

Chemical and Biological Defense Program

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Homeland
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Chemical and Biological Defense



Mission: to increase the Nation's preparedness against chemical and biological threats through improved **threat awareness, advanced surveillance and detection, and response countermeasures.**

Strategic Objectives

- Enable comprehensive understanding and analyses of CB threats
- Develop pre-event assessment, discovery, and interdiction capabilities
- Develop capability for warning, notification, and timely analysis
- Optimize technology and process for response and recovery
- Enhance the capability to inform attribution of attacks
- Develop medical countermeasures against foreign animal diseases



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Guidance and Collaborations

- DHS is identified as lead and principal contributor to multiple advancements in domestic defensive posture through an array of Executive directives:
 - **HSPD-10:** *BioDefense for the 21st Century*
 - **HSPD-22:** *Domestic Chemical Defense*
 - **HSPD-9:** *Defense of U.S. Agriculture and Food*
 - **HSPD-18:** *Medical Countermeasures against Weapons of Mass Destruction*
 - **PPD-2:** *Implementing National Strategy for Countering Biological Threats*

- Strategy and program coordination effected through several overarching interagency efforts:
 - **NSTC CHNS Subcommittees:** *Biodefense R&D, Chemical Defense R&D, Standards*
 - **MOU on CB Defense with DoD and EPA**
 - **Joint Agrodefense R&D Strategy**

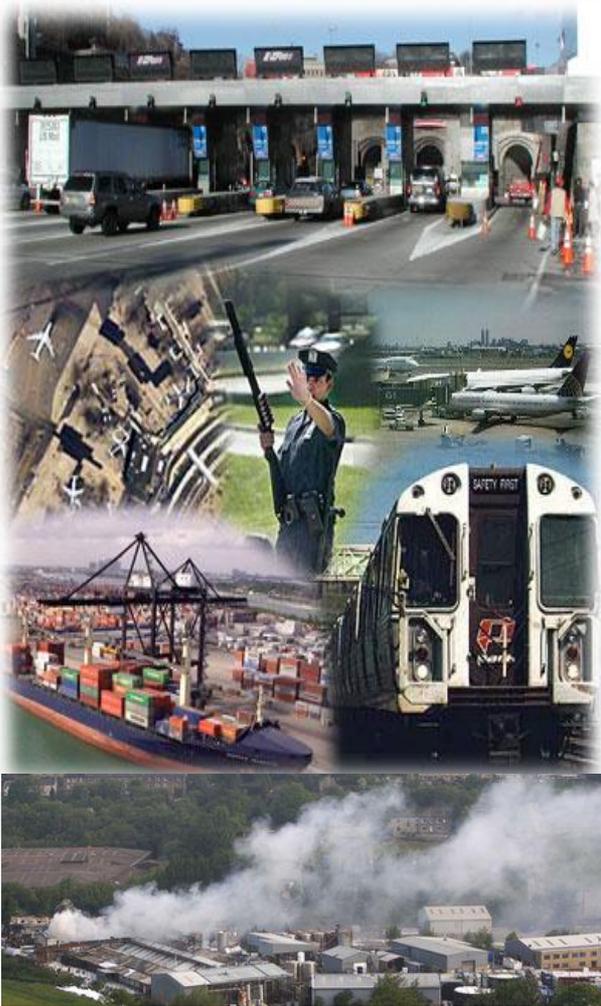


Highly Textured Customer and Stakeholder Environment

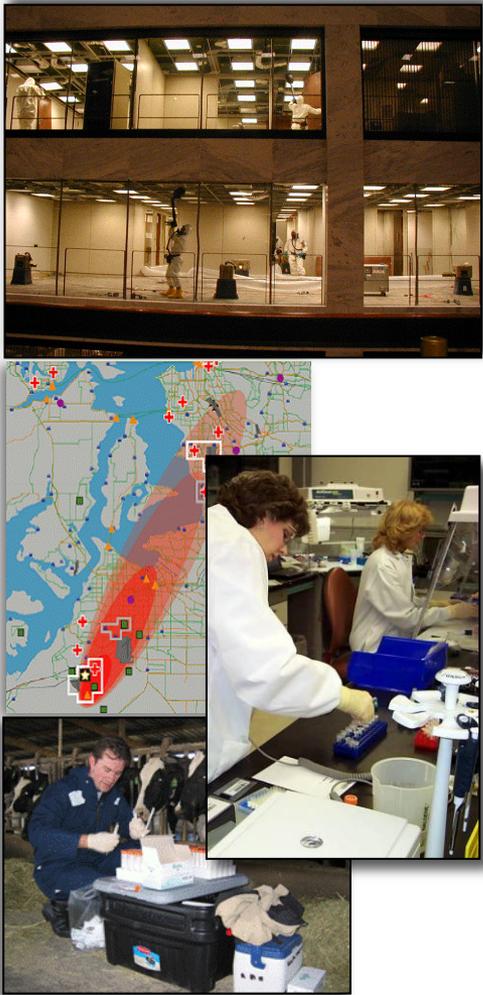
**Responders
Emergency
Management**



DHS components
(OHA, NPPD/IP, CBP, TSA,
USSS, FEMA, USCG, I&A)



Federal interagency
(FBI, EPA, HHS, USDA, DoD)



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Successful Transition – Detection Systems

BioWatch



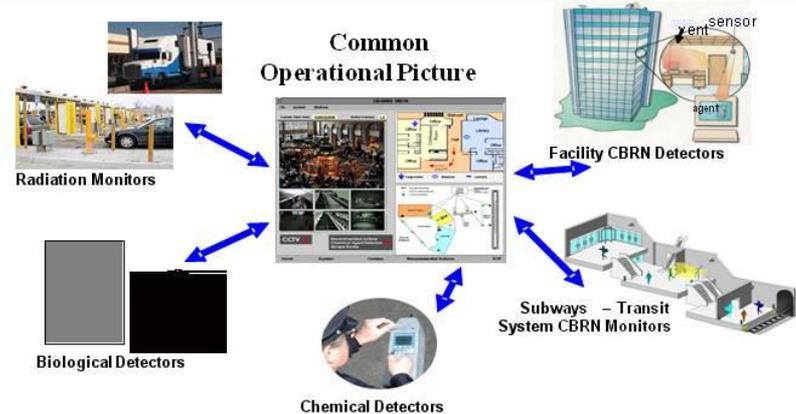
Rapidly Deployable Chemical Detection System (RDCDS)



PROTECT



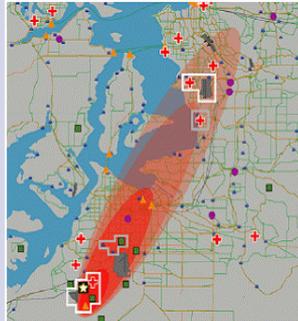
Integrated CBRNE



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Successful Transition - Restoration

Chem and Bio Remediation Guidance



All Hazard Receipt Facility



Fixed Laboratory CWA Response



Mobile Chemical Analysis Lab (PHILIS)*



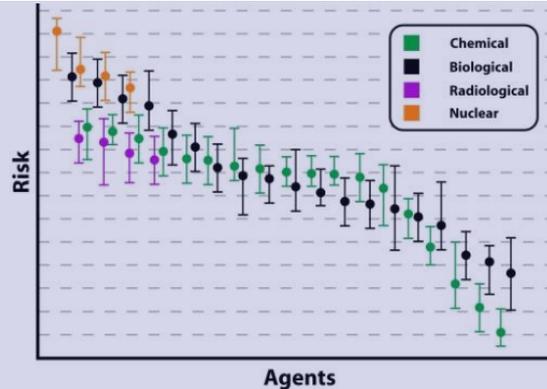
* PHILIS - Portable High Throughput Integrated Laboratory Identification System



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Successful Transition – Threat Characterization

CBRN Terrorism Risk Assessments



Material Threat Assessments



Microbial and Chemical Forensics



Material Threat Determinations

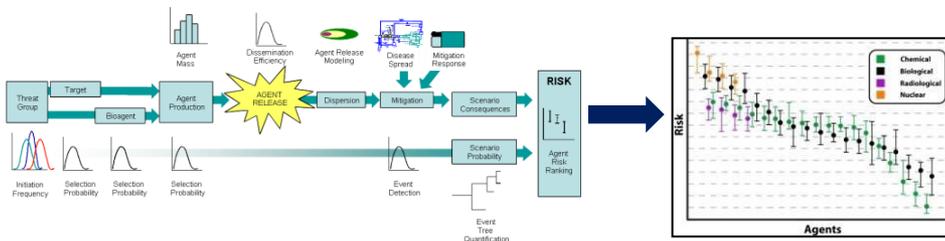
- 10 Biological
- 1 Chemical
- 2 Radiological/Nuclear



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Threat Awareness

- Risk assessments
- Material threat assessments
 - inform medical and other CM development
- Lab studies to improve understanding of bio agent properties
- Chemical hazard awareness, assessment, and analysis
- Knowledge management systems
- Technical reachback



National Biodefense Analysis and Countermeasures Center (NBACC)



Chemical Security Analysis Center (CSAC)



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Detection and Surveillance

- Rapid early warning of indoor and outdoor releases
 - Broadest possible agent coverage
 - Networked systems, where possible
- Enhanced laboratory-based surveillance technologies
- Detection tools for responders



Viable Bioparticle Capture

- maintain viability for weeks
- better characterize threat
- inform appropriate med CM



Detect-to-Protect Biosensors

- rapid detn/ID indoor releases
- pilot demo in Boston metro system



Multi-Application Multiplex Technology Platform

- rapid PCR
- for multiple matrices
- 100-target cartridges

Response and Recovery

- Generally exploit currently or near-term available technologies and response systems
- Develop consequence management frameworks and planning templates
- Demonstrate on local/regional level
- Involve Federal interagency to ensure smooth integration



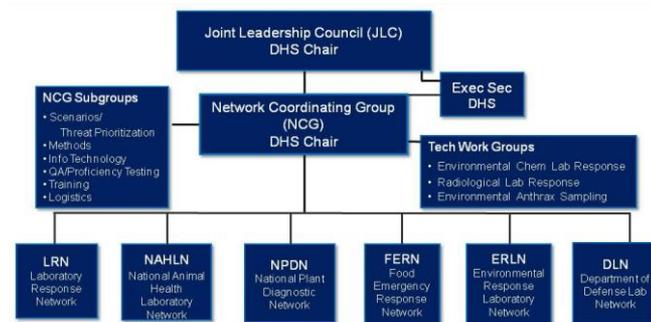
Wide Area Recovery and Resiliency Program

- chem, bio, rad
- on-going demo in Denver



Integrated Detection/Decon Demo

- persistent chem agents
- facility recovery guidance



Integrated Consortium of Lab Networks

- comprises six Fed lab response networks
- optimize joint response

Potential FY13 New Starts in CB Defense



Adaptive Facility Protection

- networked bio, chem sensors
- integrated with infrastructure climate control systems
- initiate low-regret responses
- playbook for building response
- integrate with local response

Chem Bio Event Characterization

Underground Transport Restoration

- tools, guidance for contamination mapping
- reaerosolization, fate, transport
- decon technologies for physical infrastructure and “rolling stock”
- all-hazards framework with chem, bio annexes



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Challenges

- Declining budget forces difficult decisions
- DHS chemical defense program slowed to maintenance level
- Interagency still looks to DHS to lead
- Interagency movement as a group can be difficult due to varying equities and requirements: patience is required and rewarded
- For any S&T program, optimization against simultaneous goals of quick successes and leap-ahead capability generation



Activities under DoD-DHS-EPA MOU on CB Defense

- Exploring Biosurveillance
 - Essential system components
 - Agency roles
 - Clinical and environmental detection / health surveillance
 - Information integration
- Joint efforts in environmental biodetection development
- Chem and bio agent data assimilation into “joint databases”
 - Incorporating allies information
- Evolution of biological threat and strategic response
- Countermeasures to emerging chemical threat materials



In Closing.....

- The DHS Chem Bio Defense Program has enabled significant contributions to improved defensive posture since 2004.
- Current pressures force greater focus and economy.
- DHS will work as closely as possible with its interagency partners to make best use of the Nation's investment in CB defense.





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