Verification of Infrastructure Rehabilitation Technologies

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Since the early 1990s, government and private groups have determined that the lack of organized and ongoing programs to produce independent, credible performance data is a major impediment to development and use of innovative technology. Such data are needed by technology purchasers and permitters, in the U.S. and abroad, to make informed technology decisions. In October 1995, the Environmental Technology Verification (ETV) Program was established by U.S. Environmental Protection Agency to accelerate the development and commercialization of improved environmental technologies through third-party verification and performance reporting.

Twelve different pilots have been funded during the initial phase of the ETV Program, addressing a wide range of environmental technology categories, including air, water and pollution prevention technologies. Public and not-for-profit private organizations have been selected by EPA as third-party verification partners in the Program. Each pilot has the flexibility to identify new and efficient methods to verify technologies as long as there are procedures in place to ensure the highest credibility standards. In all of the pilots, stakeholder involvement is critical to the success of the pilot, with stakeholder groups assisting the pilot partner with prioritization of technologies to be verified reviewing important documents and implementing outreach to key stakeholders.

The goal of the ETV Program is to verify the performance characteristics of commercial-ready environmental technologies through the evaluation of objective and quality assured data, so that potential purchasers and permitters are provided with an independent and credible assessment of the technology they are buying or permitting. There are five critical elements to achieve this goal:

o Fairness - testing must be available to all vendors within a category.
o Objectivity- testing must be completed by objective, third-party testing organizations.
o Technical soundness - protocols and test plans used for testing must be standardized, publicly available and reproducible at different testing locations.
o Transparency- results of testing must be publicly available.
o Quality- management and data acquisition must follow stringent QA/QC guidelines.

The Source Water Protection pilot started in July 1998, one of the last three pilots to be initiated in the Program. The focus of the pilot is on technologies that prevent the contamination and maintain the quality of ground and surface waters used as a source of drinking water. Initially, the focus of the pilot was strictly decentralized wastewater treatment, but it was recognized that there are many additional source water protection concerns to be addressed.

From information gained from a canvass of persons preparing state Source Water Protection Plans, other source water protection concerns were identified. Subsequently, the pilot has formed two Stakeholder Advisory Groups - one focusing on Decentralized Wastewater Treatment technologies, and the second focusing on infrastructure and Watershed Protection (IWP) technologies.

The Decentralized Wastewater Treatment Stakeholder Advisory Group has held three meetings, and three protocols are under development. The IWP Group met for the first time in November, when it was agreed that the pilot should proceed in developing protocols for animal waste treatment technologies and infrastructure rehabilitation coatings and grouts. The Group also decided to form two technical advisory groups, one focusing on Urban Infrastructure technologies and the other on Watershed Protection technologies. The Urban Infrastructure group will meet the day before the CIGMAT Conference to identify and prioritize other technologies to be addressed by the pilot in the area of urban infrastructure.

Early in the pilot, coatings and grouts used for infrastructure rehabilitation were identified as technologies that would benefit from verification. The work conducted by Dr. Vipu at the University of Houston was identified by the EPA laboratory in Edison, NJ as being a good opportunity for collaboration on the pilot. Dr. Vipu's work represents significant effort toward putting testing protocols in place, while the pilot brings additional benefits to the collaboration: funding for additional protocol development, the ability to have a broad stakeholder review of testing protocols and financial support for testing to bring more vendors into the verification process.

Currently, contractual arrangements are being completed between the University of Houston and NSF International, which will allow for contracting with Dr. Vipu for protocol development under the ETV SWP pilot. A Technology Panel for Infrastructure Rehabilitation technologies is currently being finalized. The Tech Panel will work with Dr. Vipu to develop draft test protocols, which will then be available for review and comment to all stockholders. Protocols will address the responsibilities of all parties involved with the verification, provide the experimental design to be used during testing, describe the requirements for test sites, address the QA/QC to be followed during testing, and describe how data generated during testing is to be handled.

The data generated during testing will be reviewed by both NSF and U.S. EPA for compliance with the QA/QC requirements outlined in the protocol. A final report will be generated, regardless of the results of the testing. The report will provide detail on the protocol used for testing, the data generated from the testing, and a complete description of the product tested. The report will be subject to peer review prior to being published. A three to five page Verification Statement, to be signed by both U.S. EPA and NSF, will also be prepared and posted on the EPA ETV and NSF web sites.

Additional, information about the ETV Program and the Source Water Protection pilot may be found on the EPA (www.epa.gov/etv) and NSF (www.nsf.org/etv) web sites. A mailing list is also maintained for individuals wanting to be kept up to date on pilot activities. Contact Tom Stevens, NSF SWP pilot manager, at (734) 769-5347 or by email at stevenst@nsf.org to be added to the list.

If you have any questions, please contact **Dr. C.Vipulanandan**