

Department of Defense Chemical Biological Defense Program



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Chemical and Biological Defense
and Chemical Demilitarization Programs,
SA(CBD&CDP)**

Joint CBRN Conference

June 26, 2007

<http://www.acq.osd.mil/cp/>

History of the CB Threat

Evolving Threats



Evolving Response





The Changing Nature of the Threat: Evolution of Chemical and Biological Agents

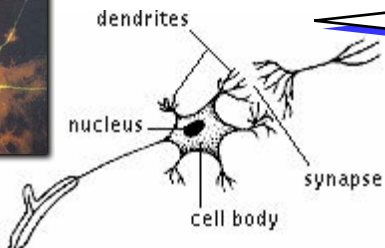
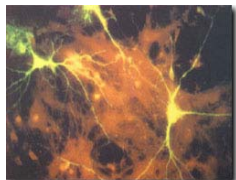


Commercial Chemical Compounds

Phosgene, Chlorine, Chloropicrin

Mustard (H) agents, Lewisite

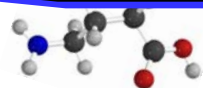
Cholinesterase Inhibitors



Tabun (GA)

G agents (GB, GD, GF)

V agents (VX)



Novichok agents

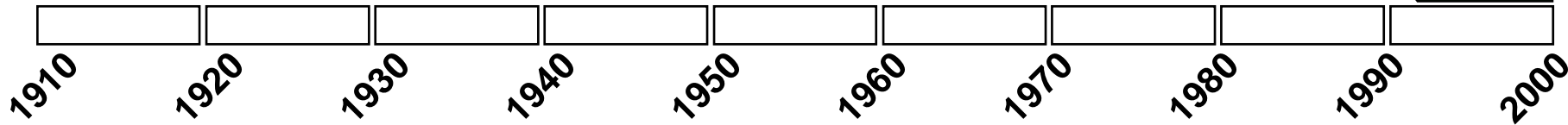
“Classical” Biological Agents

Bioregulators

Genetically Modified Agents



Advanced Biological Agents





CBDP Vision and Mission



VISION

Ensure DOD operations are unconstrained by chemical and biological effects.

MISSION

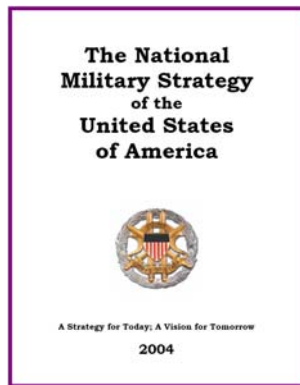
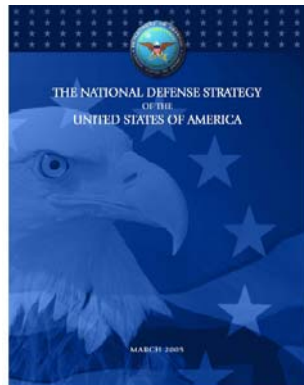
Provide chemical and biological defense capabilities in support of the National Military Strategies.



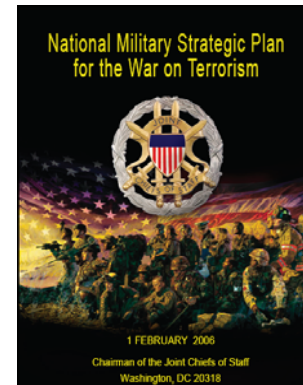
The CBDP Provides Key Capabilities Supporting Multiple National Strategies



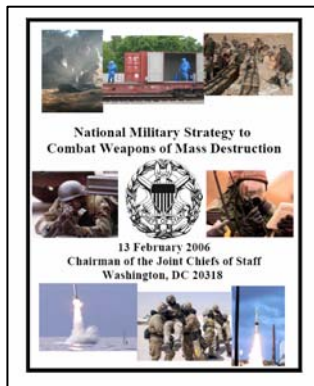
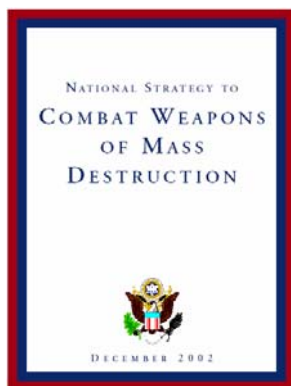
National Security



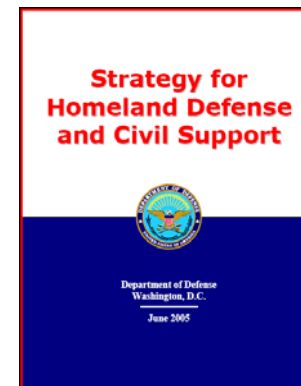
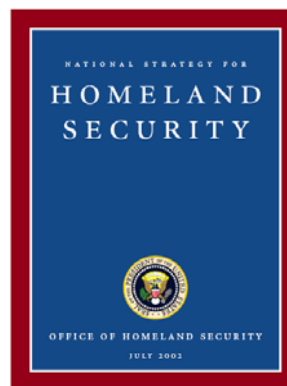
Combating Terrorism



Combating WMD



Homeland Security/Defense





Quadrennial Defense Review (QDR):

Vision for Combating Weapons of Mass Destruction



The future force will be organized, trained, equipped, and resourced to deal with all aspects of the threat posed by weapons of mass destruction. It will have capabilities to:

- ***detect WMD***, including fissile material ***at stand-off*** ranges;
- locate and characterize threats;
- interdict WMD and related shipments whether on land, at sea, or in the air;
- sustain operations under WMD attack; and
- render safe or otherwise eliminate WMD before, during or after a conflict.

The Department will ***develop new defensive capabilities*** in anticipation of the continued evolution of WMD threats. Such threats include ... ***genetically engineered biological pathogens***, and ***next generation chemical agents***. The Department will be prepared to respond to and help other agencies to mitigate the consequences of WMD attacks.



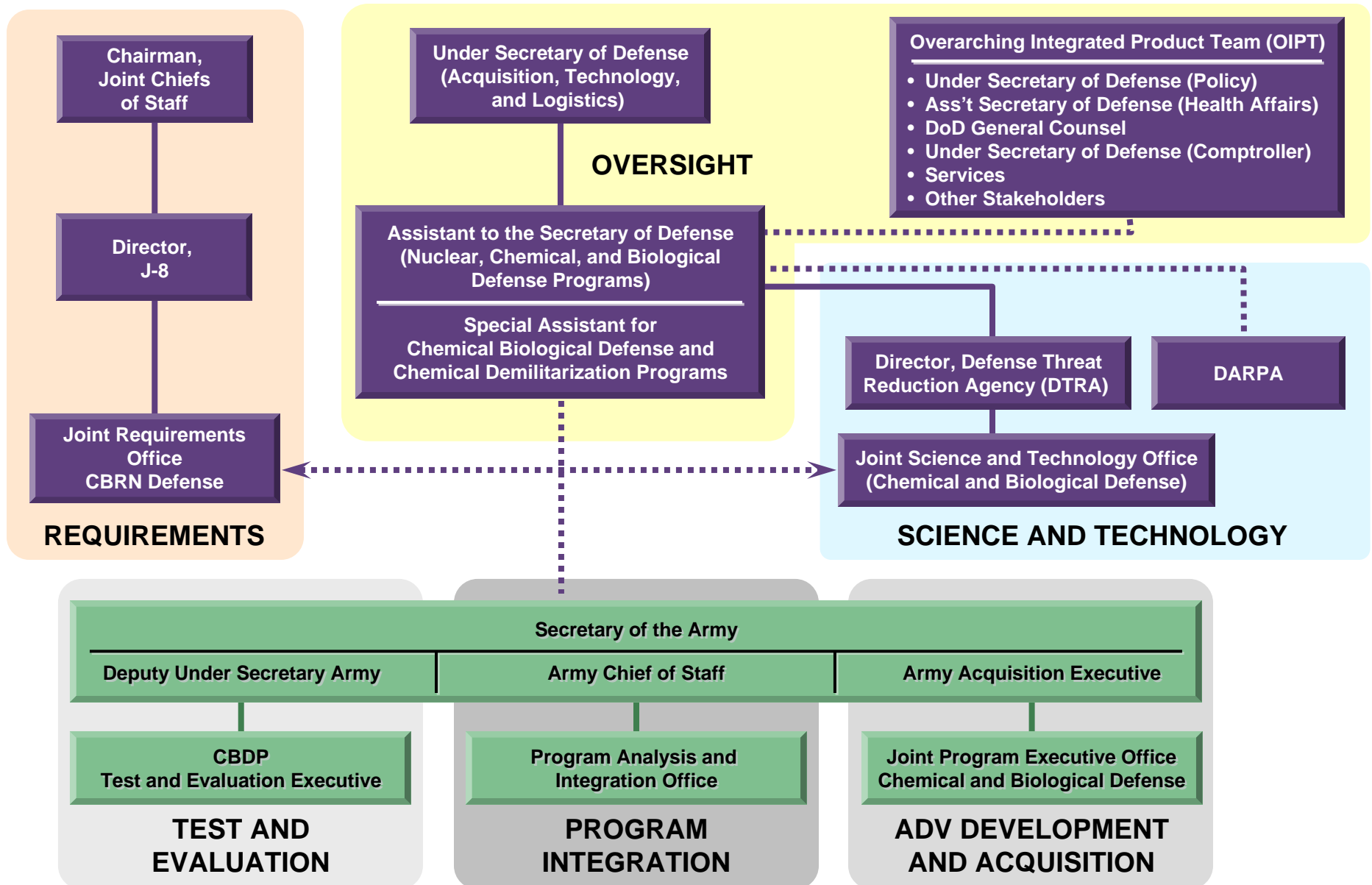
ATSD(NCB)'s Program Strategy Guidance for the CBDP



- **Provide a balanced CBDP to support National Military Strategies and Departmental objectives to improve CBRN Defense readiness and reduce operational risk.**
 - Guided by 2006 QDR, SECDEF's FY2008-2013 Planning Guidance.
 - Provides strategic focus for the FY08-13 period.
 - Focuses on capabilities-based approaches.
 - Ensures joint integrated approaches to counter the threat.
 - Addresses lessons learned from Operations Enduring and Iraqi Freedom.
 - Addresses post September 11, 2001 challenges.
 - Supports Transformation, Acquisition Reform and Strengthening Interagency Links.
- **Build a comprehensive fiscal plan wherein *budgets* flow from programs, *programs* from capability needs, *capability needs* from missions, and *missions* from *national security objectives*.**



CBDP Organization





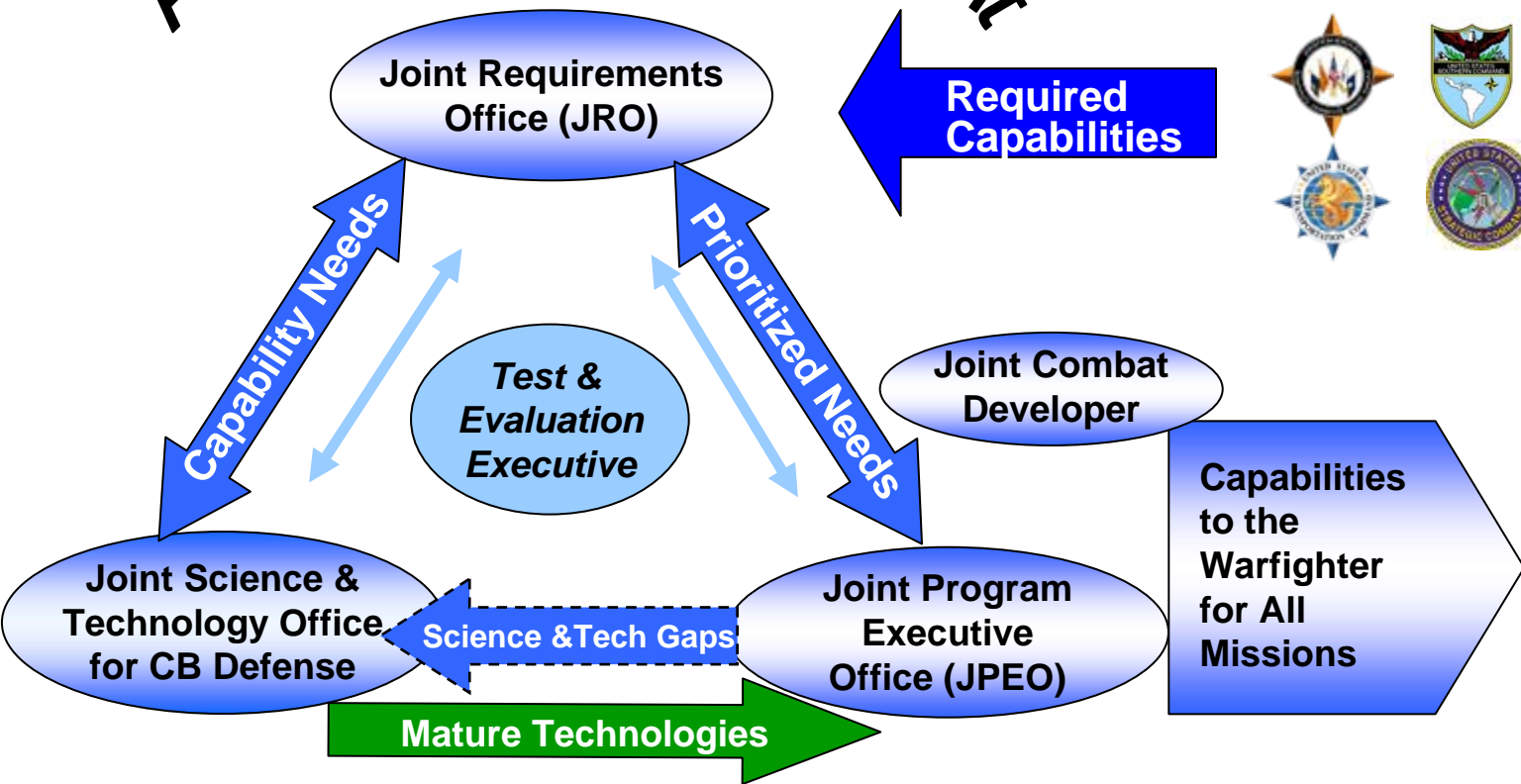
CBDP Process



- Combatant Commanders
- Services



ATSD(NCB) Oversight



Process based on managing total program risk



Leveraging Interagency Activities are Key to Achieving National Strategies



CBDP Coordinates With:



Counterproliferation Program Review Committee (CPRC)



Technical Support Working Group (TSWG)



U.S. Coast Guard



Department of Homeland Security (DHS), S&T Directorate



National Institute of Allergies and Infectious Diseases (NIAID)



Centers for Disease Control (CDC)

Various Levels of Coordination/Cooperation Exist With:



U.S. Department of Agriculture (USDA)



Department of Health and Human Services (DHHS)



Office of Science & Technology Policy



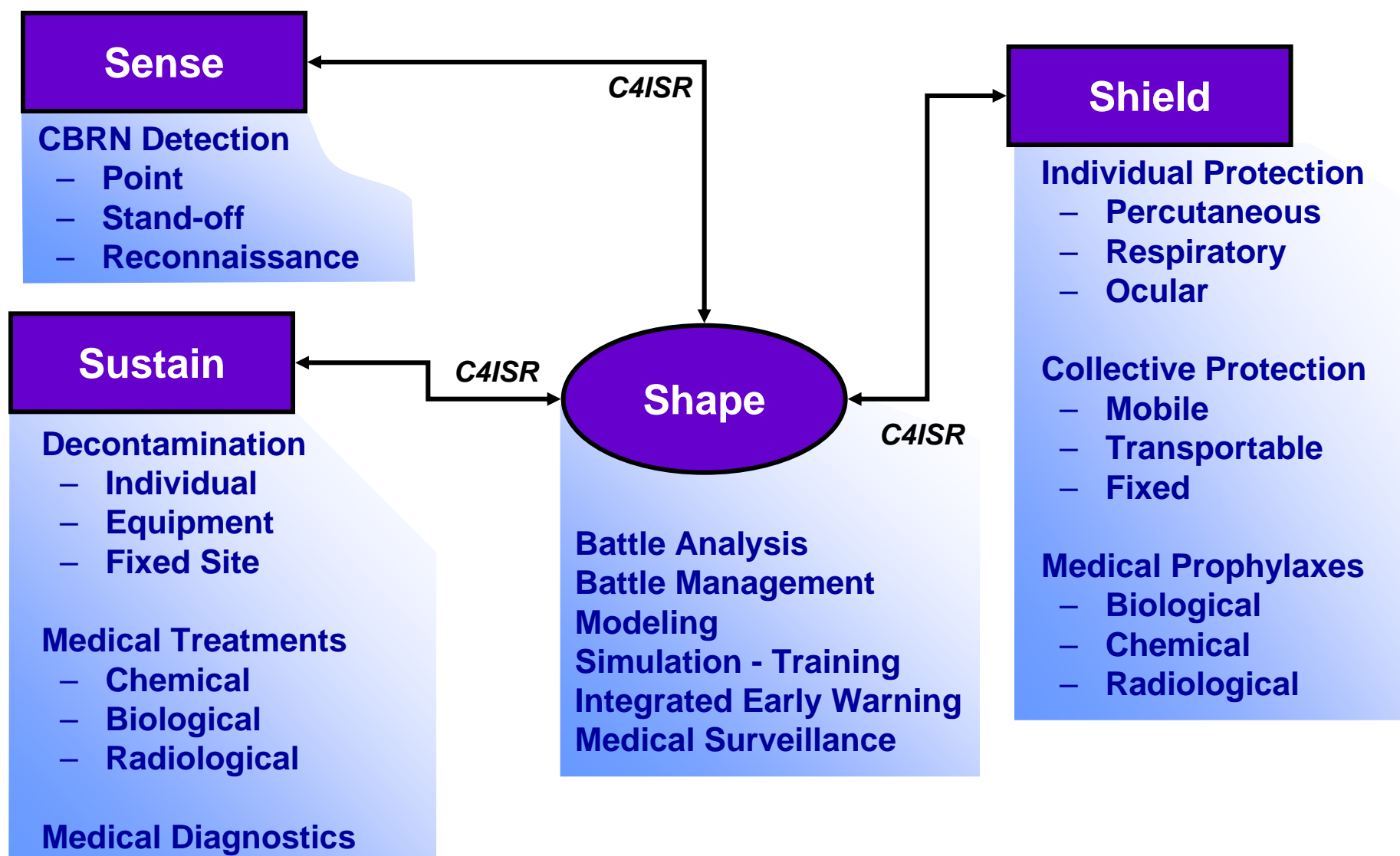
Department of Justice



National Security Council (NSC)



CBRN Defense Operational Elements and Capabilities





Selected CB Defense Systems



SENSE



**Joint Bio Point
Detection System (JBPDS)**



**Joint Bio Standoff
Detection System (JBSDS)**



NBCRV

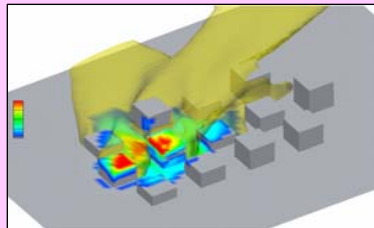


JCAD

SHAPE



**Joint Warning and
Reporting Network**



**Joint Effects
Model (JEM)**



**Joint Operations
Effects Federation
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SHIELD



**Joint Vaccine
Acquisition Program**



JSLIST



JSGPM



CB Protected Shelter

SUSTAIN



**Joint Bio Agent
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**Antidote Treatment,
Nerve Agent
Autoinjector (ATNAA)**



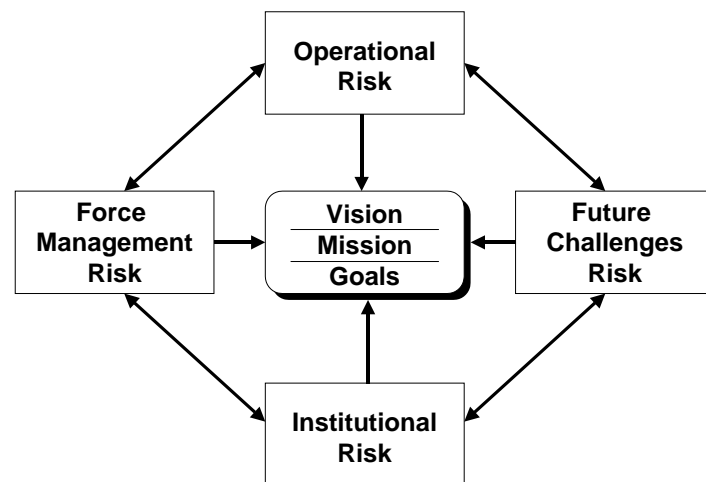
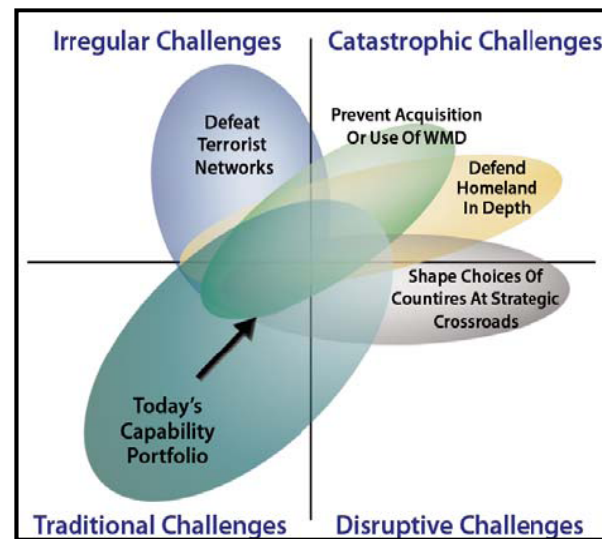
**Joint Service
Transportable
Decon System**



Program Alignment with Strategy



- Utilize the Department’s **risk management** framework appropriately to reduce near-term risks while developing new capabilities to meet tomorrow’s challenges.
- Invest in capability development to address a **wider range of challenges**.
- Provide a risk-informed investment strategy reflecting **joint warfighting priorities**.
- Identify key outputs and appropriate balance among **near, mid, and far-term strategies** for achieving them.
- Ensure strategy-driven, **affordable and achievable** outcomes.
- Support the **transformation** process... one that not only anticipates the future but also seeks to create it.
- Support **transparent, open and agile decision making**.
- Deliver results that **support the Department-wide** strategy.





CBDP Science & Technology (S&T) Initiatives



- **Identify and Exploit Revolutionary Technologies**
 - Transformational Medical Technologies Initiative (TMTI)
 - Transformational Countermeasures Technology Initiative (TCTI)
 - Nanotechnology Initiative
- **Recapitalization of S&T Infrastructure**
 - Test & Evaluation Facilities
 - NTA Test Chamber
 - U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID) Recapitalization

Initiatives will enhance CBD S&T capabilities.



TMTI is a Major Medical Innovation

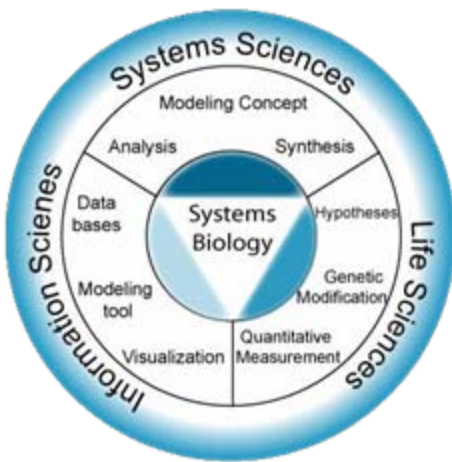


An innovative approach using revolutionary technologies to expedite the development of products to counter emerging biological threats

Thrust Areas for Research

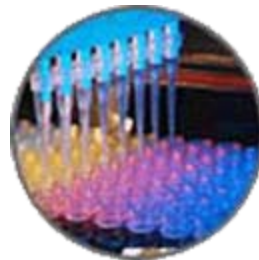
- *Genomic Identification*
- *Small Molecule Drugs*
- *Protein Based Therapeutics/Biologics*
- *Host Immune Enhancement*
- *Nucleotide Therapeutics*

Overarching Research Approach

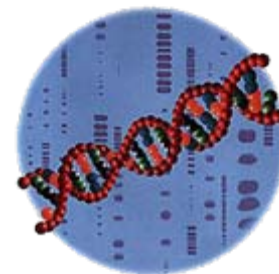


Microarray Technology
Bioinformatics
Proteomics
Metabolomics
Genomics
siRNA

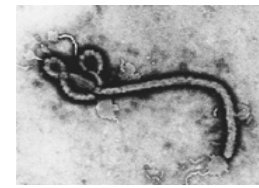
Product Goals



Platform Technologies



Genetic Sequencing of Pertinent Threat Agents



Broad Spectrum Counter-measures

One Drug—Many Bugs



Nanotechnology Initiative

Joint Science & Technology Office (JSTO) nanotechnology initiative is a two-phased effort.

Phase I

- **Objective:** Conduct a survey of nanotechnologies with application to CBD needs.
- Team from MIT-LL and Natick Soldier Center will conduct the survey.
- Recommendations will be provided to JSTO on applicable nanotechnologies.

National Nanotechnology Activities

Materials	Sensors
Quantum dots	
Fabrics	Nanostructures
Therapeutics	Catalysts

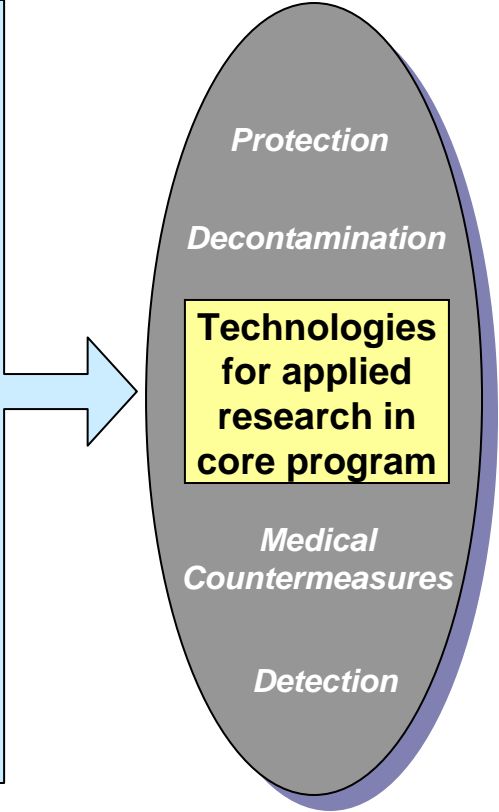
Phase II

- **Objective:** Develop a solid S&T base of nanotechnology applied to all aspects of CBD needs.
- Multidisciplinary team will advise nanotechnology program Principal Investigators (PIs).
- Nanotechnology developments will continue to be monitored.

Natick Soldier Center

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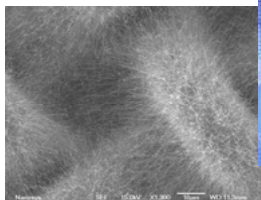
    graph TD
      NSC[Natick Soldier Center] -- Tech Assessment --> MIT[MIT Lincoln Lab]
      MIT -- Coordination --> JSTO[JSTO]
      JSTO -- Recommendations --> MIT
      MIT -- Technical Oversight & Guidance --> NPI[Nanotechnology PIs]
      JSTO -- Investments --> NPI
      NSC --> NPI
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Leverages significant interagency investments for potential CBD applications.

Transformational Countermeasure Technologies Initiative (TCTI)

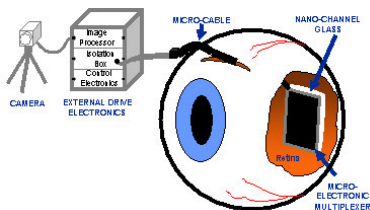
Basic Science Advances



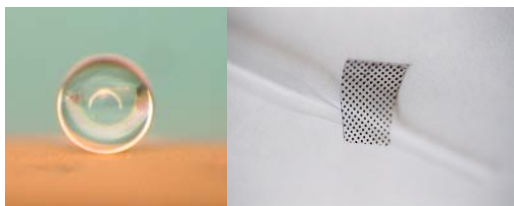
Nano-catalytic self-decon material



Bio-engineered Countermeasures



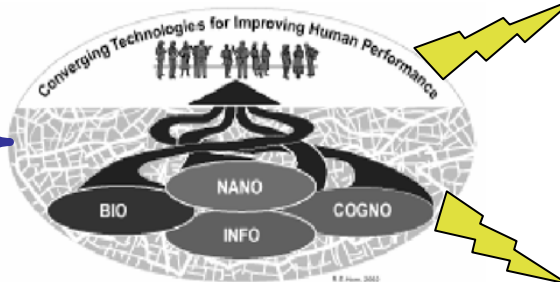
Meta-data information interface



Nano-scale protective coatings and fabrics

Integrated Cross-Cutting Technologies

- Multi-threat defense
- Integral design concept
- Interactive digital multi-faceted data architecture



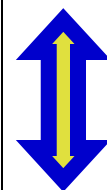
Nanotechnology-Biotechnology-Information Technology-Cognitive Sciences (NBIC)

Broad Spectrum Applications



Future Combat Systems

- Hierarchical systems of systems
- Non-intrusive; minimal logistics



Consequence Management

Achieves An Integrated System Using Revolutionary Technologies While Maintaining the Highest Levels of Performance and Being Invisible to the User



Recapitalization of S&T Infrastructure

- Initiative underway to recapitalize and revitalize CBD S&T infrastructure, which is required to:
 - Counter expanding threats from novel and emerging threats.
 - Exploit advances in technology.
 - Speed the technology transition into systems acquisition programs.

U.S. Army Medical Research Institute of Infectious Diseases



Exterior



BL-4 Lab

Edgewood Chemical Biological Center's Advanced Chemistry Lab



Lab Exterior



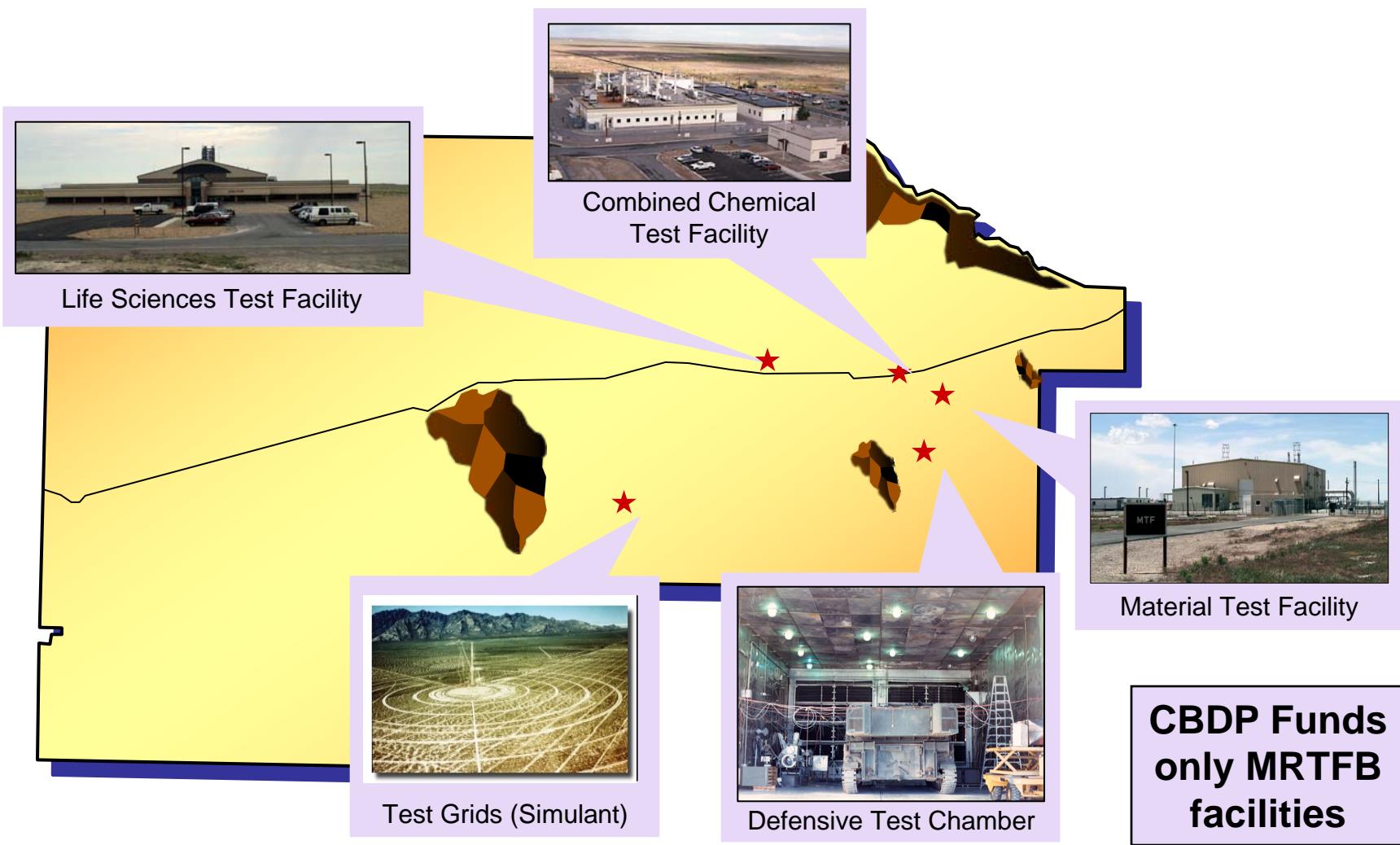
Filtration System



Lab Interior



CBDP Major Range & Test Facility Base (MRTFB) Dugway Proving Ground Key Facilities





CBDP Priorities for FY08



- Stable funding for the **Transformational Medical Technologies Initiative (TMTI)** to fully exploit the advanced science and technology innovation necessary to successfully counter future genetically engineered biological weapons.
- Adequate long-term investment in the **Research, Development, Test, and Evaluation (RDT&E) infrastructure** to enhance our RDT&E capabilities, including the modernization and construction of laboratories and test facilities to ensure we develop advanced countermeasures against current and emerging chemical and biological threats.
- **Consistent resources for the overall program** itself to ensure that, year after year, we are able to field the improved defensive capabilities essential to ensure our military can operate in any environment, unconstrained by chemical or biological weapons.



Selected CB Defense Systems



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Detection System (JBPDS)**



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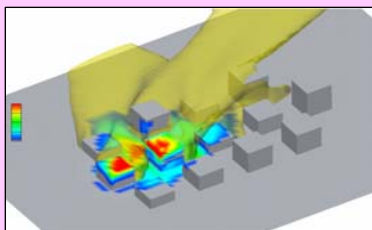


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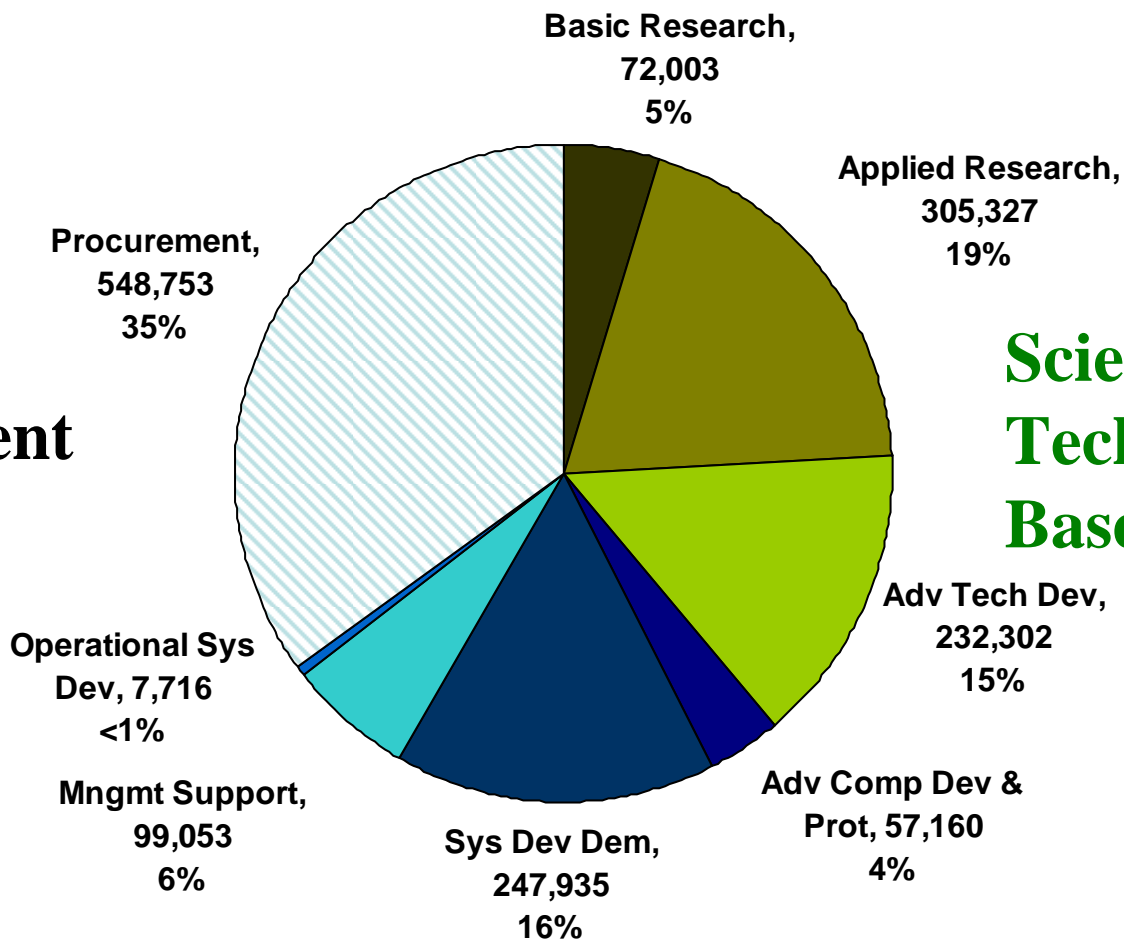
**Joint Service
Transportable
Decon System**



Chemical Biological Defense Program

Based on FY08 President's Budget Request (February 2007)

\$1.570 Billion



Procurement

Science & Technology Base

Advanced Development



Readiness and Overall Unit Preparedness





Readiness and Overall Unit Preparedness




Army Chemical Unit Preparedness

- **GAO Report, “Management Actions Are Needed to Close the Gap between Army Chemical Unit Preparedness and Stated National Priorities,” January 2007**
 - **GAO evaluated the Army’s chemical and biological units, including the extent to which (1) units tasked with providing chemical and biological defense support to combat units and commands are adequately staffed, equipped, and trained and (2) units also tasked with a homeland defense mission—especially National Guard and Reserve units—are adequately prepared for this mission.**

WMD-Civil Support Team (CST)

- **WMD-CST unfunded requirements identified during FY08-13 POM build. Requirement to be addressed during the FY10-15 POM build**

GAO	United States Government Accountability Office Report to the Ranking Minority Member, Subcommittee on National Security and International Relations, Committee on Oversight and Government Reform, House of Representatives
January 2007	<h2>CHEMICAL AND BIOLOGICAL DEFENSE</h2> <p>Management Actions Are Needed to Close the Gap between Army Chemical Unit Preparedness and Stated National Priorities</p>
GAO-07-143	



CBDP: The Way Ahead



- **Need to build on current strengths...**
 - Integrated collection of systems
 - Multi-disciplinary approaches
 - Well developed doctrine and concepts for the military in operational environments
- **...while recognizing a changing environment**
 - Laboratory and other infrastructure may need overhaul
 - Operational environment must consider homeland security
 - Emerging and non-traditional threats may be critical
 - Congress will continue to play an active role
 - Industry may be increasingly important, though DoD-unique assets need to be identified and maintained



CBDP: The Way Ahead



- **...and Planning for the Future**

- Need to balance investment between current risks (operational and procurement needs) and future risks (S&T and infrastructure)
- Coordination with other agencies (DHHS, DHS, and others) for an effective national effort
 - DoD may play key role in transitioning technologies from laboratory concepts to field-ready systems, especially medical systems
- Broad-spectrum, dual-benefit approaches will need to be evaluated in all areas



Back-up Slides





Issues



Military Construction (MILCON)

- The Army, as Executive Agent for the CBDP, no longer plans, programs, or budgets for CBDP-related infrastructure
 - The Army owns a vast majority of the infrastructure that directly supports the CBDP
 - Army Regulation 415-15* revision prohibits the programming of MILCON, Army, for CBDP-related efforts based on Army General Counsel review of 50 USC 1522

* AR 415-15, Army Military Construction and Non-appropriated-Funded Construction Program Development and Execution, 12 June 2006

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Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD)

- JPEO providing recommendation through Army Acquisition Executive on military utility of the JSLSCAD program

Integrated Consortium of Laboratory Networks

- Homeland Security Presidential Directive 9 gave impetus to develop networks to coordinate the specific skills and resources of laboratories nationwide for the complete, rapid, and effective facilitation of disease surveillance and response to bioterrorism-related health emergencies
 - Recommend continued DoD participation in the ICLN to ensure effective response to CBRN events