U.S. EPA Environmental Technology Verification (ETV) Program
Advanced Monitoring Systems (AMS) Center

Water Stakeholder Committee Teleconference
Tuesday, December 4, 2007
1:00 pm – 2:30 pm *Eastern*

Teleconference Meeting Minutes

AGENDA

Welcome, Agenda, and Meeting Objectives	Rachel Sell, Battelle
Introduction of New Stakeholder	Stu Nagourney, New Jersey Dept. of Environmental Protection
ETV Program and AMS Center Updates	Amy Dindal, Battelle Teresa Harten, EPA
Discussion of Evolving Technology Categories ■ Lead in Drinking Water Test Kits ■ Water Infrastructure Inspection Technologies ■ Chemical Oxygen Demand Techniques ■ Total Organic Carbon Analyzers	Ann Louise Sumner, Battelle
Verification of Ballast Water Exchange Screening Technology	Mary Schrock, Battelle
Verification of Multi-Parameter Water Sensor Technology	Ryan James, Battelle
Update on Technology Category - ELISA Test Kits for Endocrine Disrupting Compounds (EDCs) in Water	Amy Dindal
New Technology Category Recommendations - *What's on the Horizon?*	Rachel Sell
Next Meeting and Action Items	Rachel Sell
Adjourn	

ATTENDEES

Stakeholder Committee Members:
Tom Gargan, U.S. Army Center for Environmental Health Research
Christine Kolbe, Texas Commission on Environmental Quality
Marty Link, Nebraska Dept. of Environmental Quality
Alan Mearns, Hazardous Materials Response Division, National Oceanic and Atmospheric Administration (NOAA)
Vito Minei, Division of Environmental Quality Suffolk County Department of Health Services
Stu Nagourney, New Jersey Department of Environmental Protection
Lisa Olsen, U.S. Geological Survey (USGS)
Geoff Scott, NOAA/ National Ocean Service (NOS) Center for Coastal Environmental Health and Biomolecular Research
Roy Spalding, University of Nebraska
Ken Wood, DuPont Corporate Environmental Engineering Group

ETV AMS Center Staff:
Amy Dindal, Battelle
Julius Enriquez, EPA
Bob Fuerst, EPA/RTP
Teresa Harten, EPA
Ryan James, Battelle
Mary Schrock, Battelle
Rachel Sell, Battelle
Ann Louise Sumner, Battelle
Abby Waits, EPA

Welcome, Agenda, and Meeting Objectives

Rachel Sell, Battelle AMS Center Stakeholder Committee Coordinator, welcomed committee stakeholders and AMS Center staff, took roll call of those stakeholders participating in the teleconference, and proceeded with an overview of the agenda, noting the focus of the call would be on evolving technology categories, verification testing progress, and identifying priority technology categories for verification.

Introduction of New Stakeholder

Ms. Sell introduced a new stakeholder, Stu Nagourney, to the Water Stakeholder Committee. Mr. Nagourney is a research scientist for the New Jersey Department of Environmental Protection, Office of Quality Assurance. He is also a member of the Interstate Technology and Regulatory Council (ITRC) where he serves as the Team Leader for the Sampling, Characterization and Monitoring Team. The ITRC is a state-led coalition that works with industry and stakeholders to achieve regulatory acceptance of environmental technologies.

ETV Program and AMS Center Updates

Amy Dindal, Battelle AMS Center program manager, provided an update on the ETV Program and AMS Center. Ms. Dindal provided a brief summary of the activities during the February 2007 stakeholder meeting since this was the first meeting of the group since that meeting. She described how 128 verification reports have been completed by the AMS Center to date with 4 technology verification tests in progress (chemiluminescent ozone monitor, leak detection and repair, ELISA test kits for endocrine disrupting compounds, and lead-based paint test kits) and numerous under development. Ms. Dindal emphasized that any new verification test must have funding support in order to proceed, so the stakeholders are critical to the sustainability of the AMS Center since they are the ones that identify pressing environmental monitoring needs and identify and/or provide testing collaborations. Battelle provided seven letters of support to vendors of small business, a required option in phase II Small Business Innovation Research (SBIR) proposals. A list of the AMS Center collaborators in FY07 were provided, including: US Coast Guard; US EPA National Risk Management Research Laboratory; EPA Region 3; American Petroleum Institute; City of Columbus; US EPA Office of Solid Waste and Emergency Response; and US EPA Office of Pollution Prevention and Toxics.

Ms. Teresa Harten, director of EPA's ETV program, provided an update on the ETV program. Ms. Harten noted that 399 verifications (188 in the monitoring area) and 90 protocols have been completed to date by the ETV program. Collaborations and vendor cost-sharing has generated 50% of the program funds each of the last three years. A new ETV web site was unveiled in October with a more user friendly look and feel. Case studies booklets document and project outcomes for 15 technology categories verified are one of the most popular visited areas of the ETV web site. Ms. Harten presented a bar chart showing ETV cost efficiency over the last nine years which demonstrated that the cost per verification or protocol had decreased ~20% in FY07. She also presented a bar chart on Program-wide ETV Timing which showed that verifications completed in FY07 were completed, on average, seven months faster than those completed in FY06. Vendors want verifications to take less time to keep up with innovation and their competitors (ideally12 months or less). Ms. Harten stated that the program has a continued focus on sustainability and incorporating sustainability metrics into verification testing. Roy Spalding asked if existing metrics of sustainability had been developed. Ms. Harten responded that EPA has a sustainable technology division, and she could engage them more, but that the stakeholder and vendor ideas on sustainability metrics are what should be inserted in the protocols. Ms. Harten explained that there is a lot going on with international ETV events. The ETV program office and Battelle (Karen Riggs) participated in the third International ETV Forum in Paris in November. A common approach to verification is being actively sought by an international workgroup from the US, Canada, and European Union (EU). In addition, the AMS Center is actively pursuing co-verification testing with ETV Canada (soil rapid toxicity testing) and NOWATECH, a Danish group funded by the EU under the EU pilot ETV program (passive groundwater samplers).

Discussion of Evolving Technology Categories

Ann Louise Sumner, Battelle AMS Center Verification Test Coordinator, provided updates on the status of several evolving technology categories. She reviewed slides from a PowerPoint presentation distributed to stakeholders before the teleconference.

Lead in Drinking Water Test Kits
Stakeholders indicated they did not anticipate major impacts of EPA's new Lead and Copper Rule on their agencies; however, they still considered verification of lead test kits for drinking water to be of high priority given the number of households using private wells as their drinking water source. Dr. Sumner said that two vendors with test kits for lead in water have expressed an interest in verification: Silver Lake Research's Watersafe® kit and Industrial Test Systems, Inc., Sensafe LEADQuick™ test. Given the low cost of the test kits, significant external funding will be needed to offset the cost of verification to the vendors. Vito Minei offered to provide in-kind support to help test the kits. The AMS Center will continue to pursue potential leads for co-funding.

Water Infrastructure Inspection Technologies
Dr. Sumner said this technology category uses existing technology (remotely operated vehicles or ROVs) for a new purpose (i.e., inspecting water infrastructure), which could offer a dramatic improvement over current inspection methods. Traditional inspection methods can require the draining of water tanks prior to performing an inspection. Two vendors have expressed an interest in verification: VideoRay LLC's VideoRay Submersible Robot for water tank inspection and RapidView's IBAK PANORAMO 3D optoscanner, an ROV on wheels for inspection of sewer pipelines. Stakeholders found these technologies to hold real potential and to be more economical, translating into improved sustainability. Stakeholders were enthusiastic about the AMS Center potentially verifying these more innovative technologies. Mr. Minei offered to provide in-kind support by identifying potential applications to test these technologies.

Chemical Oxygen Demand (COD) Techniques
Dr. Sumner indicated that the planned verification of Aqua Diagnostic's PeCOD™ laboratory/ field-portable and on-line analyzers, in collaboration with DuPont, has been delayed due to manufacturing delays of the analyzers. Once internal testing is completed by the vendor, the AMS Center expects to proceed in its verification of the analyzers.

Total Organic Carbon (TOC) Analyzers/Nutrient Analyzer
Ohmart/VEGA contacted the AMS Center about Pollution Control System's BioTector® TOC and nutrient analyzer, which is especially well-suited for process control and traditional wastewater applications, not compliance monitoring or ambient monitoring. The vendor is interested in verification and is expected to provide significant funding for the test. No additional vendors responded to the solicitation for TOC technologies. The AMS Center is currently identifying collaborators for the test. Mr. Minei offered to provide in-kind support. Alan Mearns suggested that the AMS Center contact the international cruise organization as well. Stakeholders also inquired about the cost of analyzer.

Automated Pathogen Concentrator
Dr. Sumner's final update regarded an automated pathogen concentrator developed by Tufts University/Haemonetics. The CFC100A™ is a portable automated concentrator for protozoa, bacteria, bacterial spores, and viruses. Tufts University/Haemonetics is interested in having the unit verified under the ETV program. Some funding is expected from the vendor, but the AMS Center is also seeking additional financial and in-kind collaborations. The stakeholder committee was very enthusiastic about this technology, which could help move towards

detection of pathogens versus indicator organisms, and provided their concurrence for proceeding with this verification test. Geoff Scott offered to check with others within NOAA for potential interest and in-kind collaboration. Tom Gargan suggested contacting Alan Lindquist at EPA, who has funded work in this area. Alan Mearns asked if the concentrator could be applied to saltwater. Dr. Sumner offered to follow up with stakeholders regarding their suggestions.

Verification of Ballast Water Exchange Screening Technology

Mary Schrock, Battelle AMS Center Verification Test Coordinator, discussed the verification test for Dakota Technologies, Inc. Ballast Water Exchange Assurance Meter (BEAM) 100. Co-funding for this test came from the US Coast Guard Research and Development Center. The test compared the BEAM 100 to lab bench-scale fluorescence measurements of colored dissolved organic matter (CDOM). All testing was laboratory-based only. While no field testing was conducted, a portion of the laboratory testing took place under controlled temperature extremes. The BEAM 100 was evaluated for accuracy, linearity, precision, method detection limit, inter-unit reproducibility, temperature effects, matrix effects, data completeness, and operational factors. Testing utilized two types of samples: performance test samples containing quinine sulfate and fulvic acid standards prepared in HPLC-grade water and environmental samples which more closely represented ballast water and were collected from coasts representing four corners of the US. Additionally, several open ocean water standard reference materials were used. The BEAM 100 compared well with lab bench-scale fluorescence measurements; however, several operational issues were found during testing at the temperature extremes and some matrix effects were discovered that should be considered in implementing the BEAM 100 for ballast water screening. The complete report is available on the ETV web site at http://www.epa.gov/etv/vt-ams.html#bwest. Following the update, a second round of ballast water screening tests was discussed. Ms. Schrock mentioned that two other vendors with hand-held fluorimeters may have interest in testing. Several other companies with ballast water technologies that operate using principles other than CDOM fluorescence have inquired about the ETV program. In both cases, additional collaborators would be needed to support testing. One of the stakeholders indicated that there might be interest in evaluating hand-held fluorimeters for CDOM testing applications other than ballast water (e.g., for mercury in estuaries).

Verification of Multi-Parameter Water Sensor Technology

Ryan James, Battelle AMS Center Verification Test Coordinator, quickly summarized the results for the Sensicore multi-parameter sensor verification test. The sensor is a grab sampling device that can provide results in four minutes for water quality parameters such as pH, conductivity, free chlorine, and monochloramine. Collaborators for the test included EPA's National Exposure Research Laboratory (NERL) Ecological Exposure Research Division, Texas Commission on Environmental Quality, and the City of Columbus, Ohio. The verification included both laboratory and field testing of drinking water and surface water samples. Overall, Dr. James indicated the Sensicore unit was easy to use both in the laboratory setting and in the various field environments.

ELISA Test Kits for Endocrine Disrupting Compounds (EDCs) in Water

Ms. Dindal provided an update on Estrogen ELISA test kits, another technology category under development. Ms. Dindal explained that a test will be conducted in collaboration with EPA's National Risk Management Research Laboratory (NRMRL) in Cincinnati as well as other EPA and USGS labs. The verification will evaluate the ability of different ELISA test kits to detect estrogen in four different water matrices. Abraxis, LLC is the only vendor participating in the test. Testing is expected to begin in early 2008. Geoff Scott said that Paul Pennington on his staff would be a reviewer. The stakeholders also suggested someone from USGS be a reviewer, but not someone intimately involved in the testing.

New Technology Category Recommendations

Ms. Sell said that it sounded like stakeholders had provided stakeholder concurrence on pursuing a verification test for water infrastructure inspection technologies and the automated pathogen concentrator.

The stakeholders also mentioned moisture sensors, which can determine timing of snow melt, landslide risk, and when water is safe to drink.

Vito Minei said that microcystins are still of interest and that his organization would provide in-kind support for this test.

Alan Mearns mentioned that other stakeholder type groups such as the Puget Sound Northwest Straits Commission have substantial citizen activity so they may have interest in ETV activities. Mr. Mearns said he would provide local contacts.

The stakeholders were in favor of pursing more "cutting edge" technologies, and were particularly enthusiastic about these areas as well as the ELISA test kits for EDCs since it represents an emerging area. These tests could lead eventually into other emerging classes, such as multi-resistant antibiotics in the environment, so the AMS Center should place priority on focusing on cutting-edge technologies.

Next Meeting and Action Items

Ms. Sell thanked all of the stakeholders for attending the meeting and contributing so much to the ETV program. She said that she would be back in touch with everyone in 2008 with meeting minutes to review from today's call as well as plan for the next stakeholder teleconference. The call adjourned at 2:50 pm *Eastern*.