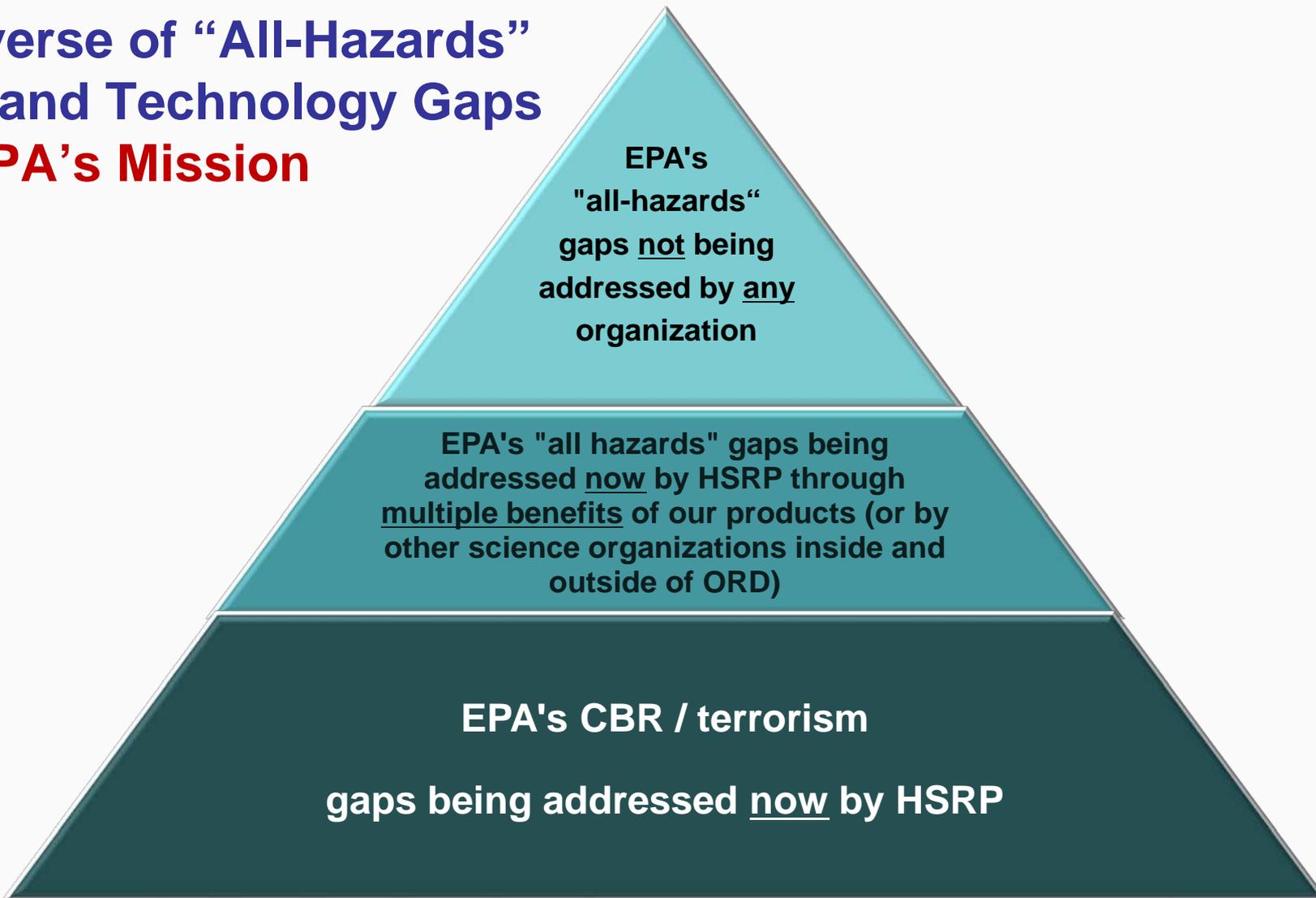
*Refining EPA’s Approach to Homeland Security, Office of Homeland Security (2011)*

**SAB/BOSC Guidance:** “The HSRP, as a valuable national resource, should adopt an ‘all-hazards’ approach to enhance its value.”

*Implementation of ORD Strategic Research Plans: A Joint report of the Science Advisory Board and ORD Board of Scientific Counselors (2012)*



# The Universe of “All-Hazards” Science and Technology Gaps within EPA’s Mission





## Multiple Benefits/Uses

“Current products should be assessed and mapped to the needs of potential new partners.”

*Implementation of ORD Strategic Research Plans: A Joint report of the Science Advisory Board and ORD Board of Scientific Counselors (2012)*





## Examples of Multiple Benefits

Research Products	HS Use	Multiple Benefits
Fumigation approaches for buildings	Anthrax decon	Hospital or mold decon
Sensors and CANARY	Detect contamination in distribution systems	Detect contamination in distribution systems
Water modeling tools	Enhance water security preparedness and response	Design and retrofit water systems for resilience
Provisional Advisory Levels	Exposure guidelines following a chem attack	Exposure guidelines following an industrial accident
Analytical methods	Cleanup following terrorist attack	Cleanup following contaminant release (accidental, natural disaster)
Waste management tools	Waste strategies following a terrorist attack	Waste strategies following a hurricane



# WE'RE BUILDING THE FUTURE NOW (ON THE JOURNEY)

- Resiliency/Sustainability
- All-hazards Approach
- Multiple Benefits



## Questions?



<http://www.epa.gov/nhsrc/>

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