TECHNOLOGY NEEDS/OPPORTUNITIES STATEMENT
METHOD TO CAPTURE/CONTAIN AIRBORNE ALPHA CONTAMINATION
FOR 233-S

Identification No.: RL-DD062
Date: August 2001
Program: Decontamination and Decommissioning
OPS Office/Site: Richland Operations Office/Hanford Site
PBS No.: RL-CP01
Waste Stream: LLW debris (ER-05, risk = 4) and TRU debris (T3-ER, risk = 5)
TSD Title: N/A
Waste Management Unit (if applicable): N/A
Facility: 233-S

Priority Rating: This entry addresses the Accelerated Cleanup: Paths to Closure (ACPC) Priority:

_X_ 1. Critical to the success of the ACPC
____ 2. Provides substantial benefit to ACPC projects (e.g., moderate to high lifecycle cost savings or risk reduction, increased likelihood of compliance, increased assurance to avoid schedule delays)
____ 3. Provides opportunities for significant, but lower cost savings or risk reduction, and may reduce uncertainty in ACPC project success.

Need Title: A method to capture/contain airborne alpha contamination (e.g., plutonium) from work areas at 233-S.

Need/Opportunity Category: *Technology opportunity* - the project desires an alternative to the current or planned baseline technology/process (i.e., a baseline exists but can be improved).

Need Description: Decommissioning is being performed in areas with airborne alpha contamination that poses a safety concern for the workers. Much of the work is performed using glove bags that are cumbersome. A "bug-zapper-like" curtain or wall could be used to decrease airborne contamination by attracting and capturing the contamination. Airborne contamination and the likelihood of a release would be reduced with such a system. (Note that work had been started on such a device by the D&D Integrated Demonstration at INEEL, however, the activity was terminated.)

Schedule Requirements:
Earliest Date Required: 10/1/2001
Latest Date Required: 12/31/2004.

Problem Description: Much of the decommissioning work at 233-S must be performed in areas with airborne alpha contamination. This requires special personnel protection and means of protecting the environment from an unintentional release. For example, pipe cutting in a trench required the construction of a glovebag, a tent, and the use of personnel protective equipment.

Benefit to the Project Baseline of Filling Need: Worker safety will be enhanced and the potential of an environmental release will be decreased by meeting this need.

Functional Performance Requirements: As a minimum, the system must contain airborne isotopes, but a system to attract and capture airborne isotopes is desired. The system must pose no electrical or other industrial hazard to the workers. A containment system must be at least as efficient as a glove bag, but be less cumbersome to use. Any fixatives applied must meet Waste Isolation Pilot Plant (WIPP) Waste Acceptance Criteria (WAC) and allow for 100 gm loading of plutonium per 55-gallon drum (e.g., the presence of organics in a fixative will reduce the quantity of allowable plutonium per drum).

WBS No.	***TIP No***.
1.4.03.3.1.02.06.03.10.42.01	N/A

Relevant PBS Milestone: PBS-MC-031

Justification for Need:

Technical: Work must be performed in areas of high airborne alpha contamination.

Regulatory: There are no specific regulatory drivers for this need.

Environmental Safety and Health: Worker safety will be enhanced and the potential of an environmental release will be decreased by meeting this need.

Cost Savings Potential (Mortgage Reduction): Rough order of magnitude (ROM) life cycle cost (LCC) savings of $100K. LCC savings estimate is based on the assumption that a method to capture airborne alpha contamination would reduce the FY2002 and FY2003 costs by 1%. The FY2002/2003 Project cost of $10.7M was assumed based on DOR/RL-97-44, Volume 5, Revision3, September 2000.Meeting this need may relax some of the protection requirements currently being used so that work may progress faster, thereby saving money.

Cultural/Stakeholder Concerns: Stakeholders are concerned with environmental and worker protection.

Other: None identified.

Current Baseline Technology: Personnel protection equipment such as glove bags, clothing and respirators, containment structures for protection of the environment, and a latex-based coating material used as a fixative.

End User: Environmental Restoration Project

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