

APCT Stakeholder Advisory Committee Meeting

March 27, 2007

Attendees: Drew Trenholm (RTI International), Michael Kosusko (US EPA/Air Pollution Prevention and Control Division), Praveen Amar (NESCAUM), Robert Bessette (Council of Industrial Boiler Owners), John Bosch (EPA), Chebryl Edwards (EPA), Jenni Elion (RTI International), Vic Engleman (Engleman Associates, representing AWMA), Debbie Franke (RTI International), Teresa Harten (EPA), Rick Larsen (SJF Ventures), Julie Levinson (W.L. Gore Associates), John Paul (Regional Air Pollution Control Agency), John Pinkerton (National Council of Air & Stream Improvement), Gene Praschan (representing ASTM), Tim Smith (EPA), Richard Van Frank, Ravi Srivastava (EPA), David Ensor (RTI International), Karin Foarde (RTI International), Maureen Avakia, Kerry Bullock (EPA), John Mycock (ETS).

Overview (Drew Trenholm). Before the meeting, Drew Trenholm emailed an agenda and an update for the APCT Center (attached).

ETV Update (Teresa Harten). Teresa Harten showed funding for the ETV Program. The 2007 ETV budget situation was still not clear. She commented on the length of time for verification. The timing is inherent in the process and influenced by stakeholder involvement and emphasis on collaboration and consensus.

APCT Center Update (Drew Trenholm). The Center is focusing on existing technology areas where vendors pay for the cost of verification. Vendors choose to verify their technologies through ETV over testing in-house, other independent labs, or other testing programs because of the value perceived by end users of verified data.

Biofilters (Drew Trenholm). Possible verification of a modular biofilter to control styrene emissions from a fiberglass parts manufacturer. Primary performance measure is a percent reduction in VOC and target compounds based on a mass balance of gas and liquid streams. Verification test would be conducted onsite in a temporary total enclosure. Discussion focused on test conditions and whether they would be representative of real-use conditions.

Mobile Sources (Drew Trenholm). Drew showed a figure illustrating the avenues of communication between the various entities with a vested interest in controlling emissions from mobile sources. The Center's primary partnership is with EPA's Office of Transportation and Air Quality (OTAQ). ETV applicants can use their verification data to submit to OTAQ's National Clean Diesel Campaign (NCDC). OTAQ was a major stakeholder in developing the protocols. OTAQ provides grants to retrofit school busses; grantees must use ETV verified products. California Air Resources Board (CARB) also has diesel retrofit program. CARB allows companies to submit ETV data to the CARB certification program. Texas provides grant funding under its New Technology Research and Development (NTRD) program to evaluate NOx control technologies to be used in non-compliance areas (Houston and Dallas). Grants awarded before FY06 are administered by the Texas Commission on Environmental Quality (TCEQ). Later grants are awarded and administered by the Texas Environmental Research Commission (TERC) through the Houston Advanced Research Center (HARC). Texas also has a program to evaluate low-emission diesel (LED) fuels intended for non-compliance areas. Companies can test their alternative fuel products against the standard fuel; one testing path is through ETV.

Mobile Sources (Jenni Elion). Verifications for two applicants interested in OTAQ's NCDC and one for Texas' low-emission diesel (TxLED) fuel program are nearing completion. The Center has completed the emissions testing for all three applicants. Two verification reports have been submitted to EPA for technical and QA review; the third verification report is still being written. Within the next six months, the Center expects to finalize test plans for 2-4 applicants with NTRD awards administered by TCEQ. This work will include verification of the first SCR technology. The APCT Center and the ETV program plan to conduct a QA systems audit at SWRI on the verification test of the SCR technology.

For TERC/HARC NTRD grants, the Center expects as many as 10 from the first round of awards and then more in second round (applications now being reviewed). The Center anticipates that future work will require some modification to the protocols. RTI is working with OTAQ to develop a test protocol for hybrid vehicles. This protocol could potentially be used by ETV in the future, including for some of the NTRD grant applicants.

In response to questions, NTRD grants are awarded by the Texas Emissions Reduction Council and Texas Commission on Environmental Quality; RTI is not part of the evaluation panel although RTI did help write some of the criteria. Funding from Texas cannot directly replace reduced funding from EPA; generally, the state monies are awarded to vendors, who may use the funds to pay for the verification costs.

Baghouse Filtration Products (Drew Trenholm). This technology area looks at fine PM penetration of bag media. Bench-scale testing is done at ETS, including pulse-jet preconditioning. After the protocol was completed in 2001, over a dozen products were tested, and then there was a slowdown. Interest renewed in 2005, in part due to new fabrics, the growing market for replacement bags, and broad exposure of the ASTM test standard based on the ETV test method. Using verified products eases the test burden on end users; South Coast Air Quality Management District (SCAQMD) requires compliance testing every year for baghouses, but only once every five years if the baghouse material has been verified. Future activities in this area include developing an ISO standard based on the ETV test method.

This technology area has continued because vendors are developing new fabrics. Drew clarified that only the fabric is tested, not the baghouse. The ASTM and ISO tests are more focused on obtaining operational characteristics where ETV focuses on PM; these various tests build on each other to provide a more complete picture of baghouse performance. The APCT Center would like to test baghouse performance at sites where verified fabrics are being used, but hasn't been able to secure funding.

Baghouse Filtration Products (Jack Mycock). Jack discussed how the protocol could be adapted to test other materials, such as coatings, in the future. The SAC expressed concerns about mercury emissions, especially from China.

Outdoor Wood-Fired Hydronic Heaters (Chebryl Edwards). There is no national emission standard for OWHH and units significantly compromise air quality. Existing units may last as long as twenty years and there are currently no EPA plans to look at retrofitting older units. This is a two-part voluntary program to reduce OWHH emissions. Part 1 is intended to get improved units with lower emissions on the market by spring 2007; part 2 is a model rule that states and local communities may adopt in setting their own standards. EPA developed a test method for use in Phase 1 of the program. EPA plans to specify the ASTM method when it is finalized. Although work has been done, this technology area may move into the ETV program under the APCT Center. Stakeholders were in agreement that this was a worthwhile thing to do.

Pesticide Spray Drift (Kerry Bullock). Kerry Bullock described the EATE pesticide drift reduction project.

Open Discussion (Drew Trenholm). RTI hasn't defined new target areas because of the funding uncertainties. The Center is focused more on keeping existing technology areas active, and expanding those areas where the market is especially strong. There was some discussion of looking at mercury control technologies. Bob Bessette, representing the Council of Industrial Boiler owners, noted that 1.7 million boilers will have to comply with area source MACT when the regulation goes into effect, and an unbiased verification protocol would be helpful in identifying efficient control technologies. Drew said there was an ESTE project proposal to look at mercury sorbents but the proposal wasn't funded by EPA.

No date was set for the next SAC meeting.

AGENDA
Air Pollution Control Technology Verification Center
Environmental Technology Verification Program
Stakeholders Advisory Committee (16th meeting)
RTI International – Dreyfus Auditorium
Research Triangle Park, NC
March 27, 2007

- 8:30 am **Welcome/Introductions**
Mike Kosusko, APCT Center Manager, EPA
Drew Trenholm, APCT Verification Center Director, RTI
- 8:40 am **ETV Program Update**
Teresa Harten, ETV Program Manager, EPA
- 9:10 am **APCT Center Update**
Drew Trenholm, RTI
- 9:25 am **Biofilter Update – New Verification**
Drew Trenholm, RTI
- 9:45 am **BREAK**
- 10:00 am **Mobile Sources (Diesel Engine – The retrofit scene**
Drew Trenholm, RTI
- 10:15 am **Mobile Sources (Diesel Engine) Update**
Verifications, Texas NTRD Grants
Jenni Elion, RTI
- 10:45 am **Baghouse Update – Revised plan, Verifications, SCAQMD rule**
Drew Trenholm, RTI
- 11:05 am **Baghouse – Opportunities to Expand the Protocol**
John Mycock, ETS
- 11:45 am **LUNCH**
- 12:45 pm **Outdoor Wood Hydronic Heaters – EPA Voluntary Program**
Chebryl Edwards, EPA
- 1:05 pm **Pesticide Drift Reduction Technologies – Protocol Development**
Kerry Bullock, EPA
- 1:25 pm **Committee Discussion**
- 2:25 pm **Summary/Wrap-Up/Next Meeting**
Drew Trenholm, RTI
- 3:00 pm **ADJOURN**



APCT Center Update of Recent Activities

January 2007

Verifications in Progress

Diesel engine retrofit controls: In the last quarter, the Air Pollution Control Technology Verification Center (APCT Center) initiated and completed verification testing of three verifications of diesel engine retrofit controls. They are currently in data review or reporting. Two of the technologies are for control of particulate matter (PM). One is the PMF GreenTec diesel particulate filter (DPF) system submitted by PUREM North America, LLC. It consists of a precious metal diesel oxidation catalyst (DOC) plus a DPF. The second PM technology is a DOC muffler plus a closed crankcase filtration system submitted by Cummins. The third technology is a diesel fuel reformulation plus an additive for nitrogen oxides (NO_x) emissions control submitted by Flint Hills Resources, LP. The verification tests were all conducted using a highway transient engine operating cycle.

The Flint Hills verification is the first verification conducted under the APCT Center's alternative fuels verification test protocol. Flint Hill's intent is to submit the data to the Texas Council on Environmental Quality's (TCEQ) Texas Low Emission Diesel (TXLED) program. The TXLED rule specifies a diesel fuel composition that is the only fuel that can be sold in counties in non-compliance with the ambient ozone standard. The TXLED fuel is lower in aromatic content which reduces NO_x emissions. The rule provides for approval of alternative fuels if the vendor demonstrates through comparative testing that their fuel is equivalent or better than the TXLED fuel. A vendor can conduct a test according to procedures in the rule and submit the results directly to TCEQ for approval or an alternative in the rule states "The demonstration required under this subsection may be satisfied by the verification of an alternative diesel fuel formulation by the Air Pollution Control Technologies Center, a center under the EPA's Environmental Technology Verification Program, and the EPA's Office of Transportation and Air Quality's (OTAQ) Voluntary Diesel Retrofit Program, demonstrating at least a 5.78% reduction in NO_x emissions".

Baghouse Filtration Products: Southern Filter Media's verification testing was completed and the report is in EPA review. They are verifying their 16-ounce, singed micro-denier polyester felt filter media. Two additional verifications were initiated both from Donaldson Company. One for an 8-opsy Polyester Spunbond with Tetratex PTFE membrane and the other for a 10-opsy Pleatable PPS with Tetratex PTFE membrane. The first has completed testing and is in reporting and the other is scheduled to be tested this month.

Funding

We now anticipate some EPA funding to the APCT Center from FY06 funds. This will be sufficient to continue operating into FY08 at a reasonable level of activity. Availability of FY07 funds approved by the House and Senate Committees, but not signed by the White House, remains uncertain. EPA is now expected to operate on a continuing resolution for the remainder of the fiscal year. We still anticipate increased numbers of verifications (see discussions below) with technology vendor fees that fully cover testing costs.

Other Activities

Diesel engine retrofit controls: Routine conference calls continued with OTAQ's Voluntary Diesel Retrofit Program to coordinate discussions with vendors interested in verifications. Several vendors are currently discussing a verification. Coordination activities were expanded to include a monthly conference call with OTAQ and Texas's New Technology Research and Development (NTRD) grants program.

The NTRD grants provide funding to develop or verify technologies that can reduce NOx emissions in areas in non-compliance with the ambient ozone standard, primarily the Houston-Galveston and Dallas-Ft. Worth areas. The primary focus is NOx emissions from diesel engines. TCEQ administers grants that were awarded in prior years. Of eight proposals funded that included an ETV verification, several have expired when the vendor made no progress and none has yet to sign a contract with the APCT Center. About three of these may still result in a verification, though it is difficult to forecast. The Texas Environmental Research Consortium (TERC) has been administering the NTRD Program since January of 2006. TERC engaged the Houston Advanced Research Center (HARC) as the technology and research manager for the program. HARC released a \$7.5 million request for grant applications (RFGA) under the NTRD Program on March 31, 2006, for "Development, Verification and Testing of Technologies to Reduce Oxides of Nitrogen Emissions from Diesel Engines." There were 12 awards for development and/or verification of diesel retrofit technologies, mostly selective catalytic reduction systems. A number of verifications are expected as a result of these grants starting later this year. HARC has also released two further RFGAs that focus on application of new engine technologies to retrofits and to marine applications.

Biofilters: The New York State Energy Research and Development Authority (NYSERDA) funded development of a biofilter to control styrene emissions from a fiberglass parts manufacturing facility. The technology developer and NYSERDA are interested in a verification and NYSERDA will provide funds to partially cover the cost. A meeting was held at the vendor's facility in December, 2006 and planning was started. A test is forecast for this summer.

Outdoor Wood Furnaces: EPA/OAQPS has developed a voluntary program with industry for verifying the emissions performance of outdoor wood hydronic heaters (OWHH). The EPA program will have a label indicating lower PM emissions that can be placed on heaters with emissions below a target level. Phase 1 of the program allows heater vendors to conduct tests and submit results to EPA. For Phase 2, "EPA's goal is to have the ETV process in place for purposes of the EPA OWHH Program by fall 2007." Vendors would "seek verification through the ETV Program and the ETV Program would arrange for accredited laboratories to conduct the testing." A stakeholder developed protocol from the voluntary program would be reviewed and adapted as an ETV protocol.

Meetings and Papers: A paper has been accepted for the Air & Waste Management Association's (A&WMA) 100th Annual Conference and Exhibition in Pittsburgh, June 2007 on baghouse media verifications.

ETV Case Study Booklets: EPA just published a second booklet of case studies entitled "Environmental Technology Verification (ETV) Program Case Studies: Demonstrating Program Outcomes, Volume II." This is the second in a two-volume set and it is currently up on the web at <http://www.epa.gov/etv>. This volume includes studies on:

- Baghouse Filtration Products
- Continuous Emission Monitors (CEMs) for Mercury
- Fuel Cells
- Microturbine/Combined Heat and Power (CHP) Technologies
- Microfiltration and Ultrafiltration for Removal of Microbiological contaminants
- Nanofiltration for Removal of Disinfection Byproduct
- Immunoassay Test Kits for Atrazine in Water
- Ultraviolet (UV) Disinfection for Secondary Wastewater

Related Activities: EPA/OTAQ funded a project to develop a verification test protocol for emissions reductions from hybrid, heavy-duty diesel vehicles. The protocol covered vehicles with batteries, capacitors, or hydraulic systems for energy storage. RTI prepared a background information report, assisted with two stakeholder meetings in February and April, 2006, and drafted the protocol. The draft protocol is currently under review by OTAQ.

Last year, the EPA created a new program element under its current ETV Program called Environmental and Sustainable Technology Evaluations (ESTE). This effort is designed to support the Agency's ability to address high-risk threats to the environment (and environmental sustainability) and to human health. As part of ESTE, innovative, commercial-ready technologies showing potential to solve high-risk problems are selected by EPA for verification testing. One technology selected was drift reduction technologies (DRT) for controlling drift of pesticide containing spray off of fields. EPA's ORD collaborated with the Office of Pesticide Programs and various stakeholders to develop a verification test protocol for new drift technologies. EPA's objective for the DRT project is to encourage the use of verified DRTs, such as improved sprayer designs, low drift nozzles/atomizers, drift retardant spray adjuvants, and natural/artificial barriers that significantly reduce spray drift from ground boom or aerial applications to row and field crop agriculture. A stakeholder technical panel was formed and met twice to provide input to a protocol. A draft of the protocol is now in EPA review. This project is expected to continue through initial tests of technologies this summer. The APCT Center may incorporate the protocol after it is completed. A presentation will be made at the A&WMA Annual Conference in June.