From: Will Ollison
Sent: Thursday, June 12, 2014 5:54 PM
To: Hanlon, Edward
Subject: June 12, 2014 CASAC-AMMS clarifying public comment

Ed:

Below are the five clarification comments for your minutes and posting at the CASAC-AMMS web site.

1. ASTM Method D5149 Annex A2 documents a positive Ethylene chemiluminescence (ET-CL) FRM humidity bias that ranges 6%-12% across 7 replicate ET-CL FRM instruments tested at the specified 20,000 ppm water vapor interference concentration; at the 30,000 ppm levels experienced in Gulf coast cities such as Houston, the wet/dry ET-CL FRM bias ranged 10%-18%. At a 75 ppb O3 standard level, the ET-CL FRM 20,000 ppm humidity positive interference bias would range between 4.5 – 9 ppb and 7.5-13.5 ppb at 30,000 ppm humidity. At both humidity levels the current O3 ET-CL FRM would violate EPA's proposed revised chemiluminescence humidity performance specification of ± 5 ppb O3. With this humidity sensitivity and the revised water vapor performance specification, ET-CL decertification would seem the better choice since the ET-CL FRM would no longer useful as a reference instrument.

2. Revised proposed performance specifications for the 254 nm UV absorption O3 photometers should include testing for additional interference species (Spicer et al. 2010) such as Hg vapor and selected aromatic VOC derivatives with electron withdrawing groups (e.g. phenols, styrenes, aldehydes, and nitro-aromatics) reported to interfere at urban ambient levels. Since there are likely to be a large number of such species, EPA should reconsider dropping the total allowable interference specification.

3. EPA should consider revising the O3 monitor linearity certification specification downward from 0-500 ppb to a range more nearly reflecting current urban ambient O3 levels (e.g., 0-250 ppb).

4. The 2 ppb zero offset noted in recent EPA testing of the scrubberless UV O3 monitor (UV-SL) may stem from the 1½% dilution of only the scrubbed analysis stream by the photolyzed N2O titrant gas. The vendor currently makes a compromise by providing a 98.5% interference-free instrument in exchange for halving the annual N2O consumption. The Agency may wish to encourage vendors to replumb an FRM version of the UV-SL monitor with a balanced unphotolyzed N2O addition also to the sample stream for use in locations where a 100% interference-free UV-SL is needed to attain the standard.

5. The AMMS Charge Question #3 response at page 5 notes the following:

The 2B Tech Model 211 can use either a photolysis cell to produce NO from an external cartridge of pure N2O, or a cylinder of high concentration NO. In routine operation, the Model 211 consumes approximately 6 m3 per year of N2O. This should be taken into account when considering cost and space requirements for deployment.

In our experience, use of a N2O cartridge (ca. 8 liter-atmospheres of N2O) is a convenient mobile sampling option, being light, cheap (50¢), requiring no regulator, and adequate to supply a monitor for 12 hours. Both cartridges and cylinders, for fixed site continuous use, store relatively pure N2O as a liquid so the point of the above CQ #3 AMMS comment about the need to consider cost and space requirements is uncertain. Use of a 10,000 ppm NO/N2 compressed gas cylinder required by the NO-CL O3 monitor seems less convenient, requiring corrosive gas regulators/plumbing and presenting a more toxic accidental leakage hazard.

All the best…