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U.S. EPA Environmental Technology Verification (ETV) Program
Materials Management and Remediation Center

Summary of the Materials Management Stakeholder Committee Teleconference
Tuesday, November 10, 2009

Attendees:

Steve Acree, EPA	Leslie Karr, U.S. Navy
Michael Adam, EPA	Golam Mustafa, EPA Region 6
Erica Becvar, USAF	Robert Phaneuf, NY DEC
Richard Carmichael, TX CEQ	Jennifer Griffin, NEWMOA
Lynn Rubinstein, NERC	Eric Stern, EPA Region 2
Jim Harrington, NY DEC	Marvin Unger, HydroGeologic, SERDP/ESTCP

ETV MMR Center Staff:

Amy Dindal, Battelle	Mark Perry, Battelle
Maria Gordon, Battelle	Teri Richardson, EPA MMR Center Project Officer

Welcome/Opening Comments

Teri Richardson, EPA MMR Center Director, welcomed the stakeholders on the Materials Management Committee. She directed most of her comments to the future of the ETV Program.

It has been a year since the MMR Center opened, and the Center has seen quite a bit of progress. Thanks to the involvement of the stakeholders, many areas of interest have been identified.

The MMR Center is one of three new centers recompeted a year ago. There is no funding for the centers, only in-kind assistance. Going forward, there is no ETV base funding in the President's 2010 budget (which has not yet been approved by Congress). We don't know what will happen in 2011. Only after the Office of Budget and Management has completed its analysis by early next year will we have a better idea of funding. The EPA, however, is committed to supporting the ETV centers through 2011.

In the meantime, Teri encouraged the stakeholders to press forward, and thanked them for their efforts.

ETV MMR Center Update on Activities

Referring to the slides sent to all participants, Amy Dindal (Battelle) provided an update on what the Center has accomplished since the last meeting of the Materials Management Committee (July 29, 2009):

Battelle completed year one of the three-year cooperative agreement for the MMR Center. We formed two stakeholder committees and conducted five stakeholder teleconferences in February, March (2), June, and July. We are currently pursuing vendors and collaborators for verification testing in priority technology categories.

Our challenge has been to identify areas of interest and to develop definitions for the scope areas of the Center. Overall, the scope of the Center has encompassed:

- Recycling
- Beneficial use of waste materials
- Recovery of useful components of waste
- Treatment to minimize disposal requirements
- Remediation.

On the remediation side of the house, the following technology priorities have evolved:

- In-situ chemical oxidation
- Delivery methods (pneumatic and hydraulic fracturing, and pressure pulsing)
- Sediment remediation (reactive capping and ex-situ treatment/beneficial reuse)
- Emerging contaminant remediation (e.g., 1,4-dioxane).

Discussion: Eric Stern (EPA Region 2) commented on ex-situ sediment remediation. He has been involved in a project in which reclaimed materials were used to make concrete and manufactured soil. Recently, 200-300 ft of sidewalk cement made from treated sediment from the Passaic River was poured on the campus of Montclair State University in New Jersey. In addition, a manufactured soil blend that included compost, woodchips, and lime was used as landscape mulch on the university grounds. Amy Dindal asked Eric to make a more detailed presentation on this project at the Remediation Committee teleconference on November 19, 2009.

Amy then presented the latest updates on the technologies on the materials management side of the house:

- **Anti-Corrosion Tank Sprays**
This spray technology is used for coating the interior of underground and aboveground storage tanks for restoration, leakage sealing, and corrosion protection. We are still working on getting vendors committed to ETV testing of this technology. We opened the solicitation for this category and had discussions with two technology vendors. One vendor, Albah Manufacturing, is very enthusiastic about testing, and is now trying to secure funding support for testing. Albah's Cold Spray Process is a low pressure, powder metal process. An outline has been developed for the proposed testing and discussed during the July stakeholder teleconference. We anticipate this will be a fully vendor-funded verification test.
- **Recycling Copper Mine Tailings**
Lesktech Limited has completed Phase I of an SBIR project to convert the environmentally problematic copper mining waste "stamp sand" into beneficial, algae-resistant, roof granule material. As part of the Phase II project, Lesktech has an opportunity to execute a verification option in which the performance of the stamp sands will be tested under the ETV program as roofing granules in the manufacture of roofing shingles. We presented an outline of the proposed testing on the last stakeholder call. Phase II would:

- determine silane coating thickness on treated granules
- measure water absorption/resistance of treated and untreated granules
- assess granule-to-asphalt adhesion for roofing materials
- assess color, brightness and reflectivity of white reflective coatings on G-sand granules.

We received valuable input from the NY DEC (Bob Phaneuf, Larry Rosenmann) on the test design relative to environmental implications of the copper mine tailings use. Bob Phaneuf said that they examined the leaching potential of the material (no concerns), and suggested doing both a metals and an organic analysis of the granules themselves, and a metals analysis of the roofing materials currently used by industry. The NY DEC report is available on the MMR Center External SharePoint. Lesktech is still deciding as to whether they will execute the SBIR Verification Option.

- **Concrete Reuse**

EPA Region 6 is working with the LA Department of Environmental Quality (LDEQ) and the LA Department of Natural Resources (LDNR) to reuse I-10 Twin Span Bridge deconstruction materials for LA Coastal Shoreline Restoration. Bridge debris (including bridge deck & guard rails, bridge piles and pile caps) will be mechanically reduced into smaller sizes to utilize as wave breaker, riprap, and filling materials for shoreline protection. Reuse of 263,000 tons I-10 bridge structural concrete for coastal shoreline restoration would provide the following benefits:

- Stone cost savings: \$8M
- GHG emission reduction: 12,161 MTCO₂E
- Total energy saving: 166,880 million BTU.

Current Status: The ETV MMR Center is pursuing verification testing of concrete beneficial reuse. A verification test might involve:

- Assessing durability of concrete in seawater
- Tank leach test of the deconstruction materials to evaluate any potential environmental risk. Relevant references/standards have been identified, and we are pursuing relevant projects for collaboration.

Discussion: Golam Mustafa of EPA Region 6 updated the stakeholders on the status of the I-10 bridge deconstruction. Demolition of the bridge will start next year. The materials are exempted from testing so there does not seem to be interest in proceeding at this time. Only concrete brought in from elsewhere would require testing.

- **Tire Recycling**

Scrap tire piles present serious environmental and health problems:

- Tire pile fires can cause air quality problems.
 - Tire pile fires generate liquid waste that can contaminate soil and ground/surface water.
 - Tire piles serve as breeding grounds for mosquitoes, rodents, and other disease vectors.
- There are cryogenic, pyrolytic, and shredding processes available for recycling tires. We are now pursuing verification testing of one or more of these recycling technologies at the U.S.-Mexico, border where this is a pervasive problem. In collaboration with the Border Environmental Health Coalition, we responded to an RFP from Region 6 Border 2012 Program (Border Environment Cooperation Commission). Although award notifications were expected in October, we have not heard from them yet. We have heard that this program has doubled grant funding for this year, and that last year half of the proposals submitted were funded.

Discussion: Jennifer Griffith asked whether the end product of the tire recycling is a useful product – that is an important consideration for verification testing of any recycling process.

- **Electronics Recycling**

There are no U.S. federal laws or mandates beyond the existing hazardous and solid waste laws established in the 1970s and 1980s. In April 2009, the U.S. House of Representatives introduced legislation for “electronic waste reduction research, development, and demonstration projects.” The problem of e-waste, which contains such hazardous materials as lead and mercury, is growing, and only 15 to 20 percent of it is being recycled.

There are dozens of technology vendors for e-waste. There are processes for a variety of materials and include reuse, refurbish, recycle, dismantling, and shredding. Logistics is a large portion of the service: Collection hubs around the country sort and palletize the e-waste and ship it to the refinery. MMR Center Stakeholders have encouraged us to pursue this category, so we are keeping it on our agenda though we haven’t seen any opportunities yet.

Discussion: None of the stakeholders present had any suggestions as to which avenues to pursue with this category. Jennifer Griffith once again raised an important issue, applicable to all the materials management technologies: given that the vendors can process the materials, are there viable uses for their products? Amy replied that there are also other associated questions to ask. With concrete reuse, what impact will the materials have on the environment when in their new application? Mark Perry agreed that end-use applications and the process itself suggest we need a holistic system approach. We need to extract value in a cost-effective way, and make sure the product doesn’t create a new, unintended environmental impact in the long run.

- **Coal Ash Reuse**

On the last MM teleconference, the stakeholders suggested looking into the use of coal combustion by-products (CCB) for construction materials, such as bricks. There are more than 30 CCB reuse applications. There is also a lot of front end engineering for this process. We are in the very preliminary stages of pursuing verification testing and soliciting inquiries from vendors, and are also looking for input from EPA OSWER/ORCR (Coal Combustion Products Partnership). However, given that coal ash regulations are currently under consideration, the timing may not be right to pursue testing in this area.

- **Regulated Medical Waste**

On the last MM teleconference, the stakeholders discussed an inquiry from Med Clean Technologies, which processes regulated medical waste (RMW—solid waste, paper towels, etc.) on site. We received stakeholder concurrence to proceed with this technology.

The vendor indicates that RMW is regulated mostly at the state levels, so the challenge may be to incorporate testing parameters that are broadly applicable. Mark Perry confirmed the vendor’s concerns. Are there any stakeholder thoughts on this problem?

Discussion: Richard Carmichael said that Texas regulates its state’s medical waste, but is not sure of standards on a national basis. Jennifer Griffith suggested looking at all the states and trying to meet the most stringent requirements in the verification test. Amy commented that we had hoped that the vendor could help with this sort of analysis. Bob Phaneuf added that New York has regulations as well. This shouldn’t hinder someone from going forth. Look at the larger states and find some common ground. Amy Dindal asked the stakeholders to connect us with state folks to serve as peer reviewers. Teri Richardson said she would find

out who at EPA deals with medical waste regulations.

- **Tyvek® Suit Recycling**

Garment Recovery Services buys back Tyvek® coveralls from clean rooms and puts them through a 12 step refurbishment process. The vendor then resells the garments back to industry. This process prevents hundreds of thousands of pounds of garments from entering the landfills on their first use (e.g., treatment to minimize disposal requirements). The stakeholders and vendor have both expressed an interest in verification testing, but funding support is problematic. This is a small company and can't afford to fund testing.

Discussion: Lynn Rubenstein mentioned that in Indiana there are state grants available for recycling. A stakeholder suggested talking with DuPont, who makes the suits, to help pay for the verification testing. Amy Dindal will check whether the MMR Center has contacted DuPont.

In summary, the ETV MMR Center has strong stakeholder participation from 30 state, industrial, and federal organizations. In the past year there has been vendor and collaborator interest in a variety of remedial and materials management technology categories covering the broad scope of the MMR Center. However, securing funding to proceed with verification testing has been challenging due to the current economic climate. We have two years to get the testing going. Once we have tests set up, we'll ask you for peer reviewers. We welcome any stakeholder funding suggestions and/or collaboration in priority technology categories!

Review of Action Items and Next Meeting

- Eric Stern: Provide a more detailed presentation on his project on materials reuse.
- Teri Richardson: Provide name of EPA contact for regulated medical waste.
- Battelle: Contact DuPont about support for the Tyvek suit recycling.
- The Materials Management Committee will meet again in late winter/early spring 2010.

Adjourn

Respectfully submitted,
Maria Gordon
Battelle Stakeholder Coordinator
ETV MMR Center