DTRA S&T to Counter WMD Threats

Dr. Michael A. Kuliasha, Director
Nuclear Technologies Directorate

Science and Engineering Technology Conference
April 17, 2012
WMD threats high in current National priorities

“There is no greater threat to the American people than weapons of mass destruction, particularly the danger posed by the pursuit of nuclear weapons by violent extremists and their proliferation to additional states.”

“Of particular concern are the proliferation of ballistic missiles and weapons of mass destruction (WMD).”

“The priority S&T investment areas for the FY13-17 Program Objective Memorandum are...advances in DoD’s ability to locate, secure, monitor, tag, track, interdict, eliminate, and attribute WMD weapons and materials.”

Distribution A: Approved for Public Release (11 April 2012)
The DTRA Mission

To safeguard the US and its Allies from Weapons of Mass Destruction (Chemical, Biological, Radiological, and Nuclear) and High Yield Explosives by providing capabilities to reduce, eliminate and counter the threat and mitigate its effects.

Chemical

Biological

Radiological

Nuclear

High-Yield Explosives
We fulfill a unique and central role in the national effort to counter WMD

DTRA is a Defense Agency, a Combat Support Agency, and a National Asset for Countering Weapons of Mass Destruction

Eliminate WMD Delivery Systems

Lockdown Nuclear Weapons and Materials

Support Arms Control Negotiations and Treaty Compliance

Capabilities to Detect, Track, and Interdict WMD

Hard and Deeply Buried Target Defeat

Post-Nuclear Detonation Forensics

Foreign Consequence Management
DTRA’s lineage dates to WWII “Manhattan Project”

- Manhattan Engineering District 1942-47
- Armed Forces Special Weapons Project 1947-59
- Defense Atomic Support Agency 1959-71
- Defense Nuclear Agency 1971-96
- Defense Special Weapons Agency 1996-98
- Defense Threat Reduction Agency 1998-

1942

Arms Control

Cooperative Threat Reduction

Nuclear Weapons Expertise

Combat Support

1998

Chem-Bio Defense

2003

2006
Total DTRA Authorizations: 2,018 (768 Military & 1,250 Civilian)

Total SCC-WMD Authorizations: 73 (53 Military & 20 Civilian)

Total Portfolio: $2.9B

*Data is the FY 2012 Appropriated President's Budget. Does not include $52.3M reimbursable.
Command Structure and Relationships

Chairman of the Joint Chiefs of Staff

Secretary of Defense

Commander, U.S. Strategic Command

Under Secretary of Defense for Acquisition, Technology & Logistics

Assistant Secretary of Defense for Nuclear and Chemical & Biological Defense Programs

Director, DTRA and SCC-WMD

Deputy DIR, SCC-WMD

Deputy DIR, DTRA
DoD’s mission space is defined by military utility

- International and U.S.
- Terrorism and nation state
- Cooperative and non-cooperative states
- Permissive and denied environments
- Interdiction
- Materials and weapons
- Overt and covert
- Science through transition
- Fixed and expeditionary
DTRA Research and Development

High Explosives
Chemical Weapons
Biological Weapons
Nuclear Weapons
Radiological Devices

Across the spectrum of Counter-WMD and RDT&E

Nonproliferation
Counterproliferation
Consequence Management

Basic Research
Applied Research
Advanced Research Development

Distribution A: Approved for Public Release (11 April 2012)
DTRA RDT&E Uniqueness

- DoD research leader on WMD
- Embedded in a Combat Support Agency
  - 24/7 Operations and Reachback Centers
- No laboratory infrastructure
  - Competitive = “Best of Breed”
- Strong interagency ties
  - DOE, DHS, DHHS, DOS, IC, etc.
- Co-located, co-managed w/USSTRATCOM SCC-WMD
DTRA J9 Organization

J9
Doug Bruder

BA
Basic & Applied Research
Joan Pierre

NT
Nuclear Technologies
Dr. Mike Kuliasha

CX
Counter WMD
Steve Dowling

CB
Chemical / Biological
Dr. Alan Rudolph

IS
Innovation & Sys Eng
CAPT J. Buckley

Distribution A: Approved for Public Release (11 April 2012)
Basic and Fundamental Research

Identifying key enabling technologies related to WMD while working to grow the next generation of counter-WMD scientists via engagement through university-centric research

• Basic Research Program
  – Sponsor high payoff fundamental research; grow the next generation S&T workforce for combating WMD
  – 6.1 grants to universities and labs

• Fundamental Research Program
  – “Transition enabler” to bridge the gap between basic research and technology development
  – 6.2 awards to Universities and Research Institutions
Chemical & Biological Technologies

Left of Event:
*Buying down risk of threat*

Disease Surveillance, Threat Detection & Point of Need Diagnostics

Threat Activity Sensing & Reporting

Adaptive Medical Countermeasures & Technologies

Rapid Response & Restoration Science and Technology

Right of Event:
*Buying down risk of event*

Distribution A: Approved for Public Release (11 April 2012)
Counter-WMD Technologies

Research, develop and demonstrate innovative technologies and capabilities to **actively counter the full spectrum** of CBRNE threats

---

**Offensive Weapons**

**Persistent ISR for WMD**

**Test Facilities & Technology**

**Advanced Energetics**

---

**CWMD Terrorism Technology**

---

Ammonium Nitrate

Fuel Oil (ANFO)

Sodium Bicarbonate

Explosive Release of Biological Simulant

Biological Simulant "bacillus thuringiensis"

Sodium Bicarbonate

Ammonium Nitrate

Fuel Oil (ANFO)
Nuclear Technologies

Research and develop technologies to **enhance the safety, security, survivability, and performance** of U.S. assets and facilities in a nuclear environment.

**Nuclear Threat Detection**

**System Survivability, Radiation Hardened Microelectronics, and EMP Protection**

**Nuclear Forensics**

**Treaty Verification Technologies**

**Nuclear Weapon Effects**
Information Science and Applications

Develop, integrate and deploy decision support methods and capabilities supporting CWMD and consequence management missions:
“Gentlemen, we have run out of money. Now we shall have to think.”

Sir Winston Churchill (1874-1965)  
Prime Minister of the UK  
1940-45 and 1951-55