

SOCOM244-003: Water Tester at Point of Need

ADDITIONAL INFORMATION

N/A

TECHNOLOGY AREAS:

Electronics

MODERNIZATION PRIORITIES:

Advanced Materials | Biotechnology

KEYWORDS:

Water Tester; Water Testing; Point-of-Need; Water Quality; Exposure; Coliforms

OBJECTIVE:

The objective of this topic is to develop applied research toward an innovative capability to improve water surveillance at point-of-need. The goal is to develop a field instrument that is rugged, compact, and able to provide microbiological and metal detection capabilities as far forward as possible to reduce both short- and long-term health risks to personnel.

IMPORTANT: For SOCOM instructions: please visit: <https://www.defensesbirsttr.mil/SBIR-STTR/Opportunities/>. Go to the bottom of the page and click "DoD SBIR 24.4 Annual". Once there, go to the SOCOM SBIR 24.4 - Release 2

DESCRIPTION:

The capability to provide water tester at point-of-need will incorporate a durable and small-scale piece of equipment that is able to withstand travel and ground movement while simultaneously providing rapid results on microbiological health threats and metal exposures. As a part of this feasibility study, the proposers shall address all viable overall system design options with specifications on the following key equipment attributes:

- Able to complete analysis for total coliforms and Escherichia coli.
- The capability to receive a result in less than 4 hours for total coliforms and Escherichia coli.
- Able to complete analysis for arsenic, lead, copper, and cyanide.
- The capability to detect arsenic, lead, copper, and cyanide is not limited to presence and absence, but will provide a definitive numerical result (milligrams per Liter).
- Results must be accessible to allow for future processing within the Defense Occupational and Environmental Health Readiness – Industrial Hygiene (DOEHRS-IH) system of record.
- Equipment (water tester) must be compact and able to fit in a carry-on piece of luggage for transport.
- Equipment (water tester) must not exceed 25 pounds.
- Equipment (water tester) must be durable to withstand transport on aircraft, rucks, tactical boxes, ground movement.
- Equipment item must be dual voltage with battery pack capability.
- Equipment item water resistant and able to withstand temperature fluctuations for heat (minimum 100o Fahrenheit (F) and cold (minimum 32o F).
- Optional: Able to test for Cryptosporidium species.

PHASE I:

Conduct a feasibility study to assess what is in the art of the possible that satisfies the requirements specified in the above paragraphs entitled "Objective" and "Description."

The objective of this USSOCOM Phase I SBIR effort is to conduct and document the results of a thorough feasibility study ("Technology Readiness Level 3") to investigate what is in the art of the possible within the given trade space that will satisfy a needed technology. The feasibility study should investigate all options that meet or

exceed the minimum performance parameters specified in this write up. It should also address the risks and potential payoffs of the innovative technology options that are investigated and recommend the option that best achieves the objective of this technology pursuit. The funds obligated on the resulting Phase I SBIR contracts are to be used for the sole purpose of conducting a thorough feasibility study using scientific experiments and laboratory studies as necessary. Operational prototypes will not be developed with USSOCOM SBIR funds during Phase I feasibility studies. Operational prototypes developed with other than SBIR funds that are provided at the end of Phase I feasibility studies will not be considered in deciding what firm(s) will be selected for Phase II.

PHASE II:

Develop, install, and demonstrate a prototype system determined to be the most feasible solution during the Phase I feasibility study on a water tester at the point of need to provide expeditious results to address water exposures that have a short- and long-term impact on the health of personnel that are forward deployed.

PHASE III DUAL USE APPLICATIONS:

This system could be used in a broad range of military applications where a water tester at the point-of-need will provide valuable exposure information for Special Operations Forces and conventional forces. The record of this information can be recorded in DOEHS-IH which can then populate the Periodic Occupational and Environmental Monitoring Summary (POEMS) that describe population exposures and the Individual Longitudinal Exposure Record (ILER) – the electronic record of exposures. Other agencies interested in this technology include environmental programs, emergency response teams, and other federal directorates.

REFERENCES:

1. TB MED 577/NAVMED P-5010-10/AFMAN 48-138_IP. Sanitary Control and Surveillance of Field Water Supplies. May 2010. https://armypubs.army.mil/productmaps/pubform/Details.aspx?PUB_ID=86297
2. DoD Instruction 6490.03. Deployment Health. June 2019. <https://www.esd.whs.mil/Directives/issuances/dodi/>

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