www.epa.gov

fact SHEET

BUILDING A SCIENTIFIC FOUNDATION FOR SOUND ENVIRONMENTAL DECISIONS



Environmental Technology Verification Program

www.epa.gov/etv

What Is ETV?

The EPA Environmental Technology Verification Program (ETV) develops test protocols and verifies the performance of innovative technologies that have the potential to improve protection of human health and the environment. ETV was created in 1995 to help accelerate the entrance of new environmental technologies into domestic and international markets. For the past 18 years, ETV has operated as a public-private partnership through cooperative agreements between EPA and private non-profit testing and evaluation organizations. ETV will conclude operations at the end of 2013.

ETV's Goal

The goal of ETV has been to provide credible performance data for commercial-ready environmental technologies to speed their implementation for the benefit of stakeholders such as purchasers, permitters, vendors, financiers and the public.

ETV Accomplishments: 18 Years (1995-2013)

Verified Technologies and Testing Protocols

ETV has verified the performance of nearly 500 environmental technologies, including:

- 179 technologies for air, water and soil or surface monitoring
- 70 air pollution control technologies
- 52 drinking water treatment technologies
- 32 greenhouse gas reduction or mitigation technologies
- 37 ground and surface water quality protection technologies
- 27 pollution prevention technologies.

ETV also has developed nearly 100 generic testing protocols to promote uniform, controlled testing for classes or categories of technologies.

Following September 11, 2001, ETV quickly responded to the need for technology performance information by homeland security officials and emergency first responders. From 2001 to 2004, ETV verified the performance of 69 monitoring and treatment technologies for safe buildings and water security applications.

Beginning in 2005, ETV began conducting Environmental and Sustainable Technology Evaluations (ESTE)—these projects helped ETV respond directly to EPA's need for credible performance information on technologies with potential to address high-priority Agency challenges. ETV has verified the performance of 12 technologies through ESTE projects, including microbial-resistant green building materials, test kits for lead in paint, biomass co-fired boiler fuel products and grouting materials for water infrastructure rehabilitation.

In 2013, an additional 20 or so technologies are in process of being verified, including baghouse filtration products for control of fine particulate matter emissions; ultraviolet, ozone and alternative inactivation, disinfection and oxidation technologies for drinking water treatment; advanced energy and green building or energy efficiency technologies; black carbon monitors; leak detection devices for blended fuel underground storage tanks and others.

Vendors and Collaborators

Key benefits of ETV have included facilitating technology acceptance and permitting at the state and local levels, providing credible data to purchasers and leveling the playing field among vendors through standardized tests and objective reporting.

More than 80 percent of ETV vendors surveyed during the program's pilot period (1995-2000) rated their overall experience with ETV as positive, more than 90 percent said that they would recommend ETV to others and 75 percent indicated that they would submit another technology for ETV verification. To date, around 80 vendors have had multiple products verified by the ETV Program.

U.S. Environmental Protection Agency
Office of Research and Development, National Risk Management Research Laboratory

ETV stakeholders represent the interests of end-users of verification information and have volunteered their time to assist in developing protocols, prioritizing technologies to be verified, reviewing documents and designing and implementing outreach activities to the customer groups they represent. Cumulatively, ETV has had the support of more than 1,200 stakeholders in numerous stakeholder groups and technical panels.

ETV has served a broad group of customers, including state regulators, EPA program offices and regions, municipalities, vendors, trade organizations and others. Support from collaborators, combined with their technical input, has helped raise the quality and relevance of ETV information. ETV collaborators have used ETV information to support technology decisions and regulatory development.

ETV collaborators, including vendors, private-sector entities and federal, state and local government agencies, have cost-shared with ETV to complete protocols and verifications. In fiscal year 2012, ETV received $1.4 million cash and in-kind support—approximately 95.3% of total program funding—from outside organizations, including EPA program and regional offices. Since 1996, ETV vendors have contributed more than $8.1 million (cash) and other organizations have contributed more than $23 million (cash) to verification. ETV has received more than $5.7 million in in-kind support from vendors and others over the life of the program.

International Participation

The U.S. ETV Program is one of the most comprehensive environmental technology verification programs in the world and has been used as a model by international organizations interested in establishing similar verification programs. From 2007 to 2010, the U.S. program participated as a founding member of the International Working Group on Environmental Technology Verification (IWG-ETV). The goal of the IWG-ETV has been to develop an international approach to verification that will allow mutual recognition—"Verify Once, Accept Everywhere." Canada, as a member of the IWG-ETV, submitted a request to the International Standards Organization (ISO) to develop a protocol for environmental technology verification as an internationally accepted standard. ISO has agreed to move ahead to develop this ETV protocol. EPA plans to participate in the ISO process to ensure the knowledge gained from the U.S. program is captured in the international standard.

> "The timely, accurate data obtained from this (ETV) testing has helped guide NYSERDA's program and has been valuable in program metrics assessment. In addition, with the performance data developed under this program, technology buyers, financiers and permitting authorities in the United States and abroad will be better equipped to make informed decisions regarding environmental technology purchase and use."
>
> **James Foster,** *Project Manager for Transportation and Power Systems Research, New York State Energy Research & Development Authority (NYSERDA) (2010)*

To Learn More about ETV

Visit ETV's Web Site, www.epa.gov/etv. Verification reports and statements, protocols and test plans and other program resources are available on the ETV Web Site.

The U.S. ETV Program has verified the performance of 60 technologies developed by 45 vendors from outside the United States and has participated in several bi- and tri-lateral joint verifications under international ETV efforts with other countries.

Recognition and Outreach

ETV has received national recognition, including commendations from the National Advisory Council for Environmental Policy and Technology and EPA's independent Science Advisory Board. Program scientists, staff and teams have received four EPA Bronze Medals for Commendable Service over the past 10 years for support of verification activities.

ETV's web site currently receives an average of 49,000 hits and 9,700 new user sessions per month. In 2012, the site received over 537,000 hits and 116,000 new user sessions. At its peak in 2006, the site received over 3 million hits annually. International interest in the web site has remained constant—approximately 25 percent of new user sessions on the web site are from entities outside the United States.

Outcomes and Impacts

ETV has had a wide array of positive impacts on public health and the environment. Notable program outcomes include: pollutant reductions from actual or projected applications of the technology, projected reductions in the cases of illnesses and disease due to pollutant reductions, economic benefits from pollutant reductions, renewable resource use and generation, health and environmental outcomes due to actual or projected applications of the technology, reductions in the frequency and length of site-specific pilot testing and pilot testing costs and use in regulation development, guidance documents and permit applications.

In 2006 and 2010, ETV published three volumes of an outcomes case study report, *Environmental Technology Verification (ETV) Program Case Studies: Demonstrating Program Outcomes*. The three booklets, which contain 17 case studies and one update, document the positive impacts ETV has had on public health and the environment.

Some examples of ETV outcomes include:

- U.S. states have used ETV-verified performance information in drinking water regulations and guidance. In 2010, NSF International, in cooperation with the Association of State Drinking Water Administrators, conducted a survey of state drinking water agencies: 35 states reported that they recognize ETV reports for drinking water treatment systems, mostly through policy, and 31 states responded that they would allow for reduced pilot testing of drinking water treatment systems for products with acceptable ETV reports.

- At least ten states—North Carolina, Florida, Idaho, Pennsylvania, Washington, Minnesota, Oregon, Montana, Virginia and Maryland—currently use ETV protocols in the evaluation of alternative technologies for wastewater treatment.
- The South Coast Air Quality Management District's Rule 1156, *Further Reductions of Particulate Emissions from Cement Manufacturing Facilities* (adopted November 4, 2005; amended March 6, 2009) states, "In lieu of annual testing, any operator who elects to use all (ETV) verified filtration products in its baghouses shall conduct a compliance test every five years." *Rule 1155, Particulate Matter Control Devices* (adopted December 4, 2009) requires the installation and use of ETV-verified filtration products by baghouse facility operators to meet particulate matter emission standards if established emission limits are exceeded by the facility.
- The EPA Office of Pollution Prevention and Toxics' Lead Renovation, Repair, and Painting Program requires ETV testing or equivalent approved testing for recognition of lead paint test kits. ETV is referenced in *Lead; Renovation, Repair, and Painting Program; Final Rule* (40 CFR Part 745), which includes a lead test kit recognition program. The recognition program references ETV as the testing organization that will be used to evaluate the test kits.
- The EPA Office of Pesticide Programs (OPP) is using ETV and its pesticide spray drift research to develop pesticide risk assessment and labeling requirements. OPP intends to use verified drift-reduction technologies in its pesticide risk assessments and registration decisions. The ETV ESTE spray drift project is discussed in the draft pesticide registration notice for spray drift entitled "Pesticide Registration Notice 2008-X Draft: Pesticide Drift Labeling."
- NSF has established the Public Drinking Water Equipment Certification Program to help streamline testing required by state permitting processes and offer water technology companies opportunities for marketing innovative systems. The certification program includes validation testing based on ETV protocols. NSF has also established a customized testing program for new and emerging technologies to complement other government and private research programs. The program utilizes independent experts in a stakeholder feedback process similar to that used under ETV.
- ETV evaluation of leak detection technologies will help the EPA Office of Underground Storage Tanks and state agencies determine which technologies will effectively detect releases from underground storage tanks containing biofuel blends.

"It can't be emphasized enough that ETV ignited our company and its growth and continues to be used by us every day in the expansion of our company. So, in a very unique way, you can never put a fixed value on ETV, because it has become a cornerstone of our company's existence, and it allows us to increase in value every day."

Claude Smith, *President, International Wastewater Systems (2010)*

To learn more about ETV, visit www.epa.gov/etv. Verification reports and statements, protocols and test plans and other program resources are available on the ETV Web Site.

ETV Verification Centers

Advanced Monitoring Systems Center
Douglas Grosse, EPA
(513) 569-7415
grosse.douglas@epa.gov

Amy Dindal, Battelle
(561) 422-0113
dindala@battelle.org

Air Pollution Control Technology Center
Mike Kosusko, EPA
(919) 541-2734
kosusko.mike@epa.gov

Jason Hill, RTI International
(919) 541-7443
jhill@rti.org

Drinking Water Systems Center
Jeff Adams, EPA
(513) 569-7835
adams.jeff@epa.gov

Bruce Bartley, NSF International
(734) 769-5148
bartley@nsf.org

Greenhouse Gas Technology Center
Mike Kosusko, EPA
(919) 541-2734
kosusko.mike@epa.gov

Tim Hansen, Southern Research Institute
(919) 282-1052
Hansen@southernresearch.org

Water Quality Protection Center
Ray Frederick, EPA
(732) 321-6627
frederick.ray@epa.gov

Tom Stevens, NSF International
(734) 769-5347
stevenst@nsf.org

ETV Program Staff

Teresa Harten, Program Director, EPA
(513) 569-7565
harten.teresa@epa.gov

Abby Waits, EPA
(513) 569-7884
waits.abby@epa.gov

Julius Enriquez, EPA
(513) 569-7285
enriquez.julius@epa.gov

Recycled/Recyclable
Printed with vegetable-based ink on paper that contains a minimum of 50% post-consumer fiber content processed chlorine free

U.S. Environmental Protection Agency
Office of Research and Development, National Risk Management Research Laboratory

EPA/600/F-08/012
October 2008 (revised June 2013)