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Joint CBRN Advanced Capability Sets Enhanced Capability Demo (JCACS ECD)

Provide the Joint Forces dismounted reconnaissance equipment with an integrated CBRN operational capability to execute mission command and conduct operations to counter the range of complex CBRN threats.

- Protective ensembles with reduced burden
- Improved personnel and materiel contamination mitigation
- Improved CBRN sensors and robotic platforms
- Sensor networking and real-time reach-back capabilities
- Progressing with participating systems
- Operational Demo expected in 4QFY19

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CBRN – Sensor Integration on Robotic Platforms (C-SIRP)

Provide the Warfighter with platform agnostic, reduced size weight and power (SWaP) CBRN sensors for integration on unmanned platforms.

- Platform interface (hardware and software) that allows quick attachment/removal of CBRN sensors
- Deployment systems that will allow sensors to be emplaced and retrieved by Unmanned Ground Vehicles (UGVs) and Unmanned Aerial Vehicles (UAVs).
- Address identified gaps in aerial or rapid CBRN reconnaissance at the tactical edge
- Reduces labor intensive methods to detect and classify CBRN agents that place Soldiers and other personnel involved at higher risk
CBRN – Sensor Integration on Robotic Platforms (C-SIRP)

CONTRACT TYPE: TBD

ESTIMATED RANGE: $10-13M

CONTRACTING CONTACT: Alex Schupp, Army Contracting Command, 410-436-1331

SOLICITATION #: JE-RDAP Order

ESTIMATED SOLICITATION RELEASE DATE: 2QFY20

PRIOR/CURRENT CONTRACT INFORMATION: JE-RDAP Order

Contract Number: TBD
Incumbent Contractor: NA

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Enhanced Maritime Biological Detection (EMBD)

EMBD will finalize development, and complete testing, integration and production of an automated biological point detection system that will detect, collect and identify biological warfare agents.

EMBD will address obsolescence concerns, reduce life cycle costs and improve system reliability over the fielded Joint Biological Point Detection System (JBPDS).

EMBD will transition technologies from the JUPITR ATD to a program of record for the USN as a replacement for the JBPDS.
Enhanced Maritime Biological Detection (EMBD)

**CONTRACT TYPE:** CPIF/FPIF, JE-RDAP Order

**ESTIMATED RANGE:** $17M-$20M

**CONTRACTING CONTACT:** Diane Dei, Army Contracting Command, 410-436-4478

**SOLICITATION #:** JE-RDAP Order

**ESTIMATED SOLICITATION RELEASE DATE:** 3QFY17

**PRIOR/CURRENT CONTRACT INFORMATION:**
- Contract Number: TBD
- Incumbent Contractor: NA

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Next Generation Chemical Detector (NGCD)

NGCD will detect and identify non-traditional agents, chemical warfare agents, toxic industrial chemicals in the air and on surfaces.

- **NGCD 1 - Detector Alarm**: Rapid vapor / aerosol area monitor to detect to warn; continuous monitor post encounter
- **NGCD 2 - Survey Detector**: Indirect scanning/ targeting of surface to locate and survey contamination boundaries
- **NGCD 3 - Sample Analysis**: Analytical sensor/ identifier with multi-phase sampling capabilities to collect at site and introduce to sensor
- **NGCD 4 – Individual Detector**: Wearable detector technology that provides warning of presence of CWAs, TICs (explosive precursors), and oxygen levels to react appropriately

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Next Generation Chemical Detector (NGCD) 1, 2, 3 and 4

CONTRACT TYPE:
- NGCD 1: JE-RDAP Order or Full & Open
- NGCD 2-4: JE-RDAP

ESTIMATED RANGE: $100M+ for each NGCD capability including production options

CONTRACTING CONTACT: Eric Braerman, Army Contracting Command, 410-436-4469

SOLICITATION #: TBD

ESTIMATED SOLICITATION RELEASE DATE:
- NGCD 1 EMD RFP or JE-RDAP Order Release 2QFY17
- NGCD 2 EMD Order Release 3QFY17
- NGCD 3 EMD Order Release 3QFY17
- NGCD 4 TMRR Order Release 3QFY19

PRIOR/CURRENT CONTRACT INFORMATION:
- Contract: TMRR for NGCD 1-3
- Incumbent Contractor: various

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NBCRV Sensor Suite Upgrade

The NBCRV Sensor Suite provides the Warfighter with the ability to detect, identify, collect, report, and mark, Nuclear Biological Chemical (NBC) Hazards while integrated on the Stryker NBCRV.

- Replacement of the Dual Wheel Sampling System on the Stryker NBCRV with Chemical surface Detector (CSD);
  - Performance deficiencies of the Dual Wheeled Sampling System (DWSS) limit the chemical reconnaissance capability of the NBCRV.
  - Replacement will allow increased maneuver speeds during survey and reconnaissance missions.

- Integration of Sensors into the Stryker NBCRV
  - Next Generation Chemical Detector 1
  - Next Generation Chemical Detector 3
  - Chemical Surface Detector
  - Joint Biological Tactical Detection System
  - Manned Mounted Platform Radiological Detection System

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NBCRV Sensor Suite Upgrade Chemical Surface Detector (CSD)
EMD, LRIP, FRP

CONTRACT TYPE: TBD

ESTIMATED RANGE: $90-95M

CONTRACTING CONTACT: Debbie Abbruzzese, 410-436-2554

SOLICITATION #: TBD

ESTIMATED SOLICITATION RELEASE DATE: 3QFY18

PRIOR/CURRENT CONTRACT INFORMATION:
Contract Number: TBD
Incumbent Contractor: TBD

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Dismounted Reconnaissance Sets, Kits and Outfits Technology Refresh

Procure components which can better meet requirements, are becoming obsolete, have high sustainment costs, etc. Focus on detection and identification capabilities and potentially other components as demand requires.

- Multiple Requests for Information (RFI) annually
- Follow-on third-party purchase for test articles (RDT&E) through existing contract mechanisms (existing prime, DLA, etc.)
- Multiple Candidates Desired
- Production of selected candidates via existing production mechanisms

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Dismounted Reconnaissance Sets, Kits and Outfits Technology Refresh - Toxic Industrial Chemical Detection (Vapor)

CONTRACT TYPE: Request For Information and subsequent candidate procurement through existing contract mechanisms

ESTIMATED RANGE: $2M-$4M

CONTRACTING CONTACT: Jonita Joyner, Army Contracting Command, 410-436-8426

SOLICITATION #: TBD

ESTIMATED SOLICITATION RELEASE DATE:
  RFI Release Feb 2017 closes Mar 2017

PRIOR/CURRENT CONTRACT INFORMATION:
  Contract Number: W911SR-15-D-0001
  Incumbent Contractor: Agentase LLC (FLIR Detection)

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Dismounted Reconnaissance Sets, Kits and Outfits Increment 2

Provide capabilities for technical forces to perform exploitation missions at CBRN related sensitive sites to perform field confirmatory detection and identification, perform sampling missions, etc. Will provide PPE capabilities for longer duration missions, field confirmatory CBRN identification devices, reach-back capabilities which provide sensor to reach-back site capabilities.

Strategy involves use of multiple organizations to support the total requirement:

• JE-RDAP contractor will provide engineering, integration, and logistics services
• Edgewood Chemical Biological Center will provide advanced engineering and development support
• Pine Bluff Arsenal will produce systems

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Dismounted Reconnaissance Sets, Kits and Outfits Increment 2

CONTRACT TYPE:
- CPFF for RDTE efforts and procurement of materiel in support of development
- FFP for procurement in support of production

ESTIMATED RANGE: $18-22M

CONTRACTING CONTACT: Debbie Abbruzzese, 410-436-2554

SOLICITATION #: JE-RDAP Order

ESTIMATED SOLICITATION RELEASE DATE: 3QFY17

PRIOR/CURRENT CONTRACT INFORMATION:
- Contract Number: W911SR-15-D-0001
- Incumbent Contractor: Agentase LLC (FLIR Detection)

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Reactive-Chemistry Orthogonal Surface and Environmental Threat Ticket Array (ROSETTA)

Provide the General Forces a low-cost, easy to use liquid surface hazard detection ticket for a wide range of Chemical Warfare Agent (CWA) and Non-Traditional Agent (NTA) threat material. These highly-selective tickets will be used in a manner similar to M8 Chemical Agent Detector Paper and enable accurate hazard detection in the presence of common battlefield interferents at the tactical-level and enhance the M256A2 kit.
Reactive-Chemistry Orthogonal Surface and Environmental Threat Ticket Array (ROSETTA)

CONTRACT TYPE: TBD, JE-RDAP Order

ESTIMATED RANGE: $750K+

CONTRACTING CONTACT: Eric Braerman, Army Contracting Command, 410-436-4469

SOLICITATION #: JE-RDAP Order

ESTIMATED SOLICITATION RELEASE DATE: 2QFY18

PRIOR/CURRENT CONTRACT INFORMATION:
  Contract Number: TBD
  Incumbent Contractor: NA

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Advanced Planning Briefing to Industry

Dr. Richard Schoske
Chemical and Biological Technologies Department (J9CB)

Defense Threat Reduction Agency & USSTRATCOM Center for Combating WMD & Standing Joint Force Headquarters-Elimination
Objective

The Detection Branch looks to develop tools to make actionable battlespace decisions, focusing on capability gaps for the warfighter in non-medical chemical and biological detection, remote sensing applications, technology enablers, and threat signature characterization.

Program Focus Areas

- Expeditionary Biological Detection
- Targeted Acquisition of Reference Materials Augmenting Capabilities
- Tactical Vapor Detection
- Alternatives to Detection Paper
- Non-Permissive Environment Chemical Detection
S&T Plan (Chemical Detection)

Near-term (FY18-22)

- Support Next Generation Chemical Detector (NGCD), which is comprised of three variants: (1) the Detector Alarm; (2) the Survey Detector; and (3) the Sample Analyzer detectors. JSTO will support variants 1 and 3 with S&T solutions, and develop enhanced colorimetric sensors for liquid and vapor classification and identification.
- Develop S&T solutions for a tactical, person-wearable airborne chemical threat monitor.
- Invest in sensor platforms for unmanned systems that can provide detection, identification, and sample collection capabilities.
- Explore sample management methodologies to address improved collection, preparation, and preservation.
- Explore fundamental science and novel technologies to reduce life-cycle costs, increase portability, and/or enhance speed, selectivity, and specificity of chemical detection approaches.

Mid-term (FY23-27)

- Investigate suite of systems approaches for integrated CB detection and identification.
- Explore fundamental science and novel technologies to reduce life-cycle costs, increase portability, and/or enhance speed, selectivity, and specificity of chemical detection approaches.
- Develop a suite of systems for identification of chemical threats in all phases of matter.
- Develop platforms for chemical surface detection applications.
- Further decrease surprise and fill gaps in existing and planned near/mid-term environmental chemical detection systems by broadening the range of threats addressed.
S&T Plan (Biological Detection)

Near-term (FY18-22)
• Investigate portable genomic sequencing technologies for environmental detection purposes.
• Invest in multi-omic discrimination capabilities including the use of paper-based mass spectrometry for the detection of a variety of CB agents, and identifying proteomic signatures to determine whether an infection was caused by naturally-occurring or laboratory-grown microbial organisms.
• Develop integrated biological identification platforms for tactical requirement along with sensor platforms for unmanned systems.
• Explore sample management methodologies to address improved collection, preparation, and preservation.
• Explore fundamental science and novel technologies to reduce life-cycle costs, increase portability, and/or enhance speed, selectivity, and specificity of biological detection approaches.

Mid-term (FY23-27)
• Investigate suite of systems approaches for integrated CB detection and identification.
• Explore integrated environmental bio sensors including trigger, collection, classification, identification processes, and possible on-demand genomic sequencing.
• Explore the capabilities of real-time biological aerosol detection platforms.
• Explore fundamental science and novel technologies to reduce life-cycle costs, increase portability, and/or enhance speed, selectivity, and specificity of biological detection approaches.
• Further decrease surprise and fill gaps in existing and planned near/mid-term environmental biological detection systems by broadening the range of threats addressed.
Basic Research BAA Solicitation:
HDTRA1-11-21-BRCWMD-BAA

- In effect March 2011-September 2021
- Typically multiple opening & closing periods, with at least one annual opportunity solicited by an Amendment to the BAA posted to Grants.gov in early December
- However, with the transition of the DTRA Basic Research Program to the Office of the Chief Scientist, a consolidation of solicitations is taking place to streamline processes and to present a single opportunity to the university-centric research community
- This transition began with the December 1, 2016 publication of FY2018 Basic Research Topics within the Fundamental Research BAA, HDTRA1-14-24-FRCWMD-BAA (see next slide)
- The Basic Research BAA Solicitation is valid for use through September 2021 should the Office of the Chief Scientist choose to use it, but the current intent is not to use this BAA for future topics

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Fundamental Research BAA Solicitation:
HDTRA1-14-24-FRCWMD-BAA

- In effect March 2015-September 2024; posted at Grants.gov

- General Thrust Areas continuously OPEN for submissions; TRL1 – early TRL4
  - Basic and exploratory Applied Research (6.1 & 6.2)
  - Required: ~250-word abstract sent to applicable Thrust Area e-mail address detailed in BAA; based on interest, a white paper may/may not be invited
  - Majority of awards will be grants; other award types are permissible

- Basic Research Topics G1-G19 are OPEN for white paper submissions
  - Responses to these topics must address only basic research
  - These topics do NOT require abstract pre-coordination
  - White Paper Deadline: February 1, 2017, by 11:59pm EST
  - Invitation-Only Full Proposal Deadline: On/About April 24, 2017
  - The majority of awards for Topics G1-G19 will be grants

- All applications MUST be submitted to Grants.gov using the application packages posted with the opportunity

- Questions? Email: HDTRA1-FRCWMD-A@mail.mil

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Chem-Bio Technologies BAA Solicitation: HDTRA1-17-S-0001

- Chemical Biological Technologies Department BAA, FY2017 Program Build

- Applied Research & Advanced Technology Development

- Seeks R&D projects with strong technical merit valuable to program requirements and goals to improve military chemical and biological defense capabilities

- Phase II Proposal Receipt Deadline January 13, 2017 at 1400hrs EST (by invitation only)

- Parallel DoD/Government ‘Service Call’ for Government Labs

- Questions? Email: dtra.belvoir.J9.mbx.CB-BAA@mail.mil

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In effect November 2016-October 2021; posted at www.fbo.gov

Efforts that advance technical state-of-the-art or increase knowledge and understanding of overarching challenges for countering WMD; TRL2 – TRL6

BAA will be conducted via a single phase: formal proposal submission
  - Offerors may choose to pre-coordinate a white paper/quad chart as detailed in the BAA.
  - Pre-coordination, while strongly encouraged, is not mandatory.

Six R&D Technology Areas (TAs): Chemical/Biological; Counter WMD; Radiation/Nuclear; Reach-back and Decision Support; Treaty Verification/Compliance; and Technology Forecasting

BAA continuously OPEN for submissions to the R&D TAs
  - On a limited basis, Addendums to the BAA may be published that detail more specific or urgent topics. Topics posted as Addendums are likely to have formal proposal deadlines and will only be available for a limited time.
CWMD RD IDIQ Contracts

10-year-Multi-Award $4B Ceiling

Capability to conduct research and development resulting in the delivery of data, hardware, software, equipment and documentation for the 11 functional areas listed below:

1. Counter WMD Weapons and Targets
2. Modeling and Simulation
3. Systems Engineering
4. Systems Survivability
5. WMD Physical Countermeasures
6. WMD Medical Countermeasures
7. Technical Nuclear Forensics
8. Nuclear Detection
9. Standoff Detection
10. Treaty and Verification Technologies
11. Sensor Platforms

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CBD SBIR and STTR

- The Small Business Innovation Research (SBIR) and the Small Business Technology Transfer (STTR) programs are:
  - Congressionally-mandated programs
  - Established to fund R&D at small businesses
  - Three-phased process
  - Funded as a set-aside assessment of extramural R&D budget
  - U.S. Small Business Administration (SBA) programmatic authority over Federal SBIR & STTR programs (Program Policy Directives)
  - DoD has 12 SBIR/STTR Programs (3 Services & 9 ‘Components’)
    - DTRA and Chem/Bio Defense (CBD) represent two separate programs; see: https://sbir.defensebusiness.org
DoD SBIR/STTR Solicitations

- Dates established by OSD Office of Small Business Programs; not all DoD Components participate in each solicitation.

- **CBD SBIR** is participating in FY17.1 cycle and plans to participate in **CBD STTR FY17.C cycle**

- A DoD Agency-wide announcement includes:
  - DoD Instructions
  - Service/Component-specific Instructions
  - Topics

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**Solicitation Schedule – FY17**

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<thead>
<tr>
<th>Solicitation</th>
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<td>SBIR 17.1 &amp; STTR 17.A</td>
<td>30 Nov 16</td>
<td>10 Jan 17</td>
<td>8 Feb 17</td>
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<td>SBIR 17.2 &amp; STTR 17.B</td>
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Proposal submission

- Fundamental Research (Solicitation HDTRA1-14-24-FRCWMD-BAA), to include Basic Research Topics, submitted to:
  http://www.grants.gov

- Chem-Bio Technologies BAA (Solicitation HDTRA1-17-S-0001) and the Science and Technology New Initiatives BAA (Solicitation HDTRA1-17-S-0002-BAA) submitted to:
  https://www.dtrasubmission.net

- ALL DoD SBIR & STTR proposals (small businesses only) submitted to:
  https://sbir.defensebusiness.org

Proposals only accepted via electronic submission

READ THE ANNOUNCEMENT INSTRUCTIONS!

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Some Helpful Resources


- Guide to DoD Contracting Opportunities:  

- Federal Business Opportunities:  https://www.fbo.gov/


- DoD Office of Small Business Programs – Doing Business with the DoD:  

- DoD SBIR/STTR Program Information for Small Business:  
  https://sbir.defensebusiness.org

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Advanced Planning Briefing to Industry

Dr. Alison Director-Myska
Chemical and Biological Technologies Department (J9CB)

Defense Threat Reduction Agency & USSTRATCOM
Center for Combating WMD & Standing Joint Force
Headquarters-Elimination
Mission: Develop and transition novel concepts and technologies to address current and emerging threats to protect the lives of our warfighters.

**Threat Agent Science (TAS)**
Provide rapid validated chemical and biological agent property and reactivity data and determine toxicological mechanisms to inform risk assessment.

**Chemical Medical Countermeasures (MCMs)**
Deliver novel medical concepts and technologies (i.e. pretreatments & therapeutics) to address current and emerging chemical threats to protect the lives of our warfighters.

**CB Research Center of Excellence**
Provide capabilities and competency to the DoD labs through the DTRA Fellowship program, explore collaborative opportunities, and recruit and mentor young talent through scholarly programs (e.g. STEM and NRC Post doc).
Threat Agent Science: Physical Characterization

Knowledge and Understanding of Threat
Provide “one-step-ahead” agent characterization and fate of priority threat agents to inform CONOPS, TTPs, and countermeasure development

- Determines if threat is real
- Develop improved capabilities for characterizing
- Informs hazard assessment for warfighter

Knowledge Spaces
- Physicochemical properties- BWAs, CWAs, NTAs, Toxins
- Environmental Fate - Persistence, Surface Binding & Reactions, Resuspension
- Aerosol & Particulate suspension
- Dissemination, Thermal degradation
- Predictive methodologies
- Develop simulants for RDT&E

Customers
- CDP
- Advanced Developers
- T&E
- Warfighter
- Intelligence Community

Properties
- Surface Tension
- Density
- Viscosity
- Solubility
- Toxicity
- VP

Thermal Degradation Dissemination

Surface Binding
Threat Agent Science: Toxicology

Determining the Health Hazard

Toxicity values inform many areas critical to warfighter operations, lab worker safety, and capability development:

Countermeasure Development:
- Physical Countermeasures: Diagnostics, Detection, Protection, Decontamination
- Medical Countermeasures: Triggers-to-Treat, Medical Countermeasures

Decision Makers:
- CONOPS, TTPs, KPPs
- Commanders’ Guidelines
- Interagency Clean-up Guidelines
- Hazard Prediction Modeling
- Consequence Management

Human Estimates Produced:
- Percutaneous: ID50s, ED50s, LD50s, Probit Slopes, NOAELS
- Inhalational: ICT50s, ECT50s, Lct50s, Probit Slopes, NOAELS

Customers

- Internal: CB, DTRA
  Reachback
- External: JPEO (MCS, PDCATTI, T&E), JRO, CHR-TT, COCOMs, OGA

Extrapolation from Animal Models

Hazards
- BWA
- CWA
- NTA
- Toxin
**Objective:** Develop & integrate “non-testing approaches” that bring together multiple property evaluations & toxicity factors to enhance predictive characterization & toxicology for threat agents. Enable rapid understanding of the relative threat of chemical substances, particularly in terms of operational hazard posed to the warfighter.

**Molecular structure and Physicochemical properties**
- Structure-activity relationship (SAR)
- Quantitative structure-activity relationship (QSAR)
- Quantitative Structure-property relationship (QSPR)

**ADME Predictions based on QSAR modeling**
- Mechanism of action prediction
- Identify potential nodes of convergence with known chemicals

**ADME (in vitro) Assay validation of predictions**

**In vivo toxicity validation**

**Acute toxicity predictions**
- Dermal
- Inhalational
- Neurotoxicity
- Cytotoxicity

**Analysis of 1000 Toxic Compounds**
- 1000 years, $15B OR
- 1 year, $5M to $100M

JSTO shall develop integrated computational and in vitro predictive models to assist in identifying those current and emerging chemical biochemical materials that have the potential as CB threats of concern to the force. (FY15-19 PIP)
Objective: Develop an integrated capability to quickly characterize advanced and emerging biological threat while providing characteristics of the known threats to inform CONOPS, TTPs, and countermeasure development.

Understanding biological threat agents as an integrated system better informs development for:
- Detection / Diagnostic Assays
- Medical Countermeasures
- Hazard Response, Defeat, and Recovery

Present → Near Term → Future
Opportunities

• Current:
  • Fundamental Research to Counter Weapons of Mass Destruction
    • Solicitation Number: HDTRA1-14-24-FRCWMD-BAA
    • Estimated value: Up to $1M/yr
    • Contracting contact: TBD

• Future:
  • Chemical/Biological Technologies Program Build DTRA BAA
  • MCS OTA Consortium
  • Combating Weapons of Mass Destruction (CWMD) Research and Technology Development ID/IQ