National Urban Security Technology Laboratory
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Document Type: Special Notice

Title: Radiation Instrument Testing: Handheld Radioactive Contamination Detectors and Radiation Portal Monitors

Posted Date: September 21, 2022

Contracting Office Address: Office of Procurement Officer, Washington, DC 20528

Description: Request for Information for Participation (RFIP) – Testing of Handheld Radioactive Contamination Detectors and Radiation Portal Monitors

Due: By or before 5:00 PM Eastern Daylight Time on Thursday, October 6, 2022

I. BACKGROUND AND OBJECTIVES

This is a Request for Information for Participation (RFIP) only. The Government will not award a contract on the basis of this RFIP. Organizations that respond will not be paid for the information submitted or for any submission preparation or related costs. Submission of vendor information in response to this RFIP constitutes consent to publication of that information in Government reports.

Following a commercial nuclear power plant accident it will be necessary to survey large numbers of people and vehicles; more than 300,000 people were surveyed in the aftermath of the 2011 nuclear reactor accident in Fukushima Japan, for example, along with several thousand vehicles carrying evacuees away from the area and still more vehicles bringing workers into the contaminated zone. To support this need, the U.S. Department of Homeland Security's (DHS) Federal Emergency Management Agency's (FEMA) Technological Hazards Division's (THD) Radiological Emergency Preparedness (REP) program developed performance standards for radiation portal monitors used for radiological response purposes (FEMA-REP-21, 1995) and tested a number of handheld radioactive contamination detectors to determine their response while surveying radioactive sources (FEMA-REP-22, 2002). Modern instruments may allow quicker scanning with adequate sensitivity at greater distances and/or higher speeds. Given the time that has passed, and advancements in technology since the publication of these documents, the DHS's Science and Technology Directorate (S&T), in support of FEMA, is seeking to test the capabilities of a variety of handheld instruments and radiation portal monitors under standard conditions, to allow for FEMA to publish the results of this testing as updates to both FEMA-REP-21 and FEMA-REP-22 for usage with the nuclear power plant emergency response community.

This is an opportunity for manufacturers of radiation detection instruments to have their instruments tested by an independent laboratory to understand the instrument's performance using standard sources under a variety of combinations of survey speed and distance to the radioactive source. Empirical data collected under this testing will be used by FEMA to issue updated REP guidance as

described above. Published data may include information on detection capability of instruments at various speeds of survey, at certain distances from radiation sources, and various radiation source activity. Those selected will also receive data collected about their instrument's performance, including instrument-specific conversion factors used during testing.

II. SUBMISSION OF INFORMATION

Respondents are required to complete a written instrument information summary for each instrument and to indicate their interest in participating in this work if their instrument(s) is selected for testing.

All information received will be treated as public knowledge and may be used in the final report and other public documentation; therefore, manufacturers should not submit proprietary information in response to this RFIP.

Responses to this RFIP must be submitted to NUSTL no later than 5:00 PM EDT, October 6, 2022. All comments, inquiries, and responses must be submitted via e-mail at NUSTL@hq.dhs.gov. The selection of companies and instruments that will participate in this testing is at the sole discretion of DHS, to include S&T and FEMA, with input from other federal government agencies.

III. PARTICIPATION REQUIREMENTS

All manufacturers who have radiation detection instruments that are used by Federal, State, Local, Tribal, and/or Territorial emergency response organizations, that are used for measuring radioactive contamination on people and/or vehicles, and that meet the technical requirements detailed below are invited to participate. Manufacturers that wish to participate are required to provide the requested information no later than October 6, 2022.

To be considered for this work, at a minimum, an instrument must be:

- For handheld radioactive contamination detectors
    - Capable of detecting beta and/or gamma radiation and displaying results that can be used to determine contamination levels
    - Available for purchase at this time or at Technology Readiness Level (TRL) of 9 and Manufacturing Readiness Level (MRL) of 9 or 10 (see https://www.dhs.gov/sites/default/files/publications/Product%20Realization%20Guide.pdf)
- For radiation portal monitors
    - Capable of detecting beta and/or gamma radiation and alarming locally or remotely.
    - Available for purchase at this time or a Technology Readiness Level (TRL) of 9 and Manufacturing Readiness Level (MRL) of 9 or 10 (see https://www.dhs.gov/sites/default/files/publications/Product%20Realization%20Guide.pdf).

Selection will be done by a Selection Committee based on criteria such as, but not limited to, detection capability, availability, alarms and units used. Selected manufacturers will be required to

provide the instrument(s) for testing during a time period between October 6, 2022 and December 31, 2022.

Selected manufacturers will be required to enter into a Cooperative Research and Development Agreement (CRADA) with DHS to facilitate the instrument testing described above.

No funding will be provided for participation.

IV. SCHEDULE

- **Information submission, review, and instrument selection:** October 6, 2022 – November 1, 2022
- **Instrument testing:** November 1, 2022 – January 31, 2023
- **Reporting results:** April 30, 2023

V. SUBMISSION OF INFORMATION

Please limit submission to a maximum of five pages in length (including a cover sheet) and provide the following information:

1. Company name
2. Company address
3. Point(s) of contact (name, title, e-mail, and phone number)
4. Business type (manufacturer or exclusive distributor)
5. Instrument name, type, description, and specifications. Clearly list the following:
    a. Type of detector (e.g., plastic scintillator, pancake GM, etc.)
    b. Instrument units (e.g., mR/hr, cpm, cps, etc.)
    c. Instrument range (minimum and maximum readings)
    d. Instrument dimensions
    e. Instrument weight
    f. Instrument drawing, picture, and layout
    g. Instrument power requirements

        ~~Instrument absolute counting efficiency~~

    h. For radiation portal monitors, provide type (e.g., pedestrian, small vehicle, truck)
    i. Data output file format (if available)

j. Instrument display type (e.g., analog, digital (numeric only), digital (numbers and graphics, etc.) and photo or drawing of instrument display

~~Recommended survey speed (handheld contamination detectors)~~

k. Recommended walking or driving speed (radiation portal monitors)

l. Quantities, symbols and alarms displayed by the system

m. Occupancy and/or speed sensors (radiation portal monitors)

n. Instrument manual if not propriety (electronic copy)

o. Any American National Standards Institute (ANSI), Department of Energy (DOE), Department of Defense (DOD), or other performance standards against which the instrument has been successfully tested

p. Information about system software (or app) and computer (or smart phone) if needed to control the system, and display and/or extract the instrument data and if propriety

q. Any factors required to convert instrument readings to contamination levels (e.g., counting efficiency, cpm equivalent to indicated dose rate [e.g., cpm per 1 mR/hr], etc.)

r. For any instrument that is not currently available for purchase, the TRL and MRL and expected availability date(s)

6. Cost information, i.e., purchase price and General Services Administration (GSA) schedule information, if available).

7. Statement of acceptance of these conditions, schedules, and other requirements for participation in this testing.

VI. OBLIGATIONS OF DHS

- Execute CRADA with selected manufacturers
- Provide a testing location, NIST-traceable radioactive test sources, and other equipment required to perform the testing
- Develop a testing plan and standard test procedures
- Conduct instrument testing in a consistent manner for all instruments
- Provide test results to the manufacturers selected for participation for their instruments only

VII. OBLIGATIONS OF SELECTED MANUFACTURERS

- Enter into CRADA with DHS

- Ship the selected instrument(s) to the testing location and arrange for the return when testing is completed

- Provide DHS with operations manuals in electronic format

- Ensure that all proprietary information that is shared with DHS is clearly and thoroughly marked as such, including on every page and in the subject line of any email transmissions

- Provide any software and hardware that might be required to operate the instrument(s) properly or to retrieve data

- Provide necessary technical support and training virtually if needed to set up and operate the instruments provided for testing

- For radiation portal monitors that are not free-standing, provide mounting frames for radiation portal monitors (i.e., a way to prevent the monitor from falling as the systems will not be bolted to the floor)

    - Note: Testing will include using a track to transport radioactive sources through the portal monitor; portal monitors that have a fixed bottom plate may not be suitable for testing. Vendors may be asked to provide alternative support if necessary.

VIII. OTHER

All information received in response to this RFIP will be treated as public knowledge; therefore, vendors should not submit proprietary information in response to this RFIP.

The submitted information will be evaluated by DHS and, at the sole discretion of DHS, selected manufacturers may include one or more of their handheld radioactive contamination detectors and/or radiation portal monitors in this effort. Determination as to an individual product's suitability will be made by DHS, to include S&T and FEMA, with input from other federal government agencies. While only federal employees will participate in the final selection decision, Government support contractors may review and provide support during the evaluation process. All participants involved in the evaluation process that are not federal employees, including those in support roles, will sign a Non-Disclosure Agreement prior to such involvement. Submission in response to this RFIP constitutes approval to release the application package to the evaluation team that may include federal government employees and government support contractors.