

Teleconference Meeting Minutes



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

Water Stakeholder Committee Teleconference Wednesday, September 24, 2008 1:00 pm – 3:00 pm EDT

AGENDA

Welcome, Agenda, and Meeting Objectives	Rachel Sell, Battelle
Introduction of New Stakeholders Max Lee and Robin Oshiro	Rachel Sell
ETV Updates and AMS Center News <ul style="list-style-type: none">• ETV/SBIR/R2 Workshop (October 7-8)• EPA Drinking Water Workshop (August 2008)• Soil Rapid Toxicity Technologies International Protocol	Doug Grosse, EPA/ Amy Dindal, Battelle
Update on Technology Categories <ul style="list-style-type: none">• ELISA Test Kits for Endocrine Disrupting Compounds (EDCs) in Water• International ETV – Passive Groundwater Samplers	Amy Dindal
Discussion of New Technology Categories <ul style="list-style-type: none">• <i>E.coli</i> and Total Coliform Monitoring• Optical Property Measurements• Water Treatment Management via Toxicity Monitoring	Ryan James, Battelle
Overview of EPA Alternative Test Procedure (ATP) program	Robin Oshiro, EPA
Discussion of Evolving Technology Categories <ul style="list-style-type: none">• Pathogen Monitors• Total Chlorinated Hydrocarbon Test Kit• Lead in Drinking Water Test Kits• Chemical Oxygen Demand Techniques	Amy Dindal

- Total Organic Carbon Analyzers/On-line Nutrient Monitoring
- Automated Pathogen Concentrator

Vendor Inquiries and *Hot Topics*

Rachel Sell

- Oil-in-Water Monitoring Technologies

Recap of Priorities, Action Items, and Next Meeting

Rachel Sell

Adjourn

ATTENDEES

Stakeholder Committee Members:

John Carlton, Alabama Dept. of Environmental Management (retired)

Christine Kolbe, Texas Commission on Environmental Quality

Max Lee, Dow Chemical

Alan Mearns, Hazardous Materials Response Division, National Oceanic and Atmospheric Administration (NOAA)

Vito Minei, Division of Environmental Quality Suffolk County Department of Health Services

Lisa Olsen, U.S. Geological Survey (USGS)

Robin Oshiro, EPA

Glenn Sabadosa, Bayer MaterialScience

Jeff Schloss, University of New Hampshire (UNH) Center for Freshwater Biology, Water Resources UNH Cooperative Extension

Roy Spalding, University of Nebraska

ETV AMS Center Staff:

Amy Dindal, Battelle

Doug Grosse, EPA

Ryan James, Battelle

Rachel Sell, Battelle

Welcome, Agenda, and Meeting Objectives

Rachel Sell, Battelle AMS Center Stakeholder Coordinator, welcomed committee stakeholders and AMS Center staff, took roll call of the participants in the teleconference. Ms. Sell proceeded with an overview of the agenda, noting the focus of the call would be on upcoming ETV events, updates on technology categories moving forward, updates on evolving technology categories, and identifying priority technology categories for verification.

Introduction of New Stakeholders Max Lee and Robin Oshiro

Ms. Sell introduced new stakeholder, Max Lee, to the Water Stakeholder Committee. Dr. Lee is a senior analytical specialist within the Environmental Tech Center at Dow Chemical. He is the global subject matter expert in the environmental analytical area, conducts new analytical method development (including bench and field analyzers), and evaluates new analytical technologies for cost reduction and increased effectiveness. He holds six patents.

Ms. Sell introduced another new stakeholder, Robin Oshiro, to the Water Stakeholder Committee. Ms. Oshiro is in the Office of Water, Office of Science and Technology, Engineering and Analytical Support Branch at the EPA. She is also EPA's Alternative Test Procedure (ATP) program representative for wastewater microbiology.

ETV Updates and AMS Center News

Doug Grosse, the EPA project officer for the AMS Center, provided an update on recent ETV and AMS Center activities. The ETV/Region 2 (R2)/Small Business Innovative Research (SBIR) Workshop is being planned for New York City, October 7-8. It will be public workshop largely attended by EPA R2, state agencies (NY Department of Environmental Conservation (DEC), NY State Energy Research and Development Agency), and vendors. 100-200 attendees are expected to participate. The workshop is organized by Center areas (e.g., air monitoring session, water monitoring session, etc.). Stakeholders participating and co-presenting with the AMS Center include air stakeholder Phil Galvin from NY DEC and water stakeholder Vito Minei (Suffolk Co Department of Health Services). The agenda is provided at the workshop website: <http://www.scgcorp.com/etvsbir08/>. ETV Team members will gather the day before the workshop begins to discuss future directions that might be taken to expand or refine the program. The ETV team will also be working towards better integration with EPA divisions.

Mr. Grosse noted that the AMS Center participated in the EPA National Risk Management Research Laboratory's Drinking Water Workshop in August. Mr. Grosse and AMS Center Director Amy Dindal presented a poster that was well-received by the participants.

Of international interest, the AMS Center completed the first international verification protocol with ETV Canada on soil rapid toxicity testing. This is significant since the ETV program is putting effort into international harmonization with other country's ETV programs.

Update on Technology Categories

Amy Dindal provided an update on two technology categories and reviewed slides from a PowerPoint presentation distributed to stakeholders before the teleconference.

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

Ms. Dindal provided an update on EDC ELISA test kits, a technology category currently in-progress. Ms. Dindal explained that the test was 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 estrogenic compounds or nonylphenol in four different water matrices: deionized water; surface water; wastewater treatment plant (WWTP) effluent; and WWTP influent. Each matrix was spiked with 10 ng/L of estradiol (E2) and 17- α -ethynylestradiol (EE2) in one aliquot and 30 ug/L nonylphenol in another aliquot. Ms. Dindal noted that the concentrations were selected to be as close to realistic as possible while staying within the operating ranges of the kits that are being tested. Abraxis, LLC is the only vendor participating in the test. Testing was completed in August. Data analysis is on-going. Verification parameters will include accuracy, precision, matrix effects, and evaluation of operational factors such as ease of use, sample throughput, and waste production. Ms. Dindal thanked the peer reviewers (Lisa Olsen from USGS and Paul Pennington from NOAA) for their review of the test/QA plan and mentioned that they should expect the verification reports for review in the next few months.

Alan Mearns asked if the kits could be used in saltwater. Ms. Dindal said that they could not be used in saltwater.

International ETV – Passive Groundwater Samplers

In cooperation with the Nordic Water Technology Verification Center (NOWATECH), the AMS Center is preparing for verification testing of passive ground water samplers. The test/QA plan is being developed jointly by NOWATECH and the AMS Center; an existing ETV test/QA plan will serve as the starting point. One vendor, Sorbisense, is currently participating in the verification test, slated for summer/fall of 2008 in Denmark. The AMS Center will provide technical and quality assurance oversight of testing. The testing was expected to be completed by the end of 2008, but since the test/QA plan is still under development, Ms. Dindal does not anticipate that the testing will occur this calendar year. Testing is expected to involve volatile organic compounds (mono-, di-, tri-, and tetrachloroethenes; BTEX; MTBE). Vito Minei said that MTBE is of concern to Suffolk County DHS, as they have taken more than 50,000 groundwater samples for MTBE. It is anticipated that a supplemental document will be prepared to describe the procedures for US ETV and NOWATECH acceptance of the joint verification process. Ken Wood offered DuPont as a source of peer review for this verification test. Battelle will contact Diane Easley, EPA Region 7, to be a reviewer per Roy Spalding's suggestion. Mr. Spalding said he would also serve as a reviewer if needed.

Discussion of New Technology Categories

Ryan James provided an update on three new technology categories, and reviewed slides from a PowerPoint presentation distributed to stakeholders before the teleconference.

E.coli and Total Coliform Monitoring

There were several questions about whether or not these technologies detect enterococci as there is still much interest in this area. However, these technologies are specific for only *E.coli* and total coliform. Dr. Mearns asked how long it took to obtain a reading. The time per reading is advertised as 1-14 hours. Dr. Mearns also asked if the kits worked in saltwater. Dr. James confirmed that at least B2P's technology does. Stakeholders provided their concurrence for this category.

Optical Property Measurements

Vendor has a technology capable of taking measurements of multiple wavelengths of UV-Vis absorbance; the multivariate analysis of wavelengths can be used to measure various water quality parameters such as nitrates, sulfates, total mercury, possibly others, dissolved organic matter, and chlorophyll. Mr. Grosse asked about its capability to speciate mercury and Lisa Olsen said that mercury speciation was indeed one of the objectives of Bryan Downing's research. However, instrumentation not yet ready for ETV verification, so concurrence was not obtained for this technology category. Possible applications include carbon cycling indication.

Jeff Schloss models microcystin levels and noted that vendors are using different fluorescence instrumentation. Dr. James encouraged him to contact Bryan Downing of USGS. Lisa Olsen mentioned there may be a health and safety issue for boaters and water skiers that the Department of the Interior may be interested in. Mr. Minei offered support for a microcystins test.

Water Treatment Management via Toxicity Monitoring

Lab_Bell Inc. offers the LuminoTox, a portable bioassay that provides rapid toxicity detection in less than 10 minutes. The technology uses non-living photosynthetic enzymatic complexes; light induces fluorescence that is sensitive to toxic compounds. There is the possibility of a collaboration with ETV Canada. The Robot LuminoTox is ready for ETV testing. Dr. Mearns asked at what dilution level does toxicity disappear (e.g., 100:1). Dr. Lee asked if there is any available data for wastewater/industrial applications. Dr. James said that he would check with the vendor, as the vendor had expressed interest in ETV testing of the bench-top LuminoTox for wastewater applications. Stakeholders provided their concurrence for this category.

Overview of EPA Alternative Test Procedure (ATP) program

Robin Oshiro provided an overview of EPA's ATP program. The Clean Water Act (CWA) ATP program is described at 40 CFR 136.4 and 40 CFR 136.5. The program assumes that there is an existing approved method with the same target for the same matrix (drinking water, ambient water, etc.) and allows method developers to ask for review (not approval) of their method.

A method that EPA would consider under the ATP program is a complete one in that it includes steps from sample receipt at the laboratory to test results. Methods not considered include machines that concentrate samples, or for microbes, techniques with an end result not comparable to an approved method (e.g., genetic method). The ATP program reviews both new and modified methods; the overall requirement is side-by-side testing comparing the new or modified method to an approved method on a nationwide basis (at 10 laboratories).

In order to have a method approved, ATP participants are required to submit an application appropriate to their method (chemical or microbial). Instructions can be found on the ATP website at <http://www.epa.gov/waterscience/methods/atp>. If EPA approves the study plan, the study is then carried out. Data generated from the study is submitted to EPA; if EPA approves data package, a participant will receive a letter, which is *not* an actual approval. EPA will publish your method in one of two ways for approval: for Safe Drinking Water Act (SDWA) methods, a Federal Register (FR) notice; for CWA methods, an FR proposal then promulgation (final ruling). FR notices are issued on an as-needed basis, not every time a method is accepted. For CWA methods, the proposal/promulgation process takes 2-3 years. In the interim, participants can post acceptance letters to their website.

Approved methods can be found at <http://www.epa.gov/waterscience/methods/> (for CWA methods) and <http://www.epa.gov/safewater/methods/analyticalmethods.html> (for SDWA methods).

Ms. Oshiro described some of the differences between the ATP and ETV programs:

- Office of Water (ATP) vs. Office of Research and Development (ETV)
- Method (ATP) vs. technology (ETV)
- Method approval for compliance monitoring (ATP) vs. technology verification (ETV)

Ms. Dindal asked how many applications are received from vendors on an annual basis.

Ms. Oshiro estimated that 100 applications are received each year, most are for chemical and drinking water methods. Ms. Oshiro said she refers ATP applicants to the ETV program.

Discussion of Evolving Technology Categories

Ms. Dindal provided an update on six technology categories still under development, and reviewed slides from a PowerPoint presentation distributed to stakeholders before the teleconference.

Pathogen Monitors

Ms. Dindal described the SBIR Phase II vendor's technology for water monitoring for pathogens that is approaching the ETV-ready stage. The vendor claims that the technology can detect cryptosporidium in 4-6 hours and will be only a \$25 test after a \$1000 capital investment. The vendor provided detailed slides on the technology which were provided to the stakeholders as background material but not discussed in detail during the call. Ms. Dindal noted that the purpose of discussing this technology was to give the stakeholders a heads-up that it would be coming up for their concurrence in the near future.

Total Chlorinated Hydrocarbon Test Kit

A vendor of a technology for total chlorinated hydrocarbon monitoring in water and soil has approached the AMS Center. Basically the technology operates like a fieldable purge and trap system, with the purged sample vapors pulled onto a colorimetric tube that will semi-quantitatively indicate the total chlorinated hydrocarbons in a sample. Alan Mearns asked if the technology would work for polybrominated diphenyl ethers, and Ms. Dindal replied that she did not think that it would. Stakeholder concurrence was received to proceed with this category, although the stakeholders did not have this technology at the top of their list.

Lead in Drinking Water Test Kits

Concurrence was received on this technology category during the last call. 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. The AMS Center will continue to pursue potential leads for co-funding and collaborators, including PA DEP Bureau of Laboratories, Delaware Health and Social Services, Illinois EPA, and the Division of Environmental Quality at the Suffolk County Department of Health Services (Vito Minei). The committee agreed that this is still a priority area for testing.

Chemical Oxygen Demand (COD) Techniques

Concurrence was received on this technology category during a previous call. Ms. Dindal indicated that the vendor, Aqua Diagnostic, is in the process of completing some field testing of their PeCOD™ on-line and field-portable COD analyzers and expects to have commercially available products in the January-March timeframe. The analyzer utilizes photo-electrochemical oxidation to determine COD levels. An illuminated TiO₂ sensor creates the oxidizing agent. The verification will be in collaboration with DuPont; verification discussions will begin once the analyzer becomes available.

Total Organic Carbon (TOC) Analyzers/On-line Nutrient Monitoring

Concurrence was received on this technology category during a previous call. In 2007, 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, as opposed to compliance monitoring or ambient monitoring. The analyzer costs approximately \$70,000, depending on the options selected. 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, and is looking towards EPA Water Supply and Water Resources Division and possibly WERF for collaboration/support. On the last call, Dr Lee mentioned that Dow has worked with the BioTector and has testing data they may be able to share; Dr. Lee is still working on the approvals to release that data to the AMS Center.

Automated Pathogen Concentrator

Concurrence was received on this technology category during a previous call. At this time, the AMS Center is waiting to receive a signed vendor agreement and deposit from the vendor before proceeding with plans for testing of this automated pathogen concentrator developed by Tufts University/Haemonetics.

Vendor Inquiries and Hot Topics

Ms. Sell asked Dr. Mearns to provide an update to the stakeholders on NOAA's efforts to monitor for oil in water during oil and fuel spills. Dr. Mearns described the many forms and fates of oil during river spills, but was not sure of the tools utilized to monitor for all spills. John Carlton said that he agrees with Dr. Mearns that this is an area of concern. He said when monitoring for oil spills downstream, operators shut water intakes down, estimate when the plume is coming, and monitor using standard Clean Water Act methods.

Ms. Olsen said the Washington Aqueduct under the U.S. Army Corps of Engineers (USACE) manages the intake at Little Falls on the Potomac River. The USGS has a gage there at <http://waterdata.usgs.gov/nwis/uv?01646500>. USACE operates Turner oil-in-water monitors at that intake. The contact at this site is Woody Peterson. Stakeholders provided concurrence on this technology category, although the AMS Center needs to explore more on what technologies are out there before proceeding with this category. After the call, Dr. Mearns forwarded points-of-contact in organizations (EPA, ORSANCO) who should be contacted for input to this test.

Time was running short, so in terms of other technologies on the horizon, stakeholders were asked to forward any ideas to Ms. Sell.

Recap of Priorities, Action Items, and Next Meeting

Ms. Sell restated that stakeholder concurrence had been received for four new technology categories: oil-in-water monitors, *e.coli*/total coliform technologies, water treatment management via toxicity monitoring, and total chlorinated hydrocarbon monitoring. The stakeholders also confirmed their continued interest in COD, lead in drinking water, and TOC/on-line nutrient monitors.

Ms. Sell reviewed the action items brought forth on the call:

1. Dr. Schloss will email slides on the use of microcystin kits to Ms. Sell for distribution to all stakeholders.
2. Dr. James will follow-up with Mr. Minei on his offer to support a verification test for microcystins monitoring.

3. Dr. James will forward Bryan Downing's contact information to Dr. Schloss.
4. Dr. James will check whether data is available for industrial wastewater applications for the LuminoTox technology for Dr. Lee.

Ms. Sell thanked all of the stakeholders for attending the meeting and for their continued input and contributions to the ETV program. She said that she would distribute meeting minutes to review and said the next stakeholder teleconference would be planned for the January timeframe. The call adjourned at 3:00 pm *EDT*.