DECONTAMINATION

April 4, 2007

Advanced Planning Briefing to Industry

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Outline

• Overview

• S&T and Warfighter Needs

• Technical Challenges

• Acquisition Strategy/ Funding/ Schedule

• Upcoming Business Opportunities

• Contacts
Science & Technology (S&T) Overview

- Overall Objective is to Develop the Science and Applied Technology Supporting the Joint Acquisition Programs of Record for Decontamination Systems by:
  - Developing Decontaminants That Are:
    - Not Restricted by or Overcome by pH and Other Current Reaction Condition Restrictions
    - Regenerative/Catalytic
    - Easily and Uniformly Dispersed
    - Non-toxic or Less Toxic Than Current Decontaminants
  - Exploring New Directions:
    - Broader Involvement of Academic and Industrial Research
    - Analytical and Predictive Decontamination Modeling
    - Wide-Area Solutions
    - Alternative Scientific Process Methodologies to Maximize Efficacy
    - Process Application/Dispersion Methodology(ies)
    - Integrate Decontamination Into Protective Systems
Program Overview

- **Strategic Vision:** Provide the Warfighter an Affordable Family of Modern Decontaminants and Applicators for Immediate, Operational and Thorough Decontamination to Sustain Operations in a Contaminated Environment with the Least Necessary Burden and Minimum Degradation to Mission Accomplishment

- **Near Term:** Build Good Strategic Partnerships with JSTO, JRO, Services, Academia and Industry to Focus on Threat Characterization, Operational Concepts and Well-defined Requirements for Technology Insertions Utilizing a System of Systems Approach
  - Focus Research Efforts Primarily on Dual-use Devices and Technological Adaption of Decontaminants to Reduce Mechanical Engineering Challenges
  - Significantly Reduce Logistics Burdens Associated with Decon Ops
Program Overview (Cont’d)

• **Mid Term**: Leverage S&T Results to Upgrade Fielded Decontamination Capabilities; Begin New Program Starts, as Appropriate
  – Explore Strippable Coatings and Other Non-traditional Approaches

• **Long-Term**: Optimize Material Self-Decontamination Capabilities; Plan Spiral System Development and Fielding (Plug-&-Play)
S&T Needs

• Decontamination is Divided into Four Technical Areas:
  – Process Fundamentals
  – Solution Chemistry
  – Solid Phase
  – Alternative Process
S&T Needs

• Near Term (FY07 – FY08) Objectives
  – Understanding Basic Decontamination Science Related to Near-term Candidate Decontaminants
  – Develop a Broad-spectrum CWA/BWA Decontamination Solution That is Reactive, Non-corrosive, Environmentally Benign, and Effective on a Multitude of Surfaces

• Mid Term (FY09 – FY13) Objectives
  – Algorithms for Decontamination Analytical and Predictive Modeling
  – Process Application/Dispersion Methodology(ies) to Maximize Decontamination Efficacy
  – Alternative Process/Science Decontamination
S&T Needs (Cont’d)

• Far Term (FY12 & Beyond) Objectives
• Robust Decontamination Analytical and Predictive Modeling:
  – Agent-Surface Interaction
  – Identification and Selection of Candidate Decontaminants
  – Efficacy of Candidate Decontaminants
  – Decontaminant Effects on Sensitive & “Durable" Materials

• New Generation/Alternative Science Decontaminants and Decontamination Systems
  – Demonstrated Efficacy Against All Agents, Including the Full Spectrum of Chemical Agents, Biological Agents, Toxic Industrial Chemicals
  – Effective On Any Type of Surface / Substrate
  – “Smart Systems” that SENSE, RESPOND, and SIGNAL
  – Integrated Into Protective Systems
Warfighter Needs

• Human Remains Decontamination System
  – Decontaminate and Return Remains to US for Burial
    – Increment I, FY08-10
      • Leverage Commercial Off The Shelf (COTS) Equipment to Support Established Processes for External Decontamination of Human Remains and Evacuation Within Theater
      • POM Funding Supports an Executable Program
    – Increment II, TBD
      • Adds Capability for Internal Decontamination Inter-theater Evacuation and Return to the US
Warfighter Needs (Cont’d)

• Joint Service Transportable Decon System-Large Scale (JSTDS-LS)
  – Decontaminate Facilities, Areas, Terrain and Exterior of Large Airframes
  – Readily Adaptable to Multiple Missions
  – Operable While on the Move from Medium Sized Vehicles (e.g., Family of Medium Tactical Vehicles), Primarily on Roads/Hard Surfaces, Limited Off-road
  – Semi-autonomous Operation
  – Decontaminate Top and Undercarriages of Vehicles
    • 8 Large Sized Vehicles/Hour or One Aircraft (C-9/B-1B/C-5 Equivalent)/Hour
  – Terrain Decontamination 5m Wide Path in Single Pass
  – Facility Decontamination
    • Decontaminate and Ensure Decontaminants have been Applied to Elevated Structures 13 m High
S&T Technical Challenges

• Basic Understanding of Decontaminant Reactivity:
  – With Agents – Chemical, Biological, Toxic Chemicals, etc.
  – With Material Surfaces – Interior, Exterior, Sensitive Equipment, etc.
  – With Agents and Combinations of Agents and daughter Products on Material Surfaces

• Developing Analytical and Predictive Algorithms and Models

• Determining Decontaminant Application/Dispersion Methodology(ies), Maximizing/Optimizing Process Efficacy

• Development of Alternative Decontamination Scientific Processes/Approaches:
  – Reduce Logistics Burden of Decon
  – Sacrificial and Catalytic Reactive Coatings
  – Mixed Novel Solvent / Reactant Systems
  – Novel Enzyme and Biomimetic Systems
  – Integration into “Smart Materials” – Merging with Protection Areas
Program Technical Challenges

• Human Remains Decontamination System (HRDS)
  – By-agent Understanding of Requirement for Decontamination

• Joint Service Transportable Decon System-Large Scale (JSTDS-LS)
  – Effectiveness - Broad Spectrum, Benign, Compatible with Materials, Environmentally Friendly
  – Decontaminant Compatibility with a Variety of Material, Protective Equipment, Detection Devices, and Other Material that may be Exposed to Decontaminants
  – Applicator Compatibility with Multiple Decontaminants
  – Storage Temperatures and Shelf Life
  – Containment/Disposal (Recycling) of Runoff (for Some Operations)
  – Throughput and System Capacity Requirements
  – Dedicated Platform
S&T Acquisition Strategy

• Balance Between Requirements Pull:
  – Align with the Joint Requirements Office (JRO) to Address Capability Needs
  – Align with Joint Program Executive Office (JPEO) Programs to Address Technology Gaps
  – Answer Critical Science Questions that Support Policy, Doctrine and Requirements Decisions

• … and technology push:
  – “Combatting WMD” Centralized Investment in Basic Research
  – Identify and Rapidly Exploit Technology Opportunities in the Pursuit of “Revolutionary Technologies”
  – Identify and Respond to New and Emerging Threats
  – Maintain a Robust Technology Base: Knowledge, Research Capabilities, and Test and Evaluation Methodologies
Program Acquisition Strategy (Cont’d)

• JSTDS Large-Scale Program
  – Actions Underway:
    • Update Requirement
    • Explore Technologies
    • Prepare for Milestone B Review and RFP in FY-08
  – Program will Focus on Improving Overarching Decontamination Processes, Efficacy, and System Capabilities for Operational and Thorough Decontamination of Equipment, Aircraft and Non-sensitive Building/Facility Interior Spaces.

• HRDS (Human Remains Decontamination System)
  – Early Concept Exploration (Proof of Concept/Conops)
  – MS-B/SDD Phase FY-08
## S&T Funding ($M)

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<th>YEAR/RTDE</th>
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<th>FY10 (notional)</th>
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*Note: Pending merger of Decontamination and Protection Research Areas in FY09 and beyond emphasizing “integrated smart systems”*
## Program Funding ($M)

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<tr>
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Program funding for HRDS/JSTDS-LS
## S&T Program Schedule

### Process Fundamentals

- **2007**: 
  - JSPDS
  - JSTDS-LS

- **2009**: 
  - HRDS

- **2010**: 
  - Alternative Process

- **2011**: 
  - Integrated “Smart Systems”

- **2012**: 
  - Notional “Future Decon”

### Solution Chemistry

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### Notional “Future Decon”

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### Key Acronyms

- JSPDS
- JSTDS-LS
- HRDS
- JMDS
## Program Schedule

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*Note: The schedule might be incomplete or subject to change.*
## S&T Business Opportunities

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<td>– BAA for New Start Projects (FY08-13)</td>
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Upcoming Business Opportunities (Cont’d)

• JSTDS-LS
  – Increment I JSTDS Large Scale
    • Expected RFP Release for R&D/Test Quantities: FY08
    • Estimated Production Quantities (Option): 500-1000 Systems

• HRDS
  – Proof of Concept
  – MS-B/System Design and Development
  – Expected RFP Release 2QFY-08

• Long Term:
  – Product Improvements for Fielded Capabilities
    • DF 200 (Based on Enhanced Efficacy Levels/Logistics Considerations)
    • Skin Decon: Consolidated Equipment and Skin Wipes, Improved Operating Temperatures, etc
S&T Points of Contact

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  - stacey.shepherd@usmc.mil

- Mr. Don Cline, JSPDS/HRDS Program Manager
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  - clinedd@jpmoip.org

- Mr. Steven Kaminsky, JMDS Program Manager
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  - steven.kaminsky@us.army.mil