

ENVIRONMENT & ENERGY / DEACTIVATION AND DECOMMISSIONING

PROJECT: Waste and D&D Engineering and Technology Development: *FX2 Advanced Fogging Technology Testing and Evaluation*

CLIENT: US Department of Energy EM
PRINCIPAL INVESTIGATOR: Dr. Leonel Lagos
SITE: Savannah River Site, Idaho National Lab

Description:

The objective for this task is to test and evaluate the FX2 Advanced Fogging Technology, developed at INL, for potential implementation at the SRNL 235-F facility. SRS has identified a need for an advanced fogging technology to better address the potential airborne contaminants at this facility. INL’s FX2 fogging agent is a proprietary mixture of water, latex paint, glycerin, and sodium lauryl sulfate. Initial testing at INL has shown the product to be excellent at reducing airborne contamination and fixing particulates in place. The research is being conducted at FIU-ARC in collaboration with INL and SRNL. This work is also relevant to D&D activities at other DOE sites as well as D&D activities world-wide.

Benefits:

The benefits of the testing of the FX2 Advance Fogging Technology at FIU include an evaluation of the following:

- Ability to control potential airborne contamination.
 - Capacity to knockdown airborne particulates.
 - Ability to fix loose contamination to different types of surfaces (glass, concrete, steel, etc.).
 - Ability to cover locations outside of the direct line-of-sight of the fogger.
- Characteristic properties of the product:
 - Burn rate (ASTM D84)
 - Flammability (ASTM D3065)
 - Viscosity (ASTM D2196)
 - Surface Tension (ASTM D1331)
 - Density (ASTM D792)

- Reactivity to flame and heat sources.
- Ability to shield against an alpha emitting point source.
- Adhesiveness to surface (test area will be placed under air pressure to determine if the dried product will become dislodged).
- Coverage of surface area, as quantified via use of ImageJ software analysis.
 - Uses contrast analysis to determine coverage of the product.
 - Correlates radiation shielding to the coverage results.

Accomplishments:

- FIU has completed the development of a Technology Test Plan to meet the objectives of this research task in collaboration with INL and SRNL.
- Preparations for executing the test plan are in progress and on target for the scheduled testing dates of March 30 through April 3, 2015.
- Results of the testing and evaluation will be documented in a Technology Demonstration Evaluation Report which will be made available on the D&D Knowledge Management Information Tool (www.dndkm.org).
- Future work envisioned includes the design and development of a robotic fogger and the establishment of a performance standard for stabilizers to minimize migration of dispersible radioactive contamination (e.g., ASTM WK5394).



DOE Fellows with FX2 inside ARC hot cell mock-up facility (left). Inside view of hot cell mock-up (right).

ABOUT

Since 1995, the Applied Research Center (ARC) at Florida International University (FIU) has provided critical support to the Department of Energy’s Office of Environmental Management (DOE-EM) mission of accelerated risk reduction and cleanup of the environmental legacy of the nation’s nuclear weapons program. ARC’s applied research is performed under the DOE-FIU Cooperative Agreement (under Contract # DE-EM0000598) and provides technical support to DOE EM in the area of environmental remediation and STEM workforce development and training.

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