Chemical and Biological Defense Program

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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
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)
Successful Transition – Detection Systems

BioWatch

Rapidly Deployable Chemical Detection System (RDCDS)

PROTECT

Integrated CBRNE

Homeland Security
Successful Transition - Restoration

Chem and Bio Remediation Guidance

Fixed Laboratory CWA Response

All Hazard Receipt Facility

Mobile Chemical Analysis Lab (PHILIS)*

* PHILIS - Portable High Throughput Integrated Laboratory Identification System
Successful Transition – Threat Characterization

**CBRN Terrorism Risk Assessments**

- 10 Biological
- 1 Chemical
- 2 Radiological/Nuclear

**Microbial and Chemical Forensics**

**Material Threat Assessments**

- 10 Biological
- 1 Chemical
- 2 Radiological/Nuclear

**Material Threat Determinations**
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
Detection and Surveillance

- Rapid early warning of indoor and outdoor releases
  - Broaddest 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
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.