

DRAFT
Statement of Work

**Testing and Evaluation of Homeland Security Related Technologies for the
Measurement, Sampling, Removal, and Decontamination of
Radiological, Chemical and Biological Agents**

1. Background

Terrorist attacks against the United States and the consequent war on terrorism being waged by the U.S., its allies and many countries around the world have provided great impetus for the development of tools and technologies that can be utilized to detect and/or neutralize terrorist threats. The deliberate use of chemical, biological, or radiological (CBR) weapons and the intentional introduction of these contaminants into the nation's drinking water supplies, buildings, and other areas is a serious concern that has resulted in research efforts into ways to detect and mitigate the effect of such actions.

EPA has been designated as the Sector-Specific Agency for the drinking water and wastewater critical infrastructure protection. EPA is also the lead federal agency for the remediation of areas contaminated by terrorist events involving the release of biological organisms, biotoxins, chemical warfare agents, toxic industrial chemicals, toxic industrial materials, and radiological materials. EPA homeland security research provides procedures and methods that will assist EPA responders in the detection and containment of contamination, and in the remediation of sites following terrorist attacks.

A large part of the Agency's homeland security research is coordinated through the EPA Office of Research & Development (ORD), National Homeland Security Research Center (NHSRC). NHSRC focuses research efforts on detection and decontamination of CBR contamination that may occur in drinking water distribution systems, ambient (indoor and outdoor) air, and building and other surfaces. The NHSRC Technology Testing and Evaluation Program (TTEP) is used to identify, test, and evaluate the performance and efficacy of technologies that can be used to support this mission. The goal is to provide constructive, objective, insightful, and useful technical information on products, methods, and equipment that may be used to monitor, detect, and decontaminate CBR agents. The information regarding the technologies can then be used by federal, state, and local first responders, water utility operators, and building and facility managers to assist them with selecting the proper tools to rapidly assess the presence and levels of CBR contaminants as well as restore impacted systems and structures from the CBR contamination.

2. Purpose

The primary purpose of this blanket purchase agreement (BPA) is to establish and implement a mechanism for testing, evaluating, and reporting on the performance of the following types of homeland security related technologies for addressing CBR warfare agents:

- A. Decontamination/surface cleaning (indoor and outdoor surfaces) of large buildings, structures, and other surfaces
- B. Analytical techniques for continuous measurement of fumigant chemicals
- C. Decontamination of drinking water distribution systems and wastewater treatment plants

- D. Water quality monitoring and detection
- E. Ambient air quality monitoring and detection
- F. Air cleaning methodologies for use in buildings and other structures
- G. CBR sampling methods - including water, air, soil, and from surfaces
- H. Point-of-use and point-of-entry drinking water treatment technologies
- I. Treatment of wastewater generated during decontamination
- J. Computer software programs for use in designing water system or building monitoring networks
- K. Personal protective equipment

Secondarily, but other critically related purposes of this effort include: (1) the development and management of stakeholder groups and subordinate technical panels; (2) establishing and maintaining a continuous project information dissemination and diffusion capability (outreach); and, (3) developing standards that can be used by others to test and evaluate technologies. More detailed descriptions of each of these follow in subsequent sections.

3.0 Tasks

Specific tasks will be described in Task Orders that will be issued against this BPA. The Task Orders will be issued by the EPA Contracting Officer (CO) and technically managed by an EPA Task Order Contracting Officer's Representative (TOCOR). The statements of work for each of the technology testing and evaluation tasks shall include the activities described in Section 3.1. Additional and separate Task Orders may be prepared with statements of work that cover the needs identified in Sections 4, 5, and 6.

3.1 Testing and Evaluation Process

The technology testing and evaluation process is intended to serve as a means to generate high-quality data that can be used to rigorously scrutinize technology performance. Evaluating the performance characteristics of technologies through the generation and evaluation of objective, quality-assured data is important to potential purchasers and users of technologies because they typically require an independent and credible assessment of the equipment they are buying. Technology performance characteristics that will be tested and evaluated will vary based on the nature of the technology and its intended application. The particular performance characteristics that shall be evaluated shall be included in the test/quality assurance (test/QA) plan. The Agency expects that the testing, evaluation, and reporting process shall be conducted expeditiously. It is desirable for tests to be completed in no more than six months from the time the test/QA plan is approved. There may also be a need to perform quick-turnaround technology testing and evaluation in the event of a national or regional emergency. Decision makers will need high-quality performance data prior to the application of technology to problem solving. It is anticipated that approximately 150 technology evaluations will be completed during the five-year span of this BPA.

The Contractor shall expect that pilot scale testing (somewhere between bench scale laboratory testing and full-scale large-item testing) will be required for testing of simple cases. Full-scale, large-item testing may be required for more a realistic evaluation of technologies using certain CBR agents, surrogates, or both. It may also be necessary to conduct testing using real chemical and biological warfare agents, therefore the Contractor shall have the capabilities, expertise, and facilities for doing so.

Attachment A provides a description of the typical tasks that shall be included in each testing and evaluation Task Order. Each Task Order will provide additional, technology-specific detail in the statement of work.

4.0 Stakeholder Groups and Technical Panels

The Contractor may be tasked with managing two established stakeholder groups – Decontamination Technology Stakeholders and Water Security Technology Stakeholders. The purpose of the stakeholder groups is to identify technology and information needs, to help identify candidate technologies for testing and evaluation, to review test/QA plans and reports, and, as appropriate, participate in the execution of a test.

The Contractor may be tasked with conducting stakeholders meetings. The purpose of the meeting is to provide insights on the testing process (e.g., contamination scenarios, technology selection guidelines, and scope of test programs) and to establish technical panels to advise on the test program (e.g., selection of surrogate agents and representative indoor surfaces such as carpet, wallboard, furnishings, and filters).

A technical panel may be formed to focus on supporting a specific technology area. The technical panel members are intended to serve during the duration of the testing process. Meetings of the technical panel may be necessary in addition to stakeholder meetings.

The government expects that stakeholders will volunteer their time to participate, but occasionally a stakeholder may be unable to participate due to the inability to cover the costs of travel to the meeting location. The Contractor and the TOCOR shall discuss whether travel assistance should be provided or whether teleconferencing would be a suitable alternative. The Contractor shall consider supporting the travel arrangements of as many as 3 stakeholders per year under this BPA.

5.0 Program Outreach

An important part of this program is disseminating information about the program and about the technologies that are participating or have participated in the program. This shall involve attendance at technical conferences, symposia, and workshops, making presentations, and preparing papers, newsletters, and other program-related literature. Outreach may also involve coordinating Technology Field Days. Technology Field Days shall be used for sharing information with the media, technology users and purchasers, Federal, state, and local governmental entities, and the public.

6.0 Standards Development

The Contractor may be tasked with the development of standards. This may require writing standards and participating in meetings of standards development organizations.

7.0 Quality Assurance Requirements

Appropriate quality assurance procedures shall be incorporated into all aspects of the testing and evaluation process. The Contractor shall comply with all aspects of the TTEP Quality Management Plan (QMP).

The Agency considers the technology testing and evaluation efforts described herein to constitute a Category III Applied Research project. Each test shall be described in a combination test/QA plan. The QA requirements contained in Attachment B shall be included in the test/QA plan.

In addition, the Contractor shall comply with the following:

Quality Assurance Audits. The Contractor and any subcontractor shall anticipate that one or more quality assurance audits may be performed during the project duration. These external quality assurance audits will be performed by EPA or an EPA support contractor. Selection of the specific areas of focus for audits will be commensurate with the scope and needs of the program. These external audits are intended to complement, not replace, the good laboratory practice of internal audits performed by the Contractor.

Quality Assurance Reporting. Each published interim or final report produced as a result of an activity that required quality documentation shall include, as an integral section of the project report or as an appendix, a readily identifiable discussion of the data quality of results. Published final reports shall include the following items as a minimum:

- A. Discussions of the quality of data produced in terms of precision, accuracy, completeness, method detection limit, and representativeness, or semi-quantitative assessments of data quality, as applicable.
- B. Limitations or constraints on the use of the data, if any.

Ethics and Data Integrity. The awardee and any subcontractor shall adhere to an ethics and data integrity code. No person shall participate in:

- A. The intentional selective reporting of data,
- B. The intentional reporting of data values that are not the actual values obtained,
- C. The intentional reporting of dates and times of data analyses that are not the actual dates and times of data analyses, or
- D. The intentional representation of another's work as one's own.

Substantive Changes to EPA-Approved Quality Documentation. Any substantive changes to the specifications in the EPA-approved quality documentation shall be submitted as a revision to the quality documentation by the Contractor. The Contractor shall identify the change and explain the rationale for the change.

Products developed under this SOW must conform to the requirements of EPA's Handbook for Preparing Office of Research and Development Reports (EPA/800/K-95/002). Substantive portions of this handbook can be found at www.epa.gov/nhsrc under the policy and guidance tab.

8.0 Other Contractor Requirements

The Contractor shall furnish all personnel, material, equipment, facilities, and services necessary to perform the requirements of the statement of work and specifications included in Task Orders issued by the Contracting Officer. The Contractor's technical staff shall coordinate its efforts with the TOCORs, as well as the technology developers/vendors (this only applies to vendors who volunteer their technologies for testing) in all aspects of the testing and evaluation process.

The Contractor must have an active chemical surety laboratory and a bailment agreement with the U.S. Army Research, Development, and Engineering Command (RDECOM). The Contractor shall also have Biosafety Level 3 facility for handling pathogenic organisms. The Contractor shall be required to work with the Government to obtain all chemical or biological agents as necessary to support the testing and evaluation process.

The Contractor shall also provide/utilize facilities for testing and evaluating the performance of the range of technology types discussed in this statement of work when it is inappropriate, infeasible, or impractical to conduct tests under real operating conditions. Using these facilities, the Contractor shall conduct small chamber studies (e.g., under a laboratory hood) as well as larger, pilot-scaled sized space (small room).

In all meetings, conferences, symposia, etc. participated in or conducted as a part of satisfying the terms of this contract. The Contractor personnel shall be clearly identified through the use of name badges that indicate their corporate affiliation. Contractor personnel shall clearly identify themselves as contractors during any introduction and/or presentation.

9.0 Contract Close-out

At the conclusion of each Task Order and of the BPA, the Contractor shall provide all records to the respective TOCOR. This shall include correspondence, peer-reviewers comments, draft reports, raw and summarized data, and other documents that reflect decisions or activities that took place during the duration of the Task Order or the BPA.

Attachment A
Components of a Technology Testing and Evaluation Task Order

1. Identify and recommend appropriate technologies. The Contractor shall exhaustively search for candidate technologies that may be included in testing. The Contractor shall recommend to the TOCOR suitable candidate technologies based on information provided by EPA, information available in the open literature research, from vendor contacts, and from stakeholder interaction. Input from the stakeholders and technical panels shall be an important factor in technology selection. The TOCOR will also provide input to the technology identification and selection process. Voluntary participation by the technology developer is desirable but not required. The Contractor may consider leasing, borrowing, or purchasing a high priority technology if it is not volunteered by the vendor. The TOCOR shall make the final decision as to the technologies that will be included in the testing process.
2. Conduct technology developer/vendor meetings. All developers interested in participating in a test shall be invited to attend a meeting at their own expense. The purpose of the meeting is for the Contractor to provide detailed information about the testing and evaluation process, to solicit interest from developers regarding their participation, and to entertain any questions they may have about the process. This meeting may be held in a physical location as a face-to-face meeting (possibly requiring travel by the Contractor and the vendor) or may be done using teleconferences.
3. Prepare test/QA plans. The test/QA plans shall be used to guide the tests and shall be inclusive of all participating technologies. The test plan shall follow the standard format of TTEP test/QA plans (available at www.epa.gov/nhsrc/ttep.html) and shall include schedules, responsibilities, and deliverables. The test/QA plans shall be reviewed by one or more technical experts. The TOCOR shall review and approve the plans before testing begins. Quality assurance requirements that shall be considered during the preparation of all test/QA plans are included in Attachment B.
4. Identify and recommend sites or locations that may be used for testing along with the basis for the recommendation. The process of site selection may require Contractor personnel to visit the sites or testing laboratories to assess the technical and logistical feasibility of a particular location.
5. Lead the execution of the test at the selected location(s). Typical activities shall include sampling, analysis, and auditing of the test.
6. Conduct sample analysis (chemical, biological, or radiological), as necessary, for use as a reference data point.
7. Compile and evaluate the results of the test. The data shall be compiled into a data summary report and into an electronic format (i.e., Microsoft Word, Microsoft Excel, or Microsoft Access). A data dictionary shall be provided with the electronic version of the data set.

8. Prepare a Technology Evaluation Report for each technology. The nature and scope of these reports shall be similar to reports prepared for other tests conducted by the EPA and available at www.epa.gov/nhsrc/teep.html. Any deviations in report content shall be identified in specific Task Orders.
9. Prepare a technology brief that shall contain a capsule summary of the information contained in the Technology Evaluation Report. Examples of Technology Briefs can be found at www.epa.gov/nhsrc/teep.html.

Attachment B
TEST/QA PLAN REQUIREMENTS FOR APPLIED RESEARCH PROJECTS
(from Appendix B of the NHSRC QMP)

An applied research project is a study to demonstrate the performance of technologies under defined conditions. These studies are often pilot- or field-scale. The following requirements should be addressed as applicable.

SECTION 0.0 APPROVAL BY PROJECT PARTICIPANTS

The EPA Technical Lead Person (TLP), typically the TOCOR, shall be responsible for obtaining signatures of appropriate project participants on the signature page of the test/QA plan, documenting agreement to project objectives and the approach for evaluating these objectives.

SECTION 1.0 PROJECT DESCRIPTION AND OBJECTIVES

- 1.1 The purpose of study shall be clearly stated.
- 1.2 The process, site, facility, and/or environmental system to be tested shall be described.
- 1.3 Project objectives shall be clearly stated and identified as primary or non-primary.

SECTION 2.0 PROJECT ORGANIZATION

- 2.1 Key points of contact for each organization involved in the project shall be identified.
- 2.2 All QA Managers and their relationship in the organizations (i.e., location within each organization) shall be identified with evidence that the QA Manager is independent of project management.
- 2.3 Responsibilities of all other project participants and their relationship to other project participants shall be identified, meaning that organizations responsible for planning, coordination, sample collection, sample custody, measurements (i.e., analytical, physical, and process), data reduction, data validation, and report preparation shall be clearly identified.

SECTION 3.0 EXPERIMENTAL APPROACH

- 3.1 The general approach and the test conditions for each experimental phase shall be provided. The statistical methods that will be used to evaluate the data should be identified.

(NOTE: As deemed appropriate to the project by the TLP, the information requested in Sections 3.2, 3.3, and 3.4 may be presented here or in Section 4; the information requested in Sections 3.5 may be presented here or in Section 5; and the information requested in Sections 3.6 may be presented here or in Section 7.)

- 3.2 The sampling strategy shall be included and evidence must be presented to demonstrate that the strategy is appropriate for meeting primary project objectives, i.e., a description of the statistical method or scientific rationale used to select sample sites and number of samples shall be provided.
- 3.3 Sampling/monitoring points for all measurements (i.e., including locations and access points) shall be identified.

3.4 The frequency of sampling/monitoring events, as well as the numbers for each sample type and/or location shall be provided, including QC and reserve samples.

3.5 All measurements (i.e., analytical [chemical, microbiological, assays], physical, and process) shall be identified for each sample type or process, and project-specific target analytes shall be listed and classified as critical or noncritical in the test/QA plan.

3.6 The planned approach (statistical and/or non-statistical) for evaluating project objectives shall be included.

SECTION 4.0 SAMPLING PROCEDURES

4.1 Whenever applicable, the method used to establish steady-state conditions shall be described.

4.2 Known site-specific factors that may affect sampling/monitoring procedures shall be described.

4.3 Any site preparation needed prior to sampling/monitoring shall be described.

4.4 Each sampling/monitoring procedure to be used shall be discussed or referenced. If compositing or splitting samples, those procedures shall be described.

4.5 For samples requiring a split sample for either QA/QC purposes or for shipment to a different laboratory, the test/QA plan shall identify who is responsible for splitting samples, and where the splitting is performed (e.g., field versus lab).

4.6 If sampling/monitoring equipment is used to collect critical measurement data (i.e., used to calculate the final concentration of a critical parameter), the test/QA plan shall describe how the sampling equipment is calibrated, the frequency at which it is calibrated, and the acceptance criteria for calibration or calibration verification, as appropriate.

4.7 If sampling/monitoring equipment is used to collect critical measurement data, the Test/QA plan shall describe how cross-contamination between samples is avoided.

4.8 The test/QA plan shall include a discussion of the procedures to be used to assure that representative samples are collected.

4.9 A list of sample quantities to be collected, and the sample amount required for each analysis, including QC sample analysis, shall be specified.

4.10 Containers used for sample collection, transport, and storage for each sample type shall be described.

4.11 Describe how samples are uniquely identified.

4.12 Sample preservation methods, including specific reagents, equipment, and supplies required for sample preservation shall be described.

4.13 Holding time requirements shall be noted.

4.14 Procedures for packing and shipping samples shall be described.

4.15 Procedures to maintain chain-of-custody during transfer from the field to the laboratory, in the laboratory, and among contractors and subcontractors shall be described to ensure that sample integrity is maintained.

4.16 Sample archival requirements for each relevant organization shall be provided.

SECTION 5.0 TESTING AND MEASUREMENT PROTOCOLS

5.1 Each measurement method to be used shall be described in detail or referenced. Modifications to EPA-approved or similarly validated methods shall be specified.

5.2 For unproven methods, verification data applicable to expected matrices shall be included in the test/QA plan meaning the test/QA plan shall provide evidence that the proposed method is capable of achieving the desired performance.

5.3 For measurements which require a calibrated system, the test/QA plan shall include specific calibration procedures applicable to each project target analyte, and the procedures for verifying both initial and continuing calibrations (including frequency and acceptance criteria, and corrective actions to be performed if acceptance criteria are not met).

SECTION 6.0 QA/QC CHECKS

6.1 At a minimum, the test/QA plan shall include quantitative acceptance criteria for QA objectives associated with accuracy, precision, detection limits, and completeness for critical measurements (process, physical, and analytical, as applicable) for each matrix.

6.2 Any additional project-specific QA objectives shall be presented, including acceptance criteria. This includes items such as mass balance requirements.

6.3 The specific procedures used to assess all identified QA objectives shall be fully described.

6.4 The test/QA plan shall list and define all other QC checks and/or procedures used for the project, both field and laboratory.

6.5 For each specified QC check or procedure, required frequencies, associated acceptance criteria, and corrective actions to be performed if acceptance criteria are not met shall be included.

SECTION 7.0 DATA REPORTING, DATA REDUCTION, AND DATA VALIDATION

7.1 The reporting requirements for each measurement and matrix shall be identified.

7.2 The deliverables expected from each organization responsible for field and laboratory activities shall be listed.

7.3 Data reduction procedures specific to the project, and also specific to each organization, shall be summarized.

7.4 Data validation procedures specific to each organization used to ensure the reporting of accurate project data to internal and external clients shall be summarized.

7.5 Data storage requirements for each organization shall be provided.

7.6 The product document that will be prepared for the project shall be specified (e.g., journal article, final report, etc.). The contents of this document can be referenced to a NHSRC or program-specific QMP, if appropriate.

SECTION 8.0 ASSESSMENTS

8.1 The test/QA plan shall identify all scheduled audits including technical system audits (TSAs) and performance evaluations (PEs) to be performed, who will perform these audits, and who will receive the audit reports.

8.2 The test/QA plan shall provide procedures that are to be followed that will ensure that necessary corrective actions will be performed.

8.3 The responsible party(-ies) for implementing corrective actions shall be identified.

SECTION 9.0 REFERENCES

References shall be provided either in the body of the text as footnotes or in a separate section.