Department of Defense
Chemical and Biological Defense Program (CBDP)

National Defense Industrial Association
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Dr. Gerald W. Parker Jr.,
Deputy Assistant to the Secretary of Defense

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CBDP Vision and Mission

**Vision**
A Department of Defense (DoD) that prevents, protects, and responds to chemical and biological threats

**Mission**
Provide global chemical and biological defense capabilities in support of National Strategies

*The CBDP is a key part of a comprehensive national strategy to prevent, protect, and respond to an evolving spectrum of 21st Century CBRN threats*
Global Security Environment

Threats
- Pervasive impact
- Conflict engagement
- Regional prevalence
- Asymmetric warfare (WMD)
- Adaptive / emergent

Major Challenges
- Traditional / non-traditional threats
- Irregular warfare
- Catastrophic consequences
- Disruptive economic impact

Stakeholders
- Joint Forces
- Interagency Partners
- International Collaborators

These issues must be addressed with the right mix of resources to enhance the nation’s security and improve Warfighter CBRN defense capabilities.
Threat Environment

**Biological**

**Traditional Threats**
- Bacterial pathogens (anthrax, plague)
- Viral pathogens (VEE, WEE)
- Toxins (botulinum, ricin)

**Emerging Threats**
- Current and emerging diseases
  - Anthrax
  - Botulinum
  - VEE / EEE / WEE
  - Emerging Infectious Diseases

**Enhanced Threats**
- Strains enhanced for environmental survivability
- Selection or creation of hypervirulent strains and pathogens with increased resistance to preventatives and treatments

**Advanced Threats**
- Pathogens with altered targets or symptoms to confound diagnosis and treatment
- Creating viruses de novo

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**Chemical**

**Traditional Threats**
- Chemical warfare agents (nerve, blood, and blister)
- Agents designed for military operations/applications
- Toxic Industrial Materials (TIMs)/Toxic Industrial Chemicals (TICs)

**Advanced Threats**
- Non-traditional Agents (NTA)
- Asymmetric applications and/or engagements
The NCB Provides Key Capabilities to Support Multiple National Strategies

National Security

Combating Terrorism

Combating WMD

Homeland Security/Defense
Changing Threats - New Strategies 1

- Promoting global health security
  - Marriage of traditional BW defense and public health programs
  - Building capacity for global health surveillance: detection, diagnosis, and reporting

- Improving international capacity against infectious disease
  - Working with international partners to improve surveillance, response, recovery, and attribution of disease outbreaks
Changing Threats - New Strategies 2

- “Whole-of-Government Approach”
  - Coordinate across Departments and Agencies to strengthen national capacity and response
  - Links defense, diplomacy, intelligence, and health missions
  - Leverage (not duplicate) the capabilities of governmental partners
  - Work with private and multinational entities to accomplish mission
  - Encourage international partners to examine US approach
Changing Threats - New Strategies 3

- Emphasis on Prevention of CBRN Attacks
  - Work through institutions, alliances and coalitions to extend reach and dismantle proliferation networks
  - Increase and improve the interdiction of materials and secure CBRN worldwide
  - Assist allies in developing detection capabilities to provide early warning of attacks and outbreaks.
  - Help partners to develop CBRN elimination technologies to mitigate the impact of attacks on their populations.
CWMD is a Primary missions of the U.S. Armed Forces
Incorporate an active “Whole-of-Government Effort”
Continue to invest in capabilities critical to future success …to detect, protect against, and respond to WMD use
Differentiate between those investments that should be made today and those that can be deferred … “reduce the cost of doing business”… ensure “reversibility”
Maintain our edge in technology superiority by protecting investments in development of future capabilities
Build partnership capacity elsewhere for sharing the costs and the responsibilities of global leadership …
Make every effort to maintain adequate industrial base and our investment in S&T
Encourage innovation in concepts of operation
CBDP Key Objectives

- Produce medical countermeasures (MCM) that meet current CBR threats utilizing platform technologies capable of meeting emerging threats

- Field CB defense technologies capable of supporting biosurveillance
  - Produce point-of-need diagnostic capabilities against CBRN threats to enable rapid force protection decisions
  - Develop affordable, broad-spectrum CB detection capabilities to detect current and emerging CB hazards

- Integrate NTA defense capabilities into all future CB defense systems
  - Further efforts to provide an expanded NTA capability to the Joint Force

- Maintain right-sized core CBDP physical infrastructure and intellectual capital, aligned with research, development, and acquisition priorities, to rapidly develop, test, and field CBR defensive capabilities to the warfighter
CBDP Focus Areas

• Medical Countermeasures
  • Fund S&T efforts to develop the next-generation of manufacturing systems and regulatory science technologies.
  • Provide a dedicated, cost-effective, reliable, and sustainable advanced development and manufacturing capability.
  • Enhance the MCM S&T pipeline and advanced development portfolio to address priority threats.

• Biosurveillance
  • Develop capabilities to prevent or reduce the impact of biological and Chemical threats and risks
  • Provide early warning & detection to reduce impact
  • Strengthen decision-making and force health protection by informing overall biological situational awareness with integrated health, environmental, and other data.
CBDP Focus Areas (Con’t)

• Diagnostics
  • Resource a robust portfolio that provides capabilities to:
    • Identify threats in both permissible and non-permissible environments by autonomous individuals or teams with limited to no infrastructure support, e.g., a small team deployed to the third world
    • Diagnose the causative agent and survey for the presence of disease to anticipate, detect, identify, and quantify, disease-causing organisms with limited supporting infrastructure

• Non-Traditional Agent (NTA) Defense (Countering Advanced Threats)
  • Develop technologies that address existing and emerging NTAs in the near, mid, and far-term.
  • Strengthen and integrate capabilities that provide warning of attack, barrier protections, and both pre-treatments/prophylaxes and post-exposure treatments.
  • Expand interim NTA defense capabilities to additional DoD response forces
Diagnostics, Detection and MCM

Host Biomarkers

Pathogen ID

Bio-informatics

High Information Content Databases:
• Whole genomic sequences
• Pathogen signatures
• Characterized reagents
• Human Biomarkers

Disease and Countermeasure Resistance Markers

Future Diagnostic S&T
• Field deployable
• Multi-use/standardized
• Networked to IT infrastructure

Reagent Quality and Standards

Sample Preparation, Stability, and Transport

Platform Technologies

Advanced Development
Early Detection Improves Response

Effectiveness of Countermeasures

Window of Diagnosis

Exposure  Pre symptomatic  Symptoms

Biosurveillance

Window of Treatment
Full Spectrum CB Defense

- **Surveillance**
  - Detection
  - Information
  - Diagnostics

- **Hazard Mitigation**
  - Individual Protection
  - Collective Protection
  - Equipment/Infrastructure Protection
  - Individual Decon
  - Equipment/Infrastructure Decon
  - Environmental Decon
  - Human Remains Decon
  - Containment

- **Medical Countermeasures**
  - Pretreatment
  - Prophylaxis
  - Therapeutics

- **Modeling and Characterization**
  - Dissemination
  - Agent Fate
  - Agent Characterization
  - Physiological Response
  - Agent / Simulant Synthesis & Culturing
**Resources: 2012 and 2013**

**FY12 Appropriated**
(TOA = $1,387 Billion)

- S&T, $501.7 Million
- System Development, $529.7 Million
- Procurement, $247.3 Million
- RDT&E Mgt, $92.8 Million

**FY13 Presidential Budget Request**
(TOA = $1,405 Billion)

- S&T, $508.1 Million
- System Development, $490.1 Million
- Procurement, $298.8 Million
- RDT&E Mgt, $92.8 Million
Strategic Partnerships are Key

Industry and Academia

Interagency

International

Department of Defense

Cooperation Integration
Questions
Full Spectrum CB Defense

CFA Framework

1 Surveillance
- CO 1.1 Detection
- CO 1.2 Information
- CO 1.3 Diagnostics

2 Medical Countermeasures
- CO 2.1 Pretreatments
- CO 2.2 Prophylaxis
- CO 2.3 Therapeutics

3 Hazard Mitigation
- CO 3.1 Individual Protection
- CO 3.2 Collective Protection
- CO 3.3 Equipment/Infrastructure Protection
- CO 3.4 Individual Decontamination
- CO 3.5 Equip./Infrastructure Decon.
- CO 3.6 Environmental Decontamination
- CO 3.7 Human Remains Decontamination
- CO 3.8 Containment

4 Modeling & Characterization
- CO 4.1 Dissemination
- CO 4.2 Agent Fate
- CO 4.3 Agent Characterization
- CO 4.4 Physiological Response
- CO 4.5 Agent / Simulant Synthesis & Culturing

Enabling CO

Capability Focus Area
Capability Objective