1. **Announcement Number:** Open Broad Agency Announcement Number (OBAA) 14-003/Call 0009

2. **FBO Solicitation Number:** HSHQDC-14-R-B0009

3. **Solicitation Event Dates/Time (Local Eastern Time):**

   - White Paper Opening Date – 04/27/2015
   - Deadline for White Paper Questions - 05/11/2015
   - White Paper Closing Date – 6/5/2015
   - Notification of Selection/Non Selection of White Papers – 06/24/2015
   - Notification to Submit Full Proposals – 06/24/2015
   - Deadline for Full Proposal Questions - 07/10/2015
   - Full Proposal Due Date – 07/31/2015
   - Notification of Selection/Non Selection of Full Proposals – 08/21/2015

   There will be no exceptions to the time and date on which responses are due, unless determined otherwise by the Government. White Papers and Full Proposals received after the designated closing date/time will not be considered.

   Note: This Call will be conducted in accordance with the Two-Phased Evaluation Process as described under Section 1.6 (Two-Phased Evaluation)of the OBAA. The OBAA Solicitation HSHQDC-14-R-B00009 was posted on Federal Business Opportunities on 06/16/2014. See Link

   https://www.fbo.gov/spg/DHS/OCPO/DHS-OCPO/HSHQDC-14-R-B0009 /listing.html

   This Call will consist of the solicitation, receipt, and evaluation of both White Papers and Full Proposals. Phase 1 will consist of the solicitation, receipt, and evaluation of the White Papers (using standardized DHS Chemical Biological Division "Project Proposal Form" format) from potential performers. Entries in the various sections of the Project Proposal Forms (White Papers) should be concise and conform to the specified formatting and word count limitations (see OBAA Attachment A). No formal transmittal letter is required for the Phase 1 responses. Once the white paper peer/scientific review down-selection process has been completed, offerors will be notified via e-mail, or in writing, whether as a result of their white paper submission review, they are either "encouraged" or "not encouraged" to submit full proposals.

   Phase 2 will consist of the solicitation, receipt, and evaluation of full proposals by those offerors of the white paper submissions who were "encouraged" to submit full proposals. Offerors who did not participate in Phase 1 will not be permitted to participate in Phase 2 and submit a Full proposal. The full proposals are limited to 20 pages, excluding the Formal Transmittal Letter, Cover Page, Summary of Costs and Related Information, Table of Contents and resumes/biographical information for proposed performers. Once the Full Proposal peer/scientific review process has been completed, offerors will be notified via e-mail, or in writing, that their proposal has been selected, selected but not funded, or not selected for award.

4. **OBAA Call Technical Topic Area (TTA) of Interest:**

   Chemical and Biological Research and Development CBD.05—Bioforensics and Chemical Forensics: Research and development of next generation and novel technologies to characterize biological and

chemical threat agents for source attribution in support of FBI and NBFAC requirements in a criminal investigation. These include novel technologies to characterize the organism, the agent, or the sample matrix.

4.1. Research Opportunity Description

4.1.1. DHS S&T: Chemical Attribution Signature Studies for Chemical Threat Agents

Background

The threat of terrorist or criminal use of chemical threat agents is of great concern in the United States. There are vulnerabilities that create the need to perform chemical analyses for attribution in a rigorous scientific manner. As part of the effort to deter criminal and terrorist chemical attacks and strengthen the law enforcement response to such an act, Homeland Security Presidential Directive (HSPD) 22, a classified document dealing with domestic chemical defense, was issued. In addition, the DHS National Preparedness Goal published in September, 2011, identified forensics and attribution as a key component of DHS' Prevention Mission Area highlighting the need for attribution capabilities as a means to identify the nature and source of materials, the perpetrators and the methods of chemical attacks.

The primary internal customers of the Chemical Forensics Program are law enforcement and intelligence components of the DHS, and the primary external customer is the Federal Bureau of Investigation (FBI) due to its lead investigative agency role in acts of terrorism and weapons of mass destruction. This BAA seeks to provide sound scientific techniques related to supporting attribution analyses leading to the capture, indictment, and prosecution of the perpetrator(s) of a criminal or terrorist act involving the actual or threatened use of Chemical Threat Agents (CTAs).

DHS Chemical Forensics Program Mission –

The Chemical Forensics Program has the mission to lead Federal chemical forensic research efforts focused on sample collection and analytical techniques to support the attribution process in response to chemical threat agent incidents and to provide tools to determine source and production methods and link samples to persons, places or other incidents.

Chemical Threat Agents include:

- Chemical Warfare Agents (CWAs)
- Non-traditional Agents (NTAs)
- Toxic Industrial Chemicals (TICs)
- Toxins and Pharmaceuticals (T&P)

Chem FP Mission Distinctive –

There have been many studies conducted over the years to identify and characterize various CTAs. However, there have been only limited studies to identify and exploit Chemical Attribution Signatures for the purpose of source and synthetic route attribution in support of law enforcement and intelligence gathering efforts. The essence of the Chemical Forensics Program is the collection, preservation and analysis of chemical samples for the purpose of sample matching and source attribution on the basis of Chemical Attribution Signatures.

Chemical Attribution Signatures (CAS) consists of trace materials/anomalies that persist in the CTA and/or its degradation products that can be useful for forensic purposes. CAS includes the following:

CAS from Source Materials
- Impurities (persistent contaminants directly attributable to source materials)
- Un-reacted precursors and starting materials
- Additives
- Side products created during precursor synthesis

CAS from Process (products of side reactions)
- Reaction by-products formed by the interaction of two or more primary reagents
- Reaction by-products formed by the interaction of an impurity or contaminant with a primary reagent that was intended to be part of the process
- Reaction by-products formed by the interaction of two impurities, the reaction of two contaminants, or the reaction of an impurity and a contaminant
- Impurities (persistent contaminants directly attributable to processing (equipment and handling)

CAS from Decomposition or Degradation
- Degradation products
- Decomposition products
- Hydrolysis products

CAS from Other Sources
- Physical/chemical characteristics (isotopic ratios, isomers, etc.)
- Other

The qualities that make CAS useful for forensic purposes include:
- Variability and uniqueness (not ubiquitous)
- Highly reproducible
- Easily detectable
- Stable (insensitive to conditions)

CAS provides technical chemical information that complements and supplements information derived from traditional forensic processing. CAS may be highly specific or they may need to be supplemented with CAS identified through other orthogonal methods. CAS may have forensic significance on the basis of their presence, absence, or relative intensity and can be used to associate samples and contaminated evidence recovered at chemical incident scenes with people, places and other events.

DHS Chemical Forensics Program Objectives -

The six programmatic objectives of the Chemical Forensics Program are:

- Provide the law enforcement and intelligence communities with infrastructure that is operationally ready and capable of processing (collecting, preserving, transporting, analyzing and storing) suspected CTAs and associated evidence
- Identify and fill the forensic infrastructure, sampling and analytical capability gaps associated with the findings of the biennial Chemical Terrorism Risk Assessment (CTRA) and inputs from Subject Matter Experts (SMEs) community and federal partners

- Solicit and evaluate user requirements and then identify and fund performers with expertise and institutional capabilities that are best suited to address the requirements and identified gaps
- Use the DHS Chemical Security Analysis Center (CSAC) as a repository for the storage and dissemination of Chemical Forensics Program data, reports and standard analytical methods, as well as existing reports from previous relevant studies
- Generate data that is peer reviewed, and when possible make it open source (preferably in relevant scientific journals)
- Collaborate with Federal and international partners

4.1.2. Description Technical Topic Areas

The focus of this BAA is in the area of chemical forensics, specifically Chemical Attribution Signatures (CAS), for the purpose of recovering and associating samples collected at chemical events with each other and with their source (people, places and events). CAS consists of impurities, un-reacted precursors, additives, by-products, physical/chemical characteristics, and other anomalies that persist in the CTA and/or its degradation products that can be used for forensic purposes. CAS may also derive from materials imparted to the chemicals from the synthesis vessels or containers. CAS has forensic significance if they can be used to determine the source, synthesis/production method and/or pathway (route determination) of the CTA represented in the sample, or if they can be used to associate or disassociate different samples. In FY 2016, the DHS Chemical Forensics Program is seeking to identify new research projects/studies that address one Technical Topic TTA:

TTA-1: Determine if high-priority CTAs or precursors produced by various synthesis methods or procured from various commercial sources contain/retain CAS that have value in associating various samples with each other and/or distinguishing how, where and/or by whom the recovered CTA or precursor samples were produced and subsequently handled. High-priority CTAs include, but are not limited to, the following:

Blood Agents
Blister Agents/Vesicants
Nerve Agents
Lung/Choking/Pulmonary Agents
Highly Toxic Pesticides, Rodenticides and Fumigant Chemicals
Toxic Industrial Chemicals (TICs)
Toxic Industrial Materials (TIMs)
Other Chemical Toxins, Pharmaceuticals and Toxicants

Determine optimal methods and analytical techniques for conducting comprehensive forensic analyses of samples for source determination and association with other samples. Consideration should be given to both destructive and non-destructive techniques. Approaches that apply to a group or class of chemicals are preferred over those that address only a particular CTA. Proposals that involve applications or minor modification of equipment that is "Commercial Off-the-Shelf" (COTS) and generally available in DHS Chemical Forensics Program customer and performer laboratories are preferred. Proposals for the building of prototype equipment will have to provide a compelling justification as to why COTS equipment is not capable of meeting the requirements. (Note: The recovery and analysis of CAS from biological and botanical samples [e.g., metabolics and biomarkers] are not within the scope of the DHS Chemical Forensics Program mission and this BAA Call. Research in these areas is funded by other agencies.)

Methods of producing various CTAs that are found in open source (printed and internet) literature searches that either state or infer that the CTAs could be used against persons or property are of obvious concern to the DHS Chemical Forensics Program.

- What are the best instrumental approaches for analyzing different types of CAS from CTAs and why should the CTAs be of interest to the DHS Chem FP?

Note: The goal of the DHS Chemical Forensics Program is to provide its customers with peer-reviewed reports, standard analytical methods and scientific journal articles that are admissible in judicial proceedings. The Chemical Forensics Program does not plan to fund classified CAS studies.

5. **Number of Selections:** It is anticipated that multiple selections will be made depending on the cost and quality of the White Papers and Full Proposals as well as availability of funds.

6. **Anticipated Ceiling:** Although subject to official fiscal appropriation and availability, it is anticipated that approximately $1.6 million of Fiscal Year (FY) 2016 funds will be available for any resultant awards under this BAA Call. **The Government will reserve the right to incrementally fund any resultant contracts awarded from this BAA Call as provided by the FAR 52.232-22, "Limitation of Funds."** Contracts or other agreements that obligate funds will not have an initial period of performance that exceeds 12 months from the date of award. Offerors will be able to propose a base year effort or a base year effort with one (1) additional follow-on year effort. Efforts proposed beyond two (2) years will not be considered.

7. **Anticipated Award Type:** Award type is anticipated to be in the form of Cost Reimbursement type contracts However the Government reserves the right to award firm-fixed price contracts, cooperative agreements, Other Transactions (OTs) (if authorized by law at time of award), or interagency agreements to appropriate parties should the situation warrant.

   In the event an offeror or subcontractor is a Federally Funded Research and Development Center (FFRDC), Department of Energy National Laboratory, or other Federally funded entity, DHS/S&T will work with the appropriate sponsoring agency to issue an interagency agreement pursuant to the Economy Act (31 U.S.C. 1535) or other appropriate authority.

8. **Anticipated Award Dates:** The 1st Quarter of Fiscal Year 2016 is when the government anticipates making any resultant contract awards under this Call for those Proposals that are selected. However, the award date for any resultant contract award may vary based on the availability of funds, which in past years has been impacted by delays of departmental appropriations associated with Continuing Resolutions.

9. **White Paper Instructions:** Offerors shall submit their White Papers in accordance with BAA 14-003, Section 5.3 - Format and Content of White Paper (Attachment A White Paper Proposal Form).

10. **Full Proposal Instructions:** Offerors shall submit their Full Proposals in accordance with BAA 14-003, Section 5.4 - Format and Content of Full Proposals.

11. **Evaluation Criteria:** White Papers and Full Proposals will be evaluated in accordance with the following evaluation criteria:

Criterion I: Utility to DHS: Potential of the proposed work for providing technology or solutions that address the Technical Topic Area (TTA) set forth in Section 1.8.3 of the BAA. Utility to DHS will also be assessed on the criteria used to conduct programmatic analysis reviews of the entire S&T portfolio, of which the Chemical Forensics Program is a part.

- Impact on client mission (High Impact Potential & High Technical Feasibility)
  - Will the deliverable(s) make a positive impact on the investigation of criminal and terrorist chemical incidents and the prosecution of the perpetrators?
  - Will the deliverable significantly improve existing capabilities?
- Transitioning of relevant products to the field (High Relevance & High Transition Likelihood)
  - Is the customer community waiting to implement the deliverable?
  - Will the deliverable(s) be easily transitioned to the laboratories who will conduct forensic examinations of samples collected at the scenes of chemical incidents?
- Technical investment positioning the organization for the future (High Research Leadership & Low Technical Maturity)
  - Is the research positioning the organization and its customers for the future?
- Clarity of purpose (High Clarity of Customer Need & High Project Clarity
  - Is the project clear on what it is trying to achieve?
- Appropriate level of customer involvement (High level of customer involvement through whole project lifecycle.
  - Is the project lined up with well understood customer requirements?
- Sufficient innovation to approach the challenges (High Degree of Innovation & Significant Novel Thinking)
  - Is the project using a new approach or leveraging best practices from projects in other domains)

Criterion II: Sound Technical Approach: Presentation of a sound technical approach to the proposed work that demonstrates reasonableness and responsiveness, as well as, an understanding of the challenges presented by the TTA. Illustration of a unique and clear path to address the challenge(s), as well as knowledge, understanding and integration of the legal aspects associated with the admissibility of scientific evidence on the basis of relevance and reliability (*Daubert* Challenges and the Federal Rules of Evidence).

Criterion III: Sound Management Approach: Presentation of a sound managerial approach to the proposed work, including a demonstrated understanding of the issues and challenges associated with achieving the goals of the topic, and a strategy to address those issues and challenges. A successful team will possess multidisciplinary expertise to address the complexity of the effort.

Criterion IV: Capability to Perform and History of Performance: Demonstration of a capability to perform the proposed work, including history of previous performance in developing related solutions and technologies. Proposals that utilize industry-academic partnering or utilize industry-Government partnering which enhances the development of novel S&T advances will be given favorable consideration.

Criterion V: Cost Realism/Reasonableness: Presentation of accurate, well-founded and reasonable estimates of all costs related to performance of the proposed effort, including an appropriate allocation of labor resources. Members of the TET and the Selection Authority will be looking for overall best value to the government.

Evaluation of White Papers and Full Proposals will be based on an assessment of the overall best value to the government based on the aforementioned criteria. Awards will be made based upon Full Proposal evaluation, funds availability, and other programmatic considerations, including awards to lesser rated proposals where orthogonal or alternative approaches and technologies are deemed to be more technically advantageous. Once the proposal evaluation process is complete, Offerors will be notified of selection or non-selection for an award. Offerors not selected for an award may request feedback regarding the evaluation findings of submitted proposals. A written request to the Contracting Officer must be received within 3 calendar days of notification of non-selection.

12. **Foreign Concerns**: Foreign persons are advised that their participation may be subject to Export Control restrictions. Any such restrictions shall be reviewed on an individual award basis.

13. **Questions**: Any questions concerning this call must be submitted via email to the Contract Specialist at jigisha.patel@hq.dhs.gov and copy the Contracting Officer at Michael. Jones@hq.dhs.gov no later than **May 11, 2015 3:00 PM EST** for the White Paper phase, and **July 10, 2015 3:00 PM EST** for the Full Proposal phase, in the following format**:**

Question #	Reference	Contractors' Question
1	General (if there is no specific document reference)	
2	(Example) BAA 14-003, page 15, Section 5.2, first paragraph, second sentence	
3	(Example) BAA 14-003/Call 0009, page 2, Section 9, first sentence	

Please include "Questions for BAA 14-003/ Call 0009" in the subject line. All questions and responses will be posted on the Federal Business Opportunities website http://www.fbo.gov and https://baa2.st.dhs.gov . Questions will only be accepted or answered electronically.