Federal Technology Development for Combating Chemical and Biological Terrorism

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Homeland Security & Force Protection

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

Outline

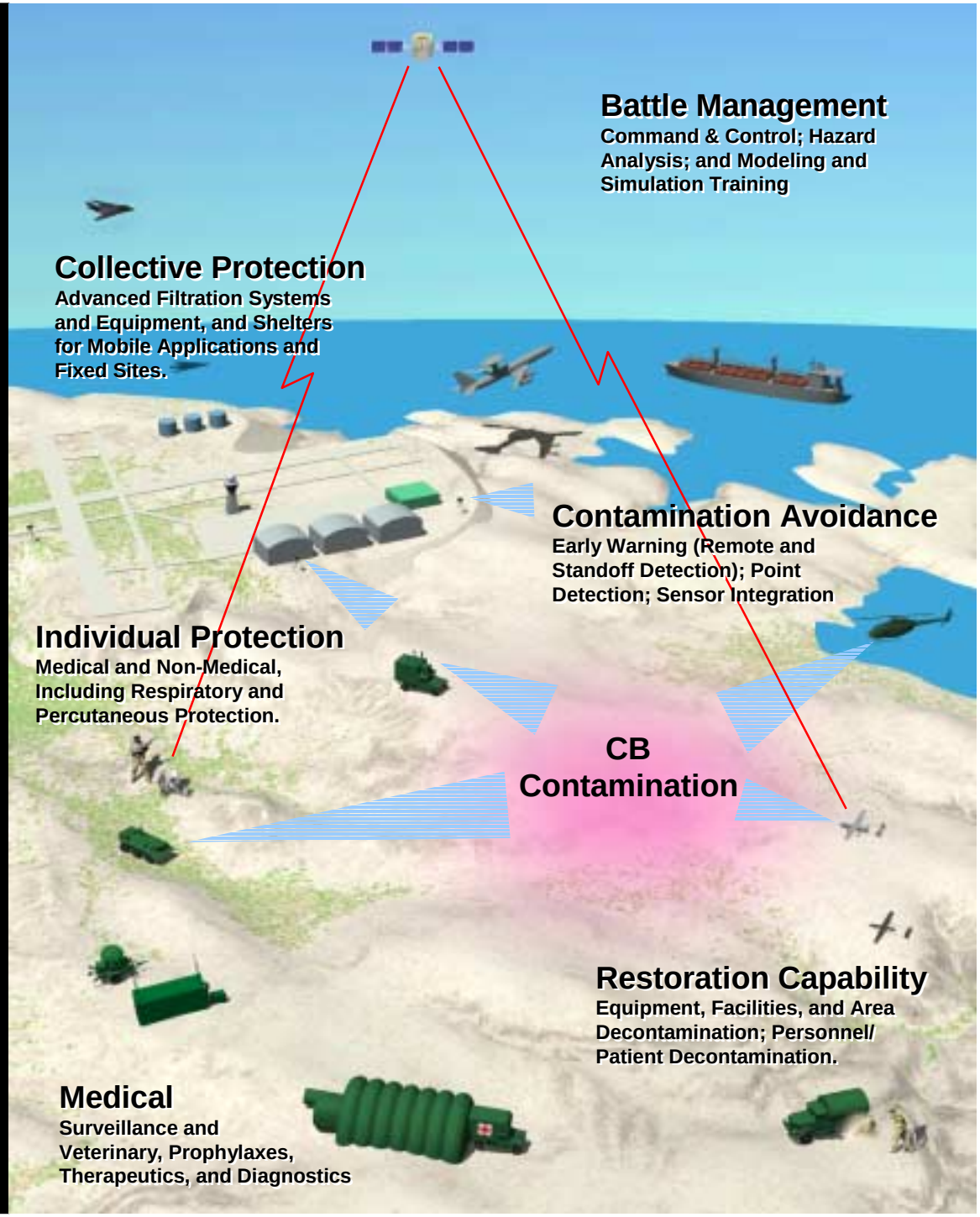
- Overview of the DoD Chemical & Biological Defense Program
- Homeland Security Initiatives
- Interagency Coordination

DoD CB Defense Operational Concept –

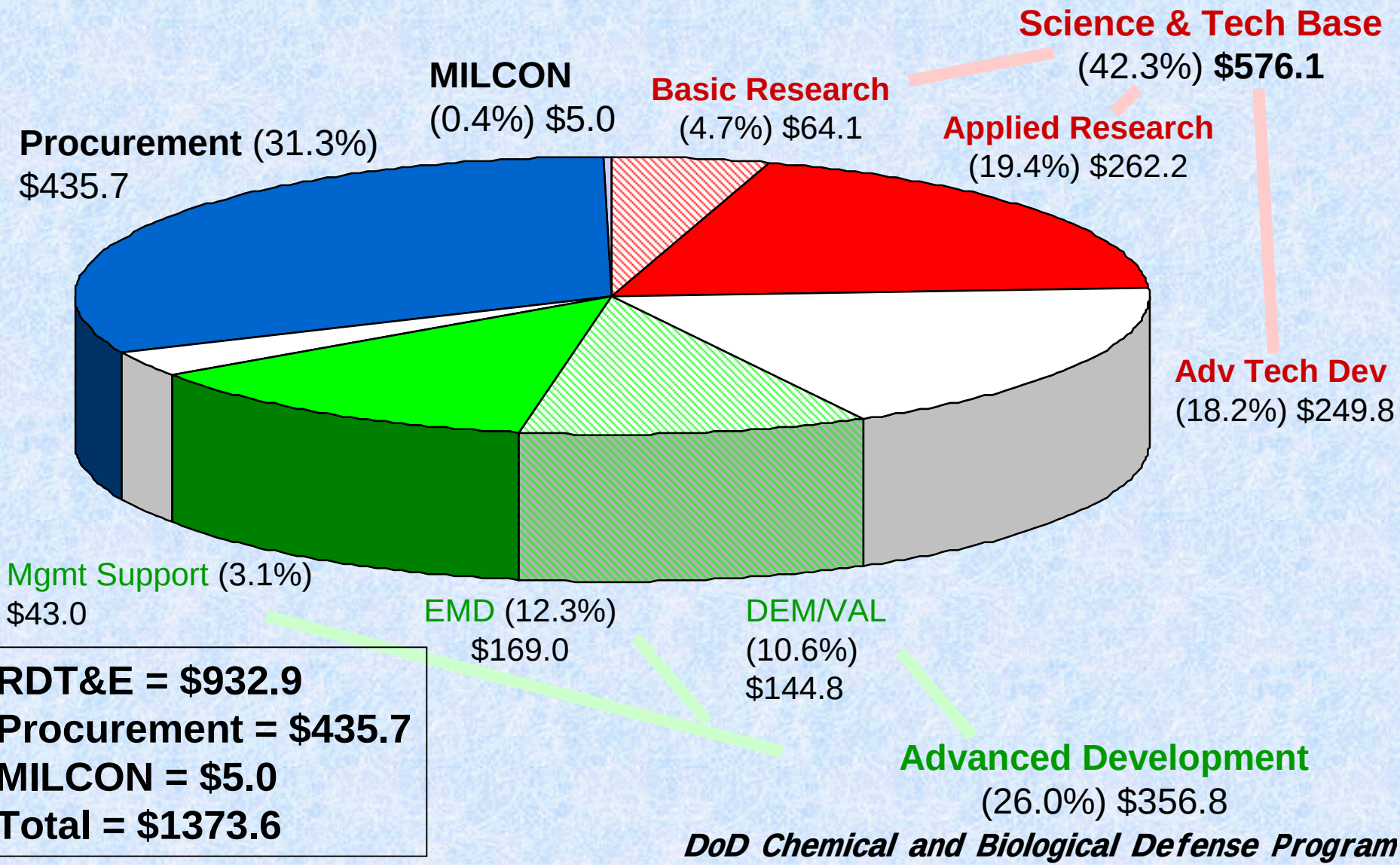
RDA to support the Warfighter

An Integrated System-of-Systems, including capabilities for:

- *Battle Management*
- *Contamination Avoidance*
- *Individual Protection*
- *Collective Protection*
- *Medical Systems*
- *Restoration*



DoD Chemical/Biological Defense Program FY2003 ($M)- President's Budget (PB) Request



RDT&E = $932.9
Procurement = $435.7
MILCON = $5.0
Total = $1373.6

The Aftermath of *9-11*

- Entire spectrum of CB matters has received increased emphasis from the Administration, Congress, Media, and the Public
- Warfighting spectrum expanded to include homeland security
- Emphasizes importance of coordinated USG program to counter WMD proliferation
- Asymmetric methods are no longer a threat, but a reality

Our guides for the immediate future:

Flexibility* and *Ingenuity* with *Responsibility

Defense Transformation

But we do not seek evolutionary progress in our ability to defend ourselves. So little is certain when it comes to the future of warfare, but on one point we must be clear: We risk deceiving ourselves and emboldening future adversaries by assuming it will look like the past. Sept. 11 proved one thing above all others: Our enemies are transforming.

Will we?

Donald Rumsfeld, Secretary of Defense

May 16, 2002, *The Washington Post*

A New Approach to Training

Support for National Security

A New Approach to Training

Support for Homeland Security

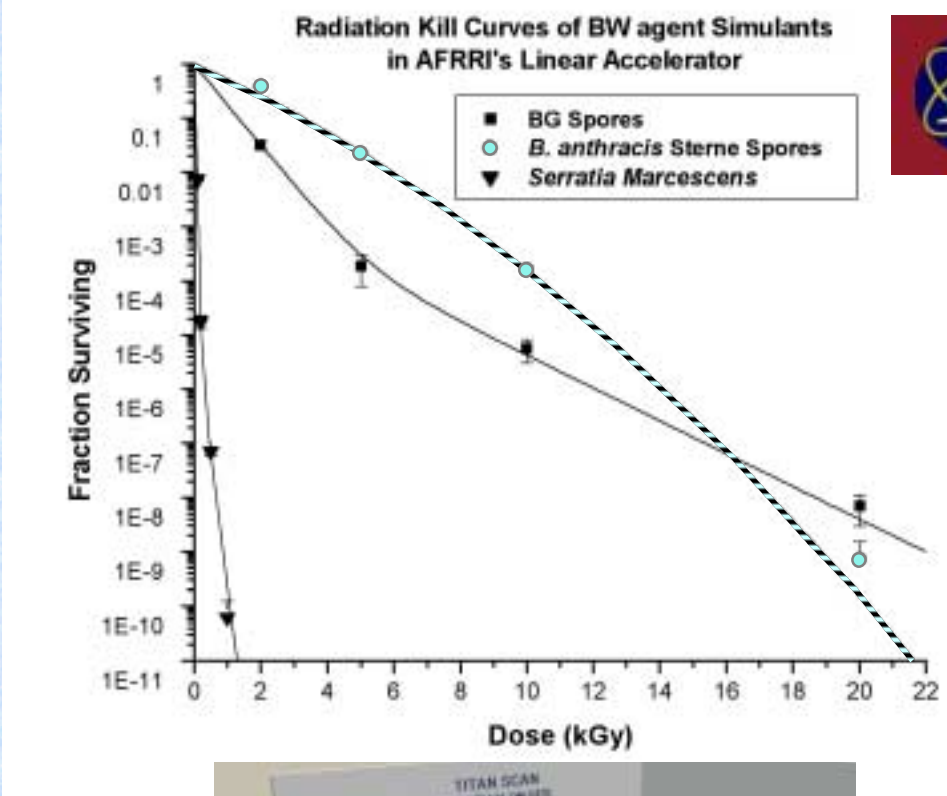
Operational Support:

Diagnostics & Analysis of Anthrax Contaminated Letters

Anthrax Culture

- Special Pathogens Sample Test Laboratory (SPSTL) at USAMRIID
- Originally established to process 10 samples per month. At peak, lab received more than 700 samples in a single day.
- >14,000 specimens (>50,000 assays) processed between Sept 11, 2001 - Jan 02 to support environmental surveillance, FBI investigations, and consequence remediation.

Operational Support:
Decontamination of Anthrax Contaminated Letters



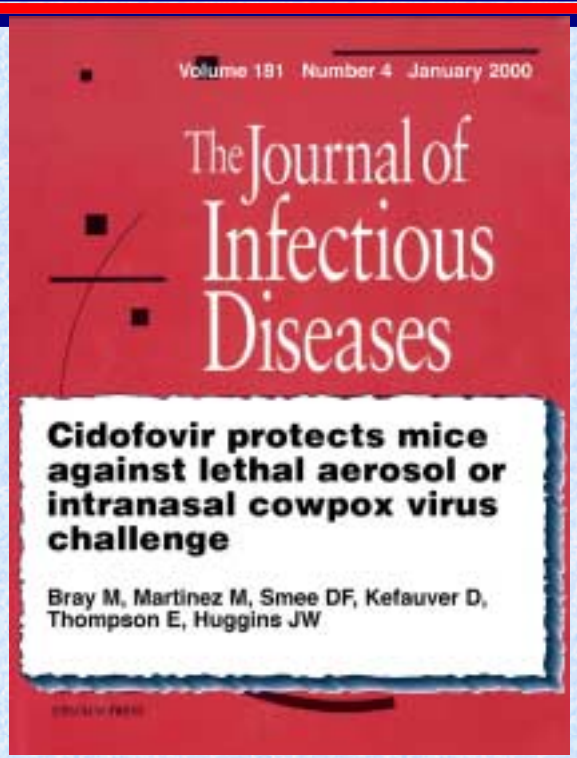
Armed Forces Radiobiology Research Institute
A F R R I

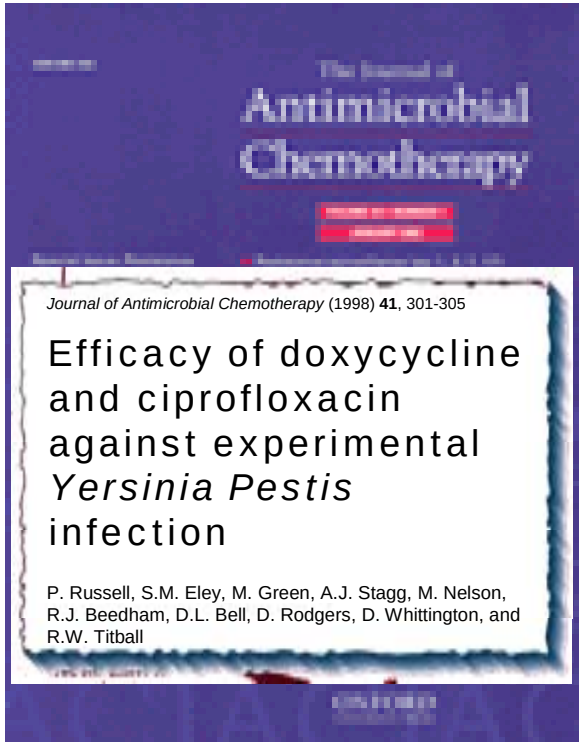
- **Empirical test and evaluation of methods to decontaminate mail.**
  - Titan Corp's e-beam technology and Orion Int'l Tech Corp's ionizing radiation technology
- **Determination of:**
  - Kill mechanisms
  - DNA damage and repair mechanisms
  - Dose-response relationships

A New Approach to Doing Business: Combating Terrorism Technology Task Force

- **Purpose**:
  - Provide DoD a coordinated technology plan for combating terrorism
- **Scope of Technologies**:
  - Address potential terrorist threats from chemical, biological, nuclear, radiological and high explosives (CBRNE)
  - Improve situational awareness and options for DoD action
- **Organization – 4 Working Groups**
  - Deterrence and Indications and Warning (*Protection*)
  - Survivability and Denial (*Prevention*)
  - Consequence Management and Recovery (*Response*)
  - Attribution and Retaliation (*Response*)
- **Approach**
  - Early emphasis on very near-term technologies available
  - Longer-term tech evaluations will include coordination with outside experts (industry, advisory boards)
  - Broad Agency Announcement to solicit proposals (opened Oct-Dec 2001)
  - 12,500 proposals were submitted -- 3,356 CBRNE-related proposals

New Uses for Existing Products:
Example -- Licensed Therapeutics





- **New FDA Rule on Efficacy Testing**
- **Product labeling**
- **Off-label use?**
- **CRADA opportunities**

Small Business Innovation Research (SBIR)
Small Business Technology Transfer (STTR)

Rights to products and processes remain with the small company, except for the reservation of limited rights by the government.

SBIR Program	STTR Program	Fast Track Program
Provides up to $850,000 in early-stage R&D funding directly to small technology companies (or individual entrepreneurs who form a company)	**Provides up to $600,000 in early-stage R&D funding directly to small companies working cooperatively with researchers at universities and other research institutions**	**Offers an opportunity to obtain matching funds of between $1 and $4 in DoD SBIR/STTR funds for every $1 the investor puts in.**

COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENTS (CRADA)

- Purpose:
  - Encourage the transfer of commercially useful technologies <u>from federal laboratories to the private sector</u> and to make accessible <u>unique technical capabilities and facilities</u>.
  - Conduct R&D in a technical area of mutual interest to both parties while establishing an appropriate quid pro quo (equal value to the two parties).
- Process:
  - A legal agreement between a federal laboratory and a nonfederal party (industry, university, not-for-profit, as well as a state or local government) to conduct specified research or development efforts that are consistent with the missions of the federal laboratory (15 USC § 3710a(d)(1)).
  - The Federal Technology Transfer Act of 1986 (Public Law 99-502) authorized federal laboratories to enter into CRADAs (15 USC §3710a(a)(1)).

CB Technology Insertion: Military *vs*. Civilians

Warfighter Requirements	Domestic Preparedness Support
– Identified military threat	– Vague Civilian Threat
– Agents selected for maximum casualties or immediate effect	– Agent "selection" driven by availability, experience, or chance
– Optimal dissemination for Strategic, Operational, or Tactical Effect	– Dissemination may be sub-optimal, haphazard, or incomplete
– Fielded detection and warning systems	– Detection and warning systems may be available for special events; other deployment concepts not defined
– Prepared and trained Response Force	– Prepared and trained Response Force
– Sustainment plan for weeks/months	– Sustainment plan for hours/days
– Individual Protective Equipment (IPE) available	– Limited IPE availability
– Emphasis on prophylaxis + therapeutics	– Emphasis on therapeutics
– Compliance with medical treatment may be mandatory	– Voluntary compliance with medical treatment

Joint Service Installation Pilot Project (JSIPP)

- **Objectives**:
  - Increase CBRNE defense capabilities at 9 CONUS DOD installations
  - Enhance emergency responder CBRNE capability for Consequence Management with equipment, procedures & training for on and off installation emergency response elements
  - Generate installation CBRNE defense requirements recommendations.
- **Scope**
  - Consists of two procurement efforts
    - Installation CB defense technologies designed to provide situational awareness & aid in consequence management decision making
    - Equip on post and train emergency responder elements in CBRNE consequence management, integrating civilian community responders
  - Includes developing & conducting training for C2 & emergency responders
  - Includes exercises to ensure capability and collect data to support CBRNE defense requirements recommendations

Homeland Security and Consequence Management

- **Evolving Role for DoD**
  - Military assistance to civil authorities
    - National Guard and Army Reserve Teams
  - Achieving interoperability with first responders
  - Interagency Board for Standardization and Interoperability
  - Joint Service Installation Protection Project
  - Homeland Security strategy
- **Office of Homeland Security funding for two FY03 initiatives**
  - **Biological Counter-terrorism Research Program**
  - **Biological Defense Homeland Security Support Program**

Biological Counterterrorism Research Program

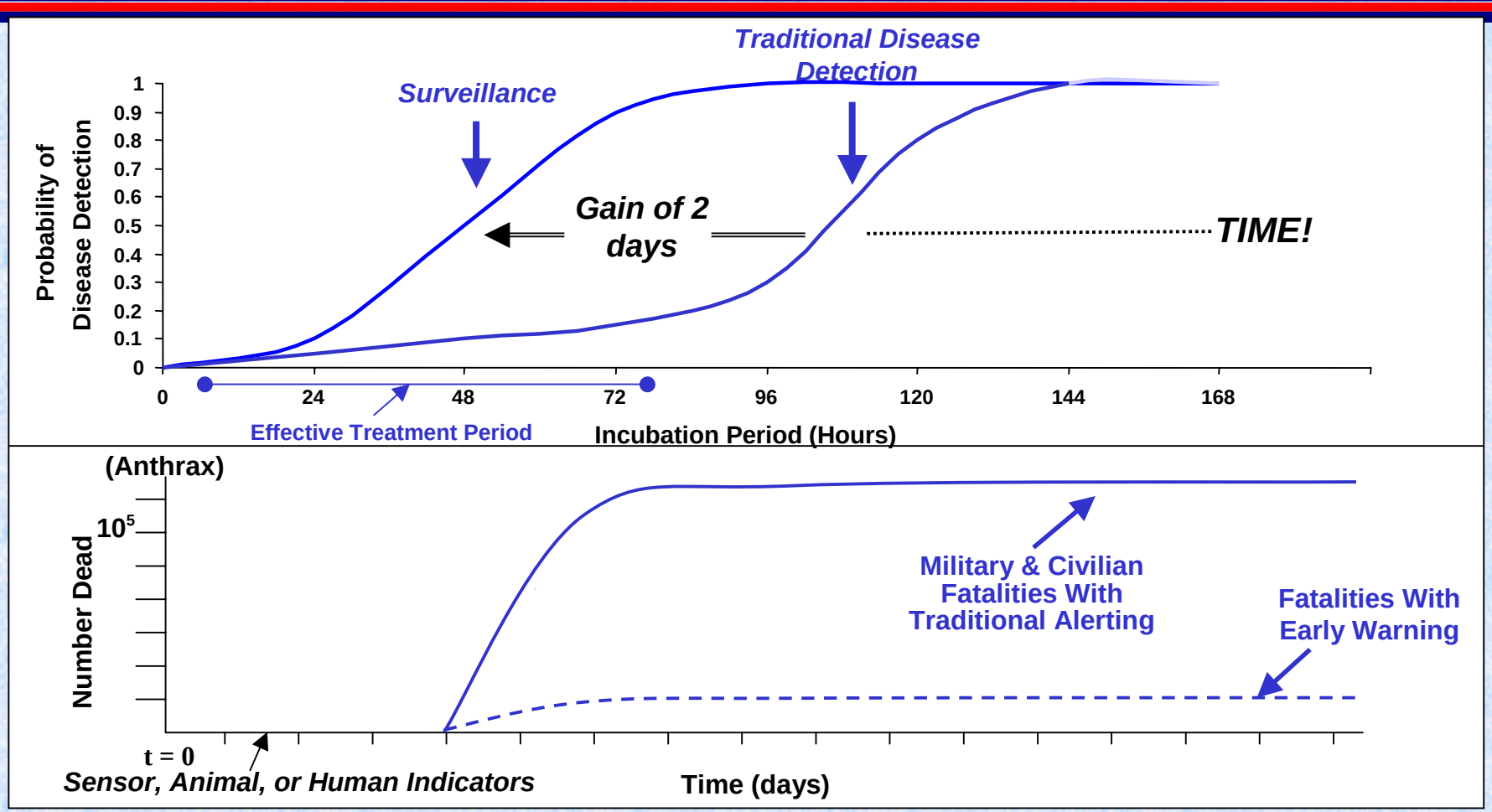
- **Establishes <u>Center for Biological Counterterrorism</u> at the U.S. Army Medical Research and Materiel Command, Fort Detrick**
- **Leverages unique capabilities to support DoD and national requirements and reduce vulnerabilities**
  - Utilize multidisciplinary and multi-agency approach
  - Establish interagency research program that focuses on bioterrorism/ BW defense threat assessment and microbial forensics
  - Support national security, law enforcement, and medical/public health communities

- ***Analysis and Attribution***
- ***Threat and Risk Assessment***
- ***Prevention of Technological Surprise***

Biological Defense Homeland Security Support Program

- **Initiates comprehensive program to build a National Biological Defense System for the Office of Homeland Security**
- **Provides an integrated Homeland Security capability to detect, mitigate and respond to biological-related incidents:**
  - Enhanced biological detection capabilities and the fusion of medical surveillance systems, wide-area environmental sensors, access control points and information systems
  - Deployed systems will exploit existing technology supplemented with new capabilities resulting from accelerated development
- **FY03 plans include establishment of a fully-equipped DoD test-bed, an enhanced monitoring system for the National Capitol Region and an initial capability in two additional urban areas**

Biological Detection and Surveillance Buys Time



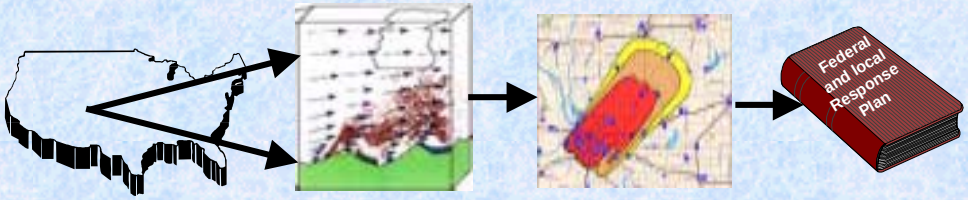
BOTTOM LINE: Gain of two days allows for an earlier, more informed public health and law enforcement response (e.g., start treatment, clear beds, etc.)

Biological Defense Initiative

- Environmental Monitoring
  - Air/Other Media Sampling
  - Access Control Points
  - Laboratory Analysis

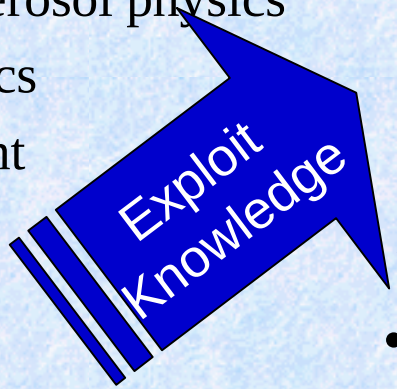
- Medical Surveillance
  - Syndromic Reporting
  - Data Mining (e.g., Public Health)

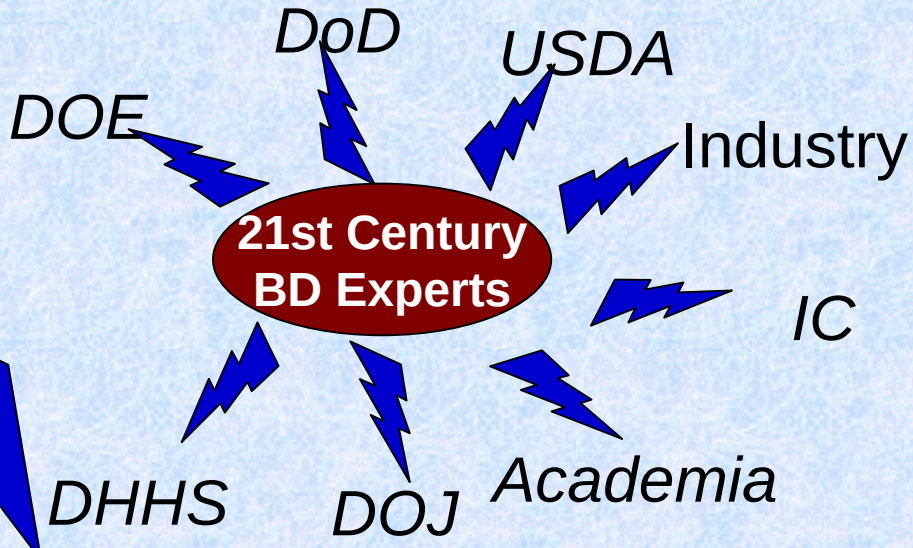
- Information Synthesis
  - Visualization
  - Data Fusion



Countering Biological Terrorism Research Program

- High Payoff Research Projects and Roadmap
  - Virulence & pathogenesis
  - Aerobiology & aerosol physics
  - Microbial forensics
  - Threat Assessment





1960s Era
U.S. BW Technology

- Infrastructure Requirements
  - Certified forensic lab
  - DOD/DHHS coordination
  - Ft. Detrick campus
  - Aerosol rapid test bed

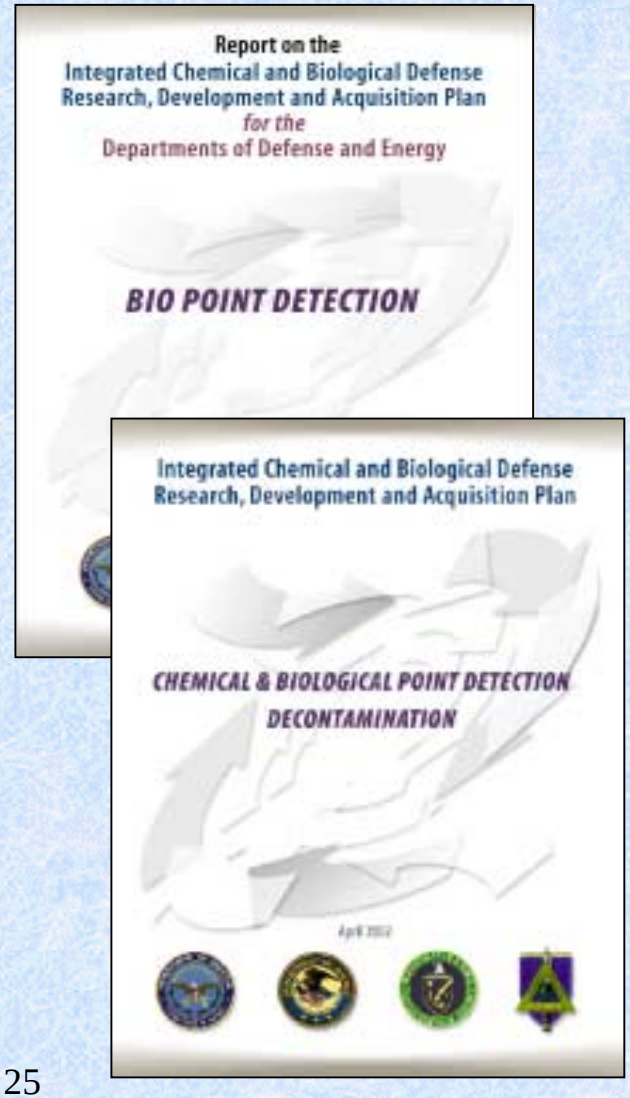
Outline

- Overview of the DoD Chemical & Biological Defense Program
- Homeland Security Initiatives
- Interagency Coordination
  - Coordination between Department of Defense and Department of Energy

DoD-DoE CB Defense Roadmap Overview

- Congressionally directed integrated plans to support warfighter and first responder
- Interagency effort to provide national counterproliferation strategy
- Expanding roadmap process to include other agencies
- CBD Research, Development & Acquisition (RDA) Focus Group/Integration process available to address interagency technology development

CBD RDA Integrated Plan for DOE & DOD Background



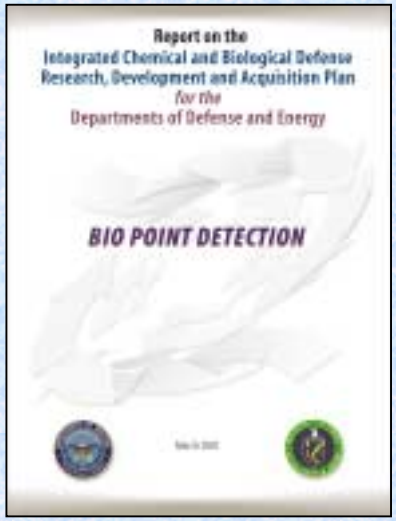
- 1996 the Counterproliferation Program Review Committee (CPRC) recommended DoD and DOE establish integrated RDA plan for technologies associated with CB counterproliferation
- Purpose of plan is to formally coordinate and address concerns of redundant efforts in the development of CB technologies between DoD and DOE
- Status of Reports:
  - > *Bio Point Detection - completed Mar 01*
  - > *CB Point & Decon - completed Apr 02*
  - > *Modeling & Simulation - planned for Mar 03*

Elements of the DOE & DOD CBD RDA Integrated Plan

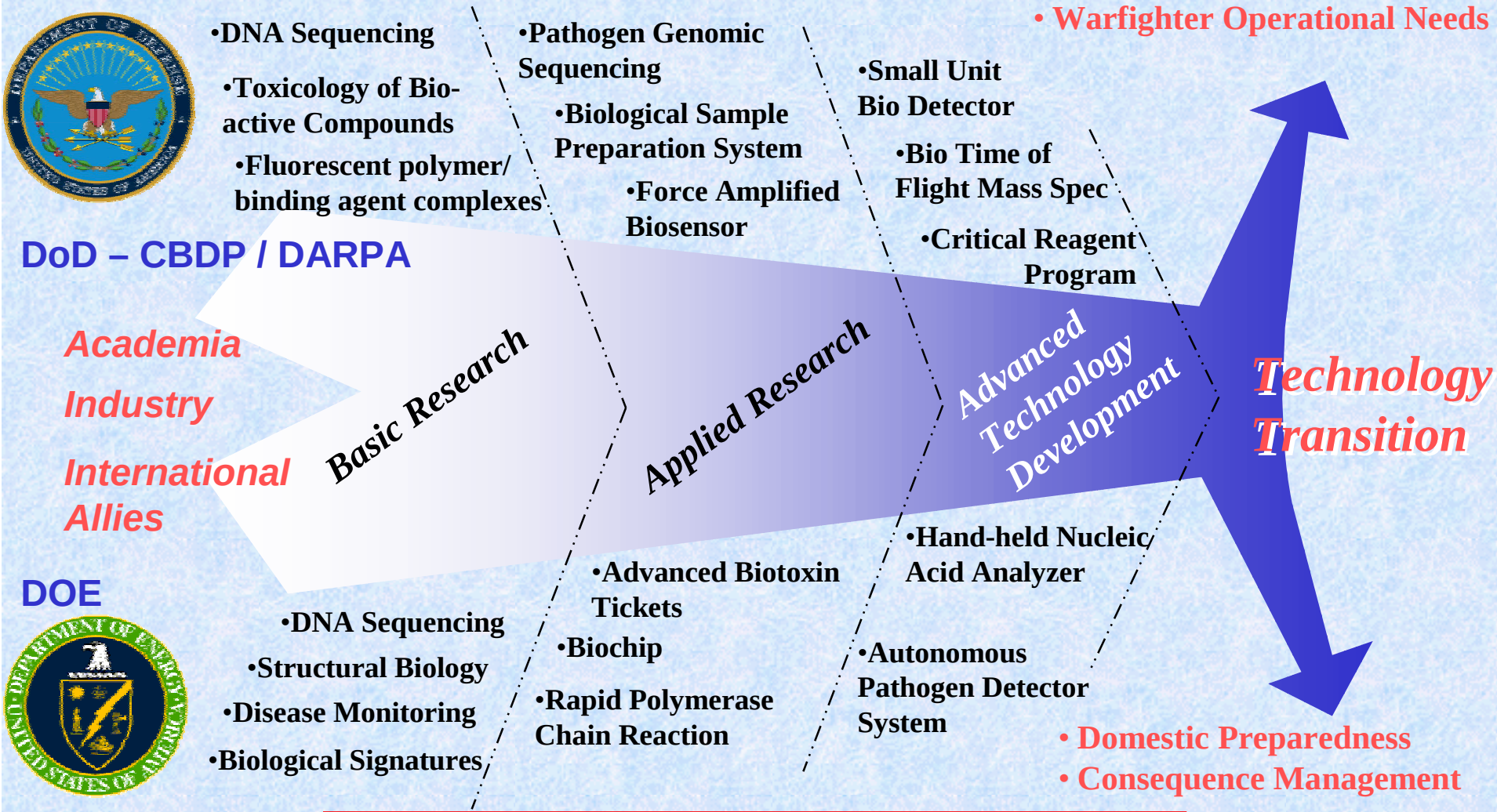
- *Process* that leads to true integration and leveraging of interagency activities
- Interagency technology *roadmap(s)* that depict transition mechanisms for S&T products across programs and agencies
- Findings from *redundancy/gap analysis*
- *Opportunities to* cooperate and *leverage activities* across programs and demonstrations to improve application of emerging technologies
- *Historical perspectives* including sources of guidance and identity of users
- *Technology Area Capabilities* needed to support a joint CB Program of emerging technologies

Technologies + Transition Milestones

+ Comparative Analysis + Leveraging Opportunities



Science & Technology Partnerships: *Biological Detection*



Common Technologies: Different Goals

Evolving Challenges

- **Homeland Security Roles and Missions**
  - Congress and Senior DoD leadership expect the DoD CBDP to support Homeland Security CB defense requirements
  - Challenge: Balance warfighter requirements with emerging Homeland Security requirements
- **Office of Homeland Security Funded Initiatives**
  - Aggressive schedule
  - Outyear funding requirements
- **Installation Force Protection**
  - Pilot program to start in FY03
  - Use lessons learned to apply to facilities in out-years
  - Bill will be high (100s of facilities)
- **Achieving interoperability with first responders**
  - Continue to work through the Interagency Board process