

STEERING COMMITTEE TELECONFERENCE MEETING SUMMARY
ETV DRINKING WATER SYSTEMS CENTER
December 9, 2005

A Steering Committee (SC) teleconference was held on Friday, December 9, 2005 to review the current status of the Environmental Technology Verification (ETV) Drinking Water Systems (DWS) Center and to discuss future initiatives, as outlined in the meeting agenda and outline (see Attachment A). Guidance from SC members was requested during the teleconference meeting. The meeting commenced at 2:30 PM EST. Bruce Bartley, the DWS Center Manager, began by welcoming the group and thanked everyone for their participating. Below is a list of attendees:

Attendees:

Adams, Jeff – U.S. EPA/Office of Research and Development (ORD)
Bartley, Bruce – NSF International
Beach, Angela – NSF International
Blumenstein, Michael – NSF International
Dyson, John – Ondeo Degremont and Water and Wastewater Equipment Manufacturers Association (WWEMA)
Jacangelo, Joe – MWH (company formerly known as Montgomery Watson Harza)
Logsdon, Gary – formerly of Black & Veatch
Mann, Robert – New Hampshire Department of Environmental Services
Osterhoudt, Darrell – Association of State Drinking Water Administrators (ASDWA)
Pearson, David – PCI Membrane Systems Ltd. (ITT Aqueous)
Wilhelm, Kristie – NSF International

To begin the call, Bruce summarized the first four items on the agenda and asked if anyone had any questions about them or the renewal of the ETV DWS Center by the EPA.

Joe Jacangelo began the discussion by asking if there had been any feedback from vendors or metrics cited about the usefulness of the ETV reports. Bruce Bartley replied that NSF and the EPA have written some case studies about specific vendors and projects. More case studies are expected in the future. Jeff Adams added that measuring environmental outcomes of ETV has been an “ongoing battle”. The EPA is continually trying to quantify, track, and measure long-term impacts of ETV.

John Dyson also said that it has been hard for him to quantify a return. He has not seen a strong positive outcome of the ETV testing in terms of getting additional sales, but it may have circumvented some testing in some states and ended up saving his company money that equals what he spent for ETV testing. Bruce said that the DWS Center is always looking for ways to reduce costs and added that too many factors are anecdotal without a systematic evaluation.

Jeff and Joe wondered if there was a way to track how states are using ETV reports and protocols. Bruce responded that NSF recently submitted a survey to the states to gather information about some NSF standards and ETV, and that he could share that information with the SC. He added that he may have the SC review the questions before the next survey. Joe suggested that NSF take a week to call all 50 states to discuss ETV. Bruce agreed and responded that NSF plans to begin making presentations to the states in 2006.

David Pearson said that he has seen a benefit from ETV by getting new projects. His company has used ETV reports more as a ‘comfort tool’ to the states and engineering firms when they assess their products. He suggested to also call engineering firms that work with states to get their assessment of the usability of

the ETV reports. Gary Logsdon suggested asking manufacturers for installation information from products that had gone through ETV and getting the names of the consulting engineers who assisted in the installation.

Darrel Osterhoudt looked back into past ASDWA surveys and said that the states appear to be mixed in their responses on their use of ETV. For example, some states still require their own testing, while some rely on the ETV reports more heavily. Bruce said that NSF will work with ASDWA with future state surveys.

Discussion on Alternative Funding

Bob Mann requested that Bruce summarize the existing funding. Bruce explained that all future work must be paid for by the manufacturer. Currently, the Department of Defense (DOD) is paying for a test and there are three other unrelated projects in the near future. Bruce's opinion of funding in the future is one quarter to one third federal funds, and the rest from manufacturers.

John responded that at the beginning of the DWS Center, there were many participating vendors due to available funds from the EPA. At the ETV meeting in Washington DC earlier this year, he noticed that a lot of the other Centers currently have funding from the EPA. In his opinion, he doesn't feel that vendor-funded testing will be self-sustaining and that there will be more participation and benefits from an EPA-funded Center. Bruce responded that those Centers that currently have funding from the EPA will also need to rely on alternative funding in the future. Jeff added that even though the DWS Center does not have funding from the EPA at this time, it doesn't mean that the Center will not get funds in the future.

Discussion on Proposed Changes in ETV Process and Existing Data

Bruce outlined some ideas that NSF is doing to lower costs, such as quicker turnaround times for reports and the use of existing data. NSF is currently looking for a way to streamline ETV testing and the report writing process. He requested that the SC write down their ideas to lower cost. Bruce and John agreed to collaborate these efforts between NSF and WWEMA. John added that there is a tremendous amount of data that can be used that is of value to the states.

Bruce explained that in previous conference calls, states supported the use of existing data in ETV reports. Gary suggested that maybe states could provide some financial support, since they are seeing a benefit from the ETV reports. Darrell responded that states' resources are low, but it is something they are willing to discuss.

Bruce began the discussion concerning outdated reports and existing data. He stated that NSF would like to incorporate non-ETV data into existing reports. At this time, writing an entire ETV report based on non-ETV data is not possible, per EPA rules. He also asked for thoughts on retiring old/outdated reports. Bob added that any data to expand the breadth of reports would be beneficial. Gary suggested using state compliance data from existing installations, since it is data that the states already accept and use, and should therefore be acceptable to ETV. Jeff explained that different governmental programs have different quality criteria and that they are trying to change the policies for ETV to allow compliance data. Gary responded that if the data is good enough to comply with regulations for public consumption of drinking water, then it should be used in ETV.

Bruce explained that NSF has made three proposals to the EPA including, using data from engineering firms or state laboratories with some kind of a quality assurance system in place (even if not equivalent with the EPA's QMP requirements), incorporating existing data into ETV reports, and updating existing reports with secondary data. Jeff responded that after changes are made to the DWS Center QMP, the changes will be reviewed and assessed. John added that ETV needs to be realistic and to accept data that

is already acceptable to the states. He explained that state compliance data is assured for quality for purposes of public health; this data assures the safety of water for human consumption. He questioned why ETV would not accept this data even when all of the quality control checks that are required in ETV are not documented. In his opinion, acceptance of compliance data needs to occur for the ETV Program to survive and to fit the needs of the people it was designed to serve.

David clarified that, as explained in the meeting packet, existing data could be used to expand and existing reports, but not be used as a standalone report. Bruce and Jeff agreed that existing data could be used to update an existing report or to reduce the cost of ETV testing, but not to justify an entire ETV report. An example of cost savings, Jeff explained, would be for the microbiological reduction test for membranes. Lab data combined with existing file would save on testing costs since lab seeding studies are normally less expensive than field studies. He said that in the future, ETV may be able to publish a report under another name such as "ETV Secondary Data Peer Reviewed Report". Jeff added that as long as the quality of the data can be defined, the information would be beneficial.

John stated that many engineering firms produce very good quality data, but may not be up to ETV standards. He explained that if a utility is providing this as compliance data, why should ETV question the quality of this data? Jeff responded that ETV needs to see documentation on how the data was derived (i.e., quality control, calibration documentation, analytical methods used for the analyses, etc.). John said that a lot of the state compliance data does not have this quality control documentation with it and to expect that is too much for this data. The states document the standards to what level the utilities have to utilize to collect the data. He explained further that most utilities do not have laboratory-style quality control documented.

Joe wondered what the cost analysis would be of reviewing and using existing data in ETV reports, and the range of cost saving for manufacturers. Bruce responded that cost quotes should be available in early January 2006. At this time, NSF and the EPA need to discuss and agree upon the level of documentation that would be needed to accompany this data. David added that states are interested in data, not always the exact preciseness of the data. Bob suggested that secondary data be added to an appendix of a report because it will still be beneficial to a state. Bruce and Jeff agreed that this approach is currently acceptable and added that a final report uses existing data in an appendix, with qualifiers of the data explained in the report. Jeff reiterated that existing data could not be used as the basis of an entire ETV report. Bruce also added that final reports can also include a 'vendor chapter' where vendors can add text and existing data.

Gary suggested that since the EPA is not providing funds for testing, that maybe ASDWA and NSF could produce independent equipment evaluation reports using existing data. Jeff responded that he and Bruce has previously discussed the fact that if the EPA ETV Program was not going to allow the use of secondary data in ETV reports, that NSF could possibly do independent reports. However, at this time, they are still pursuing this issue with ETV. Bruce added that there is some hope and movement within the EPA to move this issue forward, and that NSF will continue to push this issue. He reiterated that any thoughts that the SC could submit to NSF in writing about this issue might help.

Joe explained that for acceptance in California, vendors must go through California Department of Health Services (CA DHS) testing. Vendors are usually amenable to this testing since the job market is large there. He suggested that ETV could do incremental testing with CA DHS testing. Joe added that CA DHS testing produces very strong and reliable data sets and ETV could use this data in existing data applications. Jeff asked if there is a contact in California who we could get in touch with to find out what technologies are going to be tested and maybe combine the DHS testing with ETV testing. Joe responded that Rick Sakaji is the main person who oversees this program at CA DHS. Bruce said that NSF would be in touch with Rick and the CA DHS office on a regular and periodic basis.

Bruce confirmed that the next stakeholder meeting will likely be held in July 2006, but another conference call may be held before that time, if necessary. He also explained that these meeting minutes would be posted on the website and an announcement would be sent to all of the stakeholders on the DWS Center mailing list. Bruce thanked the group for participating and urged the participants to share this information with their colleagues. He added that NSF will be meeting with the EPA ETV Program in January to discuss the current proposals. A follow-up teleconference may be held with the SC in February to further discuss the topic of using existing data.

Meeting adjourned at 3:45 PM EST.

Action Items:

1. Send an announcement of the posting of the meeting minutes to all stakeholders on mailing list.
2. Share recent NSF ETV survey results with SC.
3. NSF and ASDWA to collaborate on future state surveys.
4. SC to write down ideas on how to lower testing/report costs and the use of existing data, and submit to Bruce Bartley.
5. Share cost quotes to the SC on reviewing existing data in early January 2006. NSF to discuss this issue with the EPA and agree upon the level of documentation that would be needed to accompany existing data.
6. NSF to contact Rick Sakaji to discuss collaborative testing with CA DHS.

ATTACHMENT A
MEETING AGENDA AND OUTLINE

**STEERING COMMITTEE
TELECONFERENCE**

ETV DRINKING WATER SYSTEMS CENTER

**Ann Arbor, Michigan
December 9, 2005**

Under a Cooperative Agreement with:

**U.S. Environmental Protection Agency
and
NSF International**



ETV ✓ ETV ✓ ETV ✓

AGENDA

- 1. Introductions**
 - a. Antitrust Statement
 - b. Welcome and Introductions
- 2. EPA Renews Support for the ETV Drinking Water Systems Center**
- 3. ETV Drinking Water Systems Center Update**
 - a. Verification Testing Status
 - b. ETV Protocol Status
- 4. ETV Water Security Update**
 - a. Progress Update
 - b. Future Water Security Work
- 5. Alternative Funding**
- 6. Proposed Changes in ETV Process**
- 7. Status of Secondary or Existing Data Use: Policies, Advances, and Proposals**
- 8. Other Discussion Items**
 - a. Potential Dates for Next Meeting of all Stakeholders

1. Introductions

a. Antitrust Statement

NSF International (NSF) directs all attendees to read and agree to the following antitrust statement:

“Because this meeting involves representatives of competing businesses, it is important that NSF has everyone’s agreement before we begin that the meeting will be conducted in full compliance with the antitrust laws. We must avoid any comment or action that encourages joint action by participating firms to restrict their competition. If any of you have any questions, I refer you to the NSF Antitrust Guide for the conduct of meetings.”

The Environmental Technology Verification (ETV) Drinking Water Systems (DWS) Center stakeholders advise NSF, the organization that manages the ETV DWS Center, on policies, test plans, protocols, and other issues deemed pertinent to the operation of the DWS Center. The Steering Committee (SC) serves to provide advice to NSF for the ETV DWS Center during the period between the annual stakeholders meeting and does not directly provide advice to or consult with the EPA. Consequently, the SC is not covered under the scope of the Federal Advisory Committee Act (FACA).

b. Welcome and Introductions

NSF would like to welcome all attendees of the ETV DWS Center annual meeting to the conference call. NSF will conduct a roll call and everyone attending the conference call will introduce themselves.

2. EPA Renews Support for the ETV Drinking Water Systems Center

At the ETV International Forum in July 2005, the EPA ETV Program announced the continuation of the DWS Center. This renewed support from the EPA will allow NSF to continue the management of the ETV DWS Center and to verify the performance of technologies used in drinking water treatment using the ETV protocols.

With the continuation of the ETV DWS Center, the EPA will provide in-kind labor for ETV verifications. The private sector, other government agencies, or collaboration of organizations and industry, will pay for the costs of the verification. To offset testing costs, the ETV Program is considering new policies on ways to use non-ETV data (i.e., secondary data) in the verifications. This and other strategies are presented later in the agenda.

In addition, the EPA and NSF are working on formal contract mechanisms to put in place by September 2006 when the present agreement ends.

3. ETV Drinking Water Systems Center Update

a. Verification Testing Status

The ETV DWS Center finalized four new verification reports for small system arsenic treatment in late 2005. Verification of arsenic treatment technologies was placed high on the priority list for the ETV DWS Center since the EPA issued a new arsenic maximum contaminant level (MCL) of 10 micrograms per liter ($\mu\text{g/L}$) in 2001.

One adsorptive media product was verified and the Phase 2 report was released for the ADI Pilot Test Unit No. 2002-09 with MEDIA G2[®] (tested in Sellersville, PA). Two coagulation and filtration products were verified: ORCA KEMLOOP 1000 (tested in Chelsea, MI) and the Pall Microza Microfiltration System (tested in Oakland Township, MI), and one ion exchange product was verified: the Basin Water High Efficiency Arsenic Removal System (tested in Elsinore Valley, CA). The ADI, ORCA, and Pall reports and verification statements can be found on the NSF ETV website

(http://www.nsf.org/business/drinking_water_systems_center/index.asp?program=DrinkingWatsCen); the Basin Water report and verification statement will be posted soon.

b. ETV Protocol Status

The ETV DWS Center recently published the revised ETV test plan involving membrane filtration technologies for the removal of microbiological and particulate contaminants. The modifications reflect the Center's efforts to harmonize the ETV test procedures with the proposed EPA Long Term 2 Surface Water Treatment Rule.

Modifications to the membrane filtration technology specific test plan (TSTP) involve the addition of a bench-scale laboratory approach for characterizing the microbial removal capability of microfiltration (MF) and ultrafiltration (UF) membranes. Microbial challenges for ETV testing shall now include either bench-scale or field challenges. All other testing tasks, such as verifying membrane flux and operation, checking cleaning efficiency, finished water quality sampling, membrane integrity testing, data handling, and quality assurance/quality control (QA/QC), remain as field-testing procedures in the test plan requirements.

The revised membrane filtration TSTP can be found as Chapter 2 of the *ETV Protocol for Equipment Verification Testing for Physical Removal of Microbiological and Particulate Contaminants* dated February 2005. The revised TSTP and all ETV protocols can be found on the NSF DWS Center website.

4. ETV Water Security Update

a. Progress Update

As part of the Water Security effort, the ETV DWS Center has also been focusing on evaluating point-of-use (POU) systems using reverse osmosis (RO) and carbon filtration for removal of

chemical contaminants. By the end of 2005, reports will have been issued for three products: the Kinetico Purefecta™, the EcoWater Systems ERO-R450E, and the Watts Premier WP-4V. These reports represent the second phase of Homeland Security-related POU system verifications. In 2004, three RO POU systems were tested for their ability to remove microbial contamination agents.

All POU tests were conducted in the NSF Drinking Water Treatment Systems testing laboratory. The systems were evaluated for their ability to remove both inorganic chemicals (cadmium, cesium, mercury, and strontium) and organic chemicals (aldicarb, benzene, carbofuran, chloroform, dichlorvos, dicrotophos, fenamiphos, mevinphos, oxamyl, and strychnine) from drinking water. The RO membranes and carbon filters were tested separately to evaluate each treatment process individually.

b. Future Water Security Work

Future ETV DWS Water Security work and plans will involve more cooperation with multiple funding partners. An example of this effort is the verification of a Department of Defense (DOD) transportable drinking water treatment system recently deployed to assist in hurricane relief efforts. NSF, in collaboration with the US EPA, the DOD Tank-Automotive Research, Development, and Engineering Center (TARDEC), and the US. Bureau of Reclamation (USBR), will verify the capability of the Expeditionary Unit Water Purification (EUWP) to treat brackish water. The DOD TARDEC engineered and designed the EUWP, which is a transportable drinking water treatment system.

EUWP design, construction, and testing were overseen by a federal multi-agency team composed of representatives from Office of Naval Research (ONR), DODD TARDEC, Naval Surface Warfare Command – Carderock Division (NSWCCD), USBR, and Sandia National Laboratories. The manufacturer, Village Marine Tec., was contracted to design and build the EUWP.

The USBR will be performing the test as the field testing organization. NSF and the EPA will oversee the EPA ETV verification of the EUWP for conformance to ETV protocols and requirements. The verification process began in July 2005.

5. Alternative Funding

The ETV DWS Center is going through a transition from being funded by the EPA ETV Program to alternative funding sources. Some sources of alternative funds include:

- Other EPA offices, such as the Small Business Innovative Research (SBIR) Grant Program;
- Other federal agencies, such as the DOD funding of the EUWP and the Department of Energy arsenic project; and
- Private sources, such as banks, investors, and equipment manufacturers.

There are several critical efforts needed to assure that the DWS Center is self-sustaining:

- Make the ETV reports more useful to the States and other users of the reports, and
- Encourage States to accept more of the ETV reports and reduce pilot testing.

NSF and the EPA are working together to review and use more non-ETV data in the ETV test planning and the report, with the goal of providing more information using more water conditions. In a 2004 survey of ASDWA members, including more performance and operation information using more water quality conditions was listed as a main goal for ETV by States.

Another major goal of the DWS Center will be to encourage States to accept more of the ETV reports and results so that equipment manufacturers realize a cost savings in pilot testing. Manufacturers may be more willing to pay for the ETV verification if the States accept more of the ETV data resulting in less pilot testing. If pilot-testing costs could be reduced by approximately 50%, it is very likely that manufacturers would realize a cost savings sufficient to justify incurring the cost of ETV testing.

NSF plans for creating a self-sustaining ETV Center include these elements:

- Outreach to States, including presenting results and process training through visits or web-based training sessions;
- Contact and visit with manufacturers of technologies that could be used in compliance with the upcoming EPA rules;
- Co-marketing with the EPA communications office;
- Regular updates on the DWS Center in E-newsletters and press releases; and
- Presentations at conferences, etc.

DISCUSSION: Do any members of the Steering Committee have suggestions on ways to make the Center self-sustaining?

6. Proposed Changes in ETV Process

NSF met with the EPA on September 21, 2005 to discuss ways to improve the timeliness and cost-efficiency of the ETV verification process. The meeting also addressed the use of secondary or existing data, which will be discussed in the next section. NSF and the Southern Research Institute (both have ETV Centers that will be funded from alternative sources) had similar proposals addressing the ETV verification process, which were discussed with ETV Program representatives.

The principle proposal was to allow NSF and other Centers to use their own quality assurance (QA) departments and procedures to assure the quality and integrity of the ETV verification process, rather than rely upon the EPA QA group for approvals and signatures. The main argument was that the EPA approved the quality management systems of organizations like NSF to manage the ETV Centers and approved each organization's quality management plan (QMP). Consequently, there is no need for additional EPA oversight other than assuring that each

organization is following the EPA-approved QMP. However, the EPA QA group will most likely continue in some capacity in overseeing the final ETV reports.

On October 20, 2005, NSF and the Southern Research Institute proposed additional significant changes in the EPA QA review of verification testing. The EPA QA office is considering the recommendations. If implemented, NSF expects a significant reduction in timing from an average of 14 months from the start of a verification project through report publication to about seven months. With the proposed changes, NSF's QA oversight would focus on assuring that the test/QA plan conforms with the ETV protocols before testing begins, assuring that the testing conforms to the ETV protocol, and that NSF staff are following the QA requirements in the QMP.

NSF will keep the Steering Committee and stakeholders informed of the progress with the EPA.

DISCUSSION: Are there any suggestions by the Steering Committee or questions to discuss?

7. Status of Secondary or Existing Data Use: Policies, Advances, and Proposals

The use of non-ETV data is a very important issue to the ETV DWS Center. ASDWA surveyed its members in late 2004 and found from their responses that the ETV reports are lacking in enough data on different water quality to approve a drinking water technology solely on the ETV report. In response to this finding by ASDWA, the EPA and NSF discussed the use of secondary or existing data in ETV reports at the meeting in late September. The EPA ETV Program is considering a change where the secondary data does not have to be collected by an organization with a quality management system equivalent to that used in ETV. For the ETV DWS Center, this change in policy will be significant since many universities and consulting firms typically do not have a QMP or a written quality management system. This will allow NSF to use non-ETV data in ETV reports from these organizations, as long as the data has some quality control data associated with it.

In general, the EPA QA group agreed that non-ETV data should be used to design testing (e.g., reduce redundancy) that can then lead to both lowering the cost of ETV testing and improving timeliness. NSF is taking the lead in providing detailed changes to the ETV QMP to allow more non-ETV data in reports.

Another application of non-ETV data is using the data to update existing reports. Non-ETV data that has gone through a QA review by NSF may be used to update existing ETV reports to reflect improvements in the product, data from current installations, etc. Another related issue is allowing manufacturers to use the data that they generate from testing the product in an ETV report. Data generated by a manufacturer can be used to help with the test/QA planning and may be presented in a separate and defined "Vendor Chapter" in the ETV report. Manufacturers can currently update reports with this data.

NSF will keep the Steering Committee and stakeholders informed of the progress with the EPA. To discuss the specifics of this topic, please contact Bruce Bartley.

In a related issue, NSF has learned that at least four ETV reports may no longer be representative of the products tested. Either the company was purchased by another company and no longer makes the product, or the company is no longer making the product. NSF proposes to move these reports to an archive section of the web site.

DISCUSSION: What does the Steering Committee think NSF should do with out-dated or unrepresentative ETV reports?

8. Other Discussion Items

a. Potential Dates for Next Meeting of all Stakeholders

DISCUSSION: July 2006 has been proposed as a potential time for the next stakeholder meeting. Are there any foreseen conflicts during this month? Are there any other time periods that the Steering Committee would like to suggest for the next stakeholder meeting?