Method 202 Assessment and Evaluation for Bias and Other Uses
Evaluation of Stakeholder Recommendations
July 9, 2008 through March 13, 2009
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Topic: Method 202 and ammonia			
7/8/08 (1)	Jason Wolf Michigan DEQ Air Quality Division	Could you explain how appropriate Method 202 is to use on sources which have ammonia in the flue gas which forms ammonium sulfate in the impingers? My understanding is that the purge will not solve this problem. Is it reasonable to analyze for ammonia in the inorganic CPM and subtract its weight from the results? Would the dry impinger method be a better choice?	We are investigating revisions to Method 202 to make the method more accurate and precise. To achieve that end we are using science-based information to determine whether a given compound is or is not particulate. We are also employing sampling and analytical procedures that minimize the potential for the formation of artifacts. As a result we have eliminated some of the options in the improved test method that were available in Method 202. EPA does not know of a situation where OTM 28 creates particulate from gases or vapors in the stack that would not be created after the stack gas is released to the atmosphere. Other than the adjustment for the mass of ammonia added to neutralize the acid component in the sample, the method does not have any adjustment for any acid or base compounds. We have performed one limited laboratory assessment of the new dry impinger method using a synthetic exhaust gas matrix that included ammonia and sulfur dioxide. We expected the formation of ammonium sulfate (bisulfate, sulfite etc.), but the ammonia did not chemically combine with SO_2, NO, or NO_2. Even if the chemical reaction did take place, EPA expects that the reaction would occur upon release to the atmosphere. While the dry impinger method may not exactly replicate particulate formation, it is much closer to what we expect in the ambient air than alternative methods of comparable complexity.
Topic: Methylene Chloride extraction			
7/15/08 (2)	Zach Klotovich, P.E. Idaho Dept. of Environmental Quality	Do you have any information regarding the amount of condensable particulate that is usually found in the organic fraction vs. inorganic fraction? I know it depends in large part on the source of emissions. Or, do you have information	The improved condensable particulate method separates organic and inorganic condensable particulate using an organic solvent extraction step. The organic extraction recovers organic condensables from glass surfaces and the aqueous rinse of the sampling train. Laboratory experiments conducted by Environment Canada

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		regarding how much of the organic fraction would be lost if the impinger catch is handled as only inorganic particulate? Would all of the organics be lost, or would some of the organics stay in the inorganic fraction?	demonstrated a significant low recovery bias for organic condensable material if the sample recovered from the sampling train were treated only as exclusively inorganic material. One is likely to lose the lower molecular weight condensable organic compounds if the first evaporation is conducted at elevated temperatures. If we were to allow the combined evaporation, we would require that all of the evaporation occur at less than 85 °F (the maximum filtration temperature allowed with the method). The evaporation of hundreds of mLs of water would take days or weeks. Based on these facts, EPA would not want to make assumptions or take short cuts with the sampling and analytical procedures that we have developed.
Topic: Method 202 sulfate correction			
7/16/08 (3)	DeAnna Oser Georgia DNR	Is it true that for Method 202, anything that is a sulfate in the impinger water was not in particulate form in the stack and therefore can be discounted. Did I understand correctly? Is this approach valid only if you do the nitrogen purge as recommended and if there is no sulfur in the fuel to form sulfates in the exhaust? On a wood-fired boiler would you have sulfates that would be seen by the IC analysis and be indistinguishable from other artifacts formed after capture? We are preparing to do some testing on a wood fired boiler and want to get a good picture of what is condensable.	For Method 202 there could be a substantial amount of sulfate artifact (really H_2SO_4) in the impinger contents that originates from SO_2 in the stack gas. If the nitrogen purge is performed one would expect that the sulfate content could be reduced by about 95 percent (from about 250 mg to 15 to 20 mg). As you may also surmise from this, for some sources 15 to 20 mg of artifact would be a significant percentage of their PM (PM10 or PM2.5) emissions. EPA's current belief (knowledge) is that the artifact in Method 202 is created from SO_2 that is converted to SO_3 in the impinger water and then becomes hydrated with between two and eight waters. EPA recommends OTM 28 for a better measure of condensable PM emissions. Also, if this test is being performed to get an understanding of the ambient air implications, it may be worthwhile to suggest that an ion chromatography analysis of the impinger contents for sulfates, nitrates, chlorides, fluorides so that you could pair that with the ambient air analyses from PM2.5 ambient air speciation monitors. You may also want to consider the use of a Teflon® membrane (or quartz filter) and have the filter analyzed for metals (those included in the speciation samplers).

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Topic: Solicitation for Comments on Proposed Modified EPA Method 202			
7/18/08 (4)	Barry R. Wallerstein, South Coast Air Quality Management District (SCAQMD)	Our concerns are that the proposed modifications to Method 202 may measure less of the PM and PM precursor emissions than the existing AQMD approved methods including Method 202, and, therefore, may lessen the stringency of existing AQMD regulations. EPA cites a test report from the Alliance of Automobile Manufacturers that concludes there is no statistical difference between results by the existing and proposed modified Method 202. This test may not represent the same comparison for facilities in the district, including those that involve natural gas combustion and ammonia injection. We do not agree that the term artifact applies to many sources in the district since our inorganic catches typically consist of both cations and anions that combine to make a solid ionic salt when the water is removed.	EPA has improved Method 202 to reduce the by-product resulting from SO_2 conversion to sulfuric acid captured in the water-cooled impinger solutions used in the original promulgated version of Method 202. EPA has also evaluated the retention of condensable inorganic and organic particulate using physical chemical predictions backed up by laboratory tests. The revised Method 202 has been improved to capture condensable particulate that would be formed under ambient air conditions immediately after release of the emission from the stationary source. The modifications minimize, if not eliminate, slower fate and transport reactions of gases in the atmosphere. The revised method also eliminates many of the options in the original procedure, which will improve the consistency of data generated nationally on stationary source condensable particulate emissions. EPA has developed this method in combination with a revision to Method 201A, which allows sampling and analysis of both filterable and condensable particulate matter less than 2.5 micron in aerodynamic diameter. EPA believes these method revisions significantly improve the bias and precision of $PM_{2.5}$ measurement from stationary sources by resolving well-known errors with the methods. States should consider how and if these method revisions are applied to stationary sources they regulate.
Topic: Methylene Chloride extraction			
7/22/08 (5)	Terrance Madden Michigan DEQ	I was reading the new SES newsletter and came across the article by Roger Shigehara regarding OTM 27 and OTM 28. I copied a small section below in which you had apparently mentioned that 47 mm filters would be of marginal use with Method 5 above flows of 0.5 cfm. Could you explain that a little further? (i.e. why is that?)	In the most recent update of the OTM 28 method, EPA provided a broad range of filter sizes for the CPM (backup) filter but specified the use of a Teflon$^{®}$ membrane filter. The previous version allowed the use of a fiber filter but since we are extracting the filter with water and MeCl to address a constant weight issue with the weighing of the filter we switched to a membrane filter so we did not have to deal with the fibers. We know of one field effort where 47 mm filters were used to collect CPM after the impingers in Method OTM 28. Samplers reported over

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			20" vacuum to achieve the required flow rate. They also reported using a flat perforated Teflon® filter backer. EPA obtained various Teflon® membrane filters and evaluated pressure drop in a simulated OTM 28 sampling train at 0.5 and 1 cfm sampling rates. We used a standard Teflon® filter support with annular concentric rings to allow better flow through the filter's membranes. We found was that above 0.5 cfm, the vacuum required to pull the sample through 47 mm Teflon® filters increased to an unacceptable level. One stakeholder informed EPA that a Teflon® matt filter backer allows sufficient flow through 47 mm Teflon® membrane filters for use in this method.
Topic: White powder in inorganic fraction			
7/25/08 (6)	Tom Stolzenburg RMT, Inc.	For a natural gas boiler, we found a white powder in the inorganic fraction of the impingers (method 202). We are scratching our heads as to what analysis to perform on it to determine what it is. (We certainly did not expect to find anything). Do you have any advice, given that we have so little to work with?	I assume that the boiler was not using ammonia injection. If there was ammonia injection the powder may be some form of ammonia and sulfur (ammonium sulfate, sulfite, bisulfate, bisulfite etc.) If there was no ammonia injection, EPA does not have information on what the white powder is in your inorganic portion of Method 202 sample. We have performed IC analysis of the impinger portion but that would only give you anions and cations. If the white powder was only in the first sampling run, it may have been from contamination in the regulator for the nitrogen purge. If it was in all three samples it may be a contaminated nitrogen cylinder assuming you elected to use the nitrogen purge option in Method 202. EPA also has evidence of higher blank and a white residue from out-of-specification deionized water for an ion exchange system. In OTM 28 (a probable replacement for Method 202) we specify the use of a high-quality nitrogen, the use of a filter between the regulator and the impinger, and ultrafiltered deionized water.
7/30/08 (7)	Jim Schifo, VP Keramida Environmental, Inc.	We have found some inconsistencies on what test methods are used to show compliance with PM/PM10 limits. Method 5E is	The short answer is that Method 5E does not measure PM10 emissions (filterable and condensable). There are several issues for not using Method 5E for compliance with PSD (thresholds or limits). First, Method 5E has

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		mentioned in the NSPS, subpart PPP, but it is not clear from the protocol when this test should be used. Is Method 5E to be used to determine PM10 to show compliance with PSD? Only to show that they meet the NSPS BACT Limits? Or for all PM10 testing for these processes?	no particle sizing and the filterable component would include particles that are greater than 10 µm as well as those that are equal or less than 10 µm. Next, the impinger portion is collecting the inorganic and organic fractions in a sodium hydroxide solution and analyzed for TOC using a method that also subtracts inorganic carbon and may not arrive at an actual mass of even the organic carbon that is collected in the sample. EPA recommends using Method 201A for filterable PM_{10} or OTM 27 for filterable $PM_{10}/PM_{2.5}$ and OTM 28 for condensable PM.
Topic: Comparison of CTM 040 and OTM 27			
7/30/08 (8)	Gary Beeson Northern Virginia Regional Office Virginia Department of Environmental Quality	Is there was a comparison document between methods CTM 040 and OTM 27? We are trying to do this comparison today for a meeting and if that work has already been completed it would speed up our review of these methods.	The biggest change between CTM 040 and OTM 27 is the formatting. OTM 27 is formatted with the EMMC format whereas CTM 040 used the historical formatting. We have removed the discussion of using multiple nozzle sizes that was in CTM 040 as this diverts from obtaining a proportional sample in the stack. As a result of requesting comments on the two OTM methods (27 and 28), we will be revising OTM 27 to add a figure and table for nozzles when the tester is using only the $PM_{2.5}$ cyclone. We are also revising some text to clarify some details of the method.
Topic: Determining total PM			
8/1/08 (9)	Rick Begley Pennsylvania DEP	What are you thoughts about running a particulate test using just one of the back half methods, Method 202 or OTM 28, (i.e., no Method 5 filter box or cyclone) to determine total PM? This would be considered only for applications such as natural gas fired combustion turbines where no filterable PM is expected, but are required to test for total PM. The sampling would be the same, but the probe/heated sample line would be connected directly to the back half and all PM collected would be	EPA technical staff thinks that is a reasonable modification for gas-fired sources since our experience is that the front half filter does not generally collect a measurable mass of particulate even when the sampling period is multiple hours (4 to 6). Combining all the mass into one portion of the sampling train addresses the issue of having two to four parts of the collected sample being below the detection limit and coming to the conclusion that the emissions is zero or some multiple of the detection limit. We would require the use of the backup filter if Method 202 is selected for particulate collection to ensure filterable particulate is measured. For long sampling times, the water condensed from the source combined with the water in the impingers may result in a large percentage of artifact

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		considered total PM. This idea came up as a way to eliminate potential error caused by attempting to weigh negligible filterable PM. What do you think of this proposal?	from SO_2 compared to the PM emission. OTM 28 may be a better method to address the issues of artifact biases and detection limit. Also, if the membrane filter from OTM 28 is inverted and sonicated in a petri dish without folding it to fit into a small tube, then it should provide a better ability to dislodge material and get it into suspension in water or MeCl. We believe that the six sonications would get much of the ultra-fine PM off the filter and allow it to be a part of either the inorganic or organic fraction. If sources in PA use this alternative and OTM 28, we would like to know whether this approach results in an measurable mass from a gas turbine (with or without ammonia injection) since our data indicate the SO_2 artifact has been resolved for most applications of OTM 28. We believe that the use of Method 202 even with the nitrogen purge would result in some inorganic CPM due to artifact.
Topic: Update on status of method revisions			
8/11/08 (10)	Paul Skubinna Air Resources Management Bureau Montana Department of Environmental Quality	Were there significant results or changes from the comments you received (up to June 27)? Is there a possibility to review comments received and any EPA responses? Does EPA intend to promulgate the OTMs or incorporate them as official Reference Methods?	The two technical issues surfacing from comments involve figures and tables describing the nozzle design for use when only performing $PM_{2.5}$ measurements (the inlet to the cyclone is smaller in diameter than the inlet to the PM_{10} cyclone). These tables and figures have been added to OTM 27. Also, the factor for the correcting for the amount of ammonium mass used to neutralize the sulfuric acid and arrive at a SO_3 mass required a small correction. It is our intent to propose the revision of Methods 201A and 202 using OTM 27 and 28. EPA technical staff can not guarantee that revised OTM 27 and 28 will be reposted with all the corrections that appear in Methods 201A and 202 since the proposal package is making its way through the various levels of EPA. While EPA does not think modifications that someone might propose would improve the method significantly, it is possible significant changes may come from the review process. In order to convince us that the method should be changed, EPA will require supporting data or a good technical basis to indicate that the modification improves the precision and accuracy of the methods.

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Topic: Oven temperature requirement			
8/13/08 (11)	Joe Jackson, QEP AirNova, Inc.	(1) I was hoping that the 300˚C oven requirement was meant to be 300˚F. I am concerned that most labs do not have this capability (my oven only goes to 475˚F). Maybe an addition statement to the method (to include the glassware baking temp instead of having an absolute temp) could be added. (2) Could you tell me the vendor name for the Teflon® membranes that meet the 99.95 percent efficiency of 0.5 micron particles? Could you send me the supplier's quality control test data for the EPRI results? (3) If you have any information that describes the variable blank issue that led to the oven bakeout procedure, I would like to see it and present it to NJ DEP. (3) If you have any information that describes the variable blank issue that led to the oven bakeout procedure, I would like to see it and present it to NJ DEP. (4) Do you know if anyone has tried to place H_2O_2 in the moisture knockout impingers to also obtain the SO_2 concentration? This seems like an easy addition to the method to allow for SO_2 determination also.	There may be a lower temperature that would achieve the same results as the overnight preparation at 300 ˚C, but we have no data to substantiate the efficacy of a lower temperature. We have in the method a maximum blank value that one is allowed to subtract. This blank value is based upon overnight oven drying at 300 ˚C, the use of very high quality solvents, and the use of impeccable technique. (1) At this time we have data based upon several laboratory tests that show dried glassware at 100 °C have a highly variable blank value (i.e., from 3 to 10 mg) that adversely impacts the performance of the method. We also have data based upon several laboratory tests performed with glassware baked at 300 °C that show the blank value is lower and more consistent (i.e., 0.7 to 1.5 mg) and therefore does not adversely impact the performance of the method. We have no data between these two temperatures to provide us with definitive information on the temperature at which the glassware's previous exposures have been eliminated and one has removed the residue that adversely affects the performance of the test method. We do have a requirement to perform field blanks that would potentially identify the origin of high blank values. A source tester that does not use the quality of preparation, reagents, and field technique specified in the method is potentially exposing their client to adverse results since any blank above 2.0 mg will be attributed to the source's emissions. The test method could have been written without any quality specifications for glass preparation, solvent quality, verification of solvent quality or attention to technique and the blank results would reveal those situations where testers were remiss in their application of the level of cleanliness that this method requires. All of the specifications that we have incorporated into the method help the tester and the laboratory achieve the quality indicator that we have established using the maximum blank correction. EPA would like to have additional data from stakeholders on

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			the performance of one or more alternative glassware preparation procedures to more clearly characterize when acceptable performance could be expected. (2) With respect to your request for a vendor, I can not recommend any specific vendor. I do know that Pall (http://labfilters.pall.com/catalog/924_20061.asp) has a wide variety of filters that would meet the requirement for the method. Tisch Scientific also advertises PFTE membrane filters in the appropriate size ranges. (3) You, the source tested, and the source test contractor will be liable for possible high test results that may occur as a result of inadequate glass cleaning. We assert that the blank requirements included in the method offer an indication of what is possible and blank values above these levels indicate that some component of the source tester's effort may be in question. (4) I do not know of anyone that has used H_2O_2 in the moisture dropout impingers to quantify SO_2 emissions. In our laboratory experiments, we have used overkill by using an FTIR to confirm the SO_2, NO, NO_2 concentrations as well as the SO_3 and NH_4 concentrations. Use of H_2O_2 before the CPM filter will oxidize SO_2 and capture it as condensable particulate, producing a positive bias. Using H_2O_2 in the moisture portion of the train will bias the water collection high due to the additional mass of SO_2 captured by the peroxide.
Topic: Equation 24, OTM 27			
8/15/08 (12)	Robert J. Lisy, Jr. Air Compliance Testing, Inc.	Regarding Equation 24 in OTM 27, I think the squaring of the Cp's needs to be inverted in the equation with the Cp' in the numerator and Cp in the denominator. If you could contact me regarding this it would be appreciated.	This equation looks fine. It seems reasonable to EPA that correcting for the effect of the cyclones, one would take the Δp measured during the preliminary traverse, divide it by the influence of the pitot's coefficient, and then multiply it by the effect of the pitot used to make the final measurements.

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Topic: Not above an emission limit			
8/19/08 (13)	Jim Schifo KERAMIDA Environmental, Inc.	Is there any EPA guidance that would allow someone set up a sampling protocol to prove that a source “is not above” a certain emissions limit rather than insisting on actually collecting a certain minimum catch weight. This, in some cases, would allow significantly reduced sampling times and problems trying to keep sources running at high capacities during long periods of time.	We have for as many years supported the acceptance of test programs that result in below detection limit values used to demonstrate compliance with emissions limits that should have been quantified with the volume of sample collected using the appropriate test method. We have typically suggested that the tester target about 10 to 25 percent of the emissions limitation for the detection limit for a test program. At this level of detection, there is little argument whether the source would or would not be in compliance with the applicable requirement. EPA technical staff are not sure whether the Agency has published any guidance that states what we have accepted.
Topic: Sections 9.5 and 9.7			
8/20/08 (14)	Scott Evans Clean Air Engineering	Are Sections 9.5 and 9.7 to OTM 28 saying the same thing? In Section 9.5, what do the words "each time they are used" mean? Does the once per day calibration check in Section 9.7 meet this requirement? Can Section 9.5 be eliminated?	With respect to Sections 9.5 and 9.7 of OTM 28, they do say similar things. Section 9.7 does focus on the weighing of the CPM while 9.5 would also cover any water weights done in the field. We'll look into potential revisions. You will notice that we have said that OTM 27 and OTM 28 will probably not change until we propose revisions to Methods 201A and 202. The changes that will be made are those that are needed to get the method through the bureaucratic review process. We would rather compile comments on OTM 27 and OTM 28 from outside the Agency as part of comments on Method 201A and 202 and address them through the formal comment process.
Topic: Teflon® filters			
8/25/08 (15)	J. Bruce Nemet QA Officer Resolution Analytics, Inc.	Would we be free to utilize these Teflon®-coated filters (Pallflex Part# TX40HI45) in lieu of Teflon® membrane filters if we can indicate a low offshedding of filter fragments. The Teflon® coating should also prevent SO_2/SO3 reaction as well I would think. These are membrane filters that are Teflon® coated on the front side. The Teflon®-coated	Our experience with Teflon® coated glass fiber filters is that the sonication releases many shards of glass, which would be impossible to remove from the solvents (MeCl and H_2O). At this point we would advise that the Teflon® membrane filter be used until there is ample data to indicate that the use of fiber filters will not result in a high bias caused by periodic fiber losses from the backup filter.

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		filters are more realiably obtained, less expensive, and have less pressure drop issues than do the membrane filters.	
Topic: HCl in the stack gas			
10/20/08 (16)	Neil M. Nissim NJDEP/Bureau of Technical Services	1) I'm looking at a report for a facility in NJ and the facility is claiming that due to HCl contamination in the stack gas, there are excessive chlorides in the back-half condensable. They have added the NH_4OH and are subtracting both the ammonium ion associated with the SO_4 and subtracting the chlorides associated with the NH_4. The method doesn't explicitly say you can't do both but I assumed they couldn't since the chloride correction was in Section 8 which is alternative procedures. What's the official word from EPA? 2) Does the facility make a good argument with the elevated HCl concentration in their stack gas? If so, can you subtract the chloride gain in addition to the sulfate correction? I guess you can since you stated the sulfate correction is part of the method. Could you reveal a little more about the genesis of the chloride correction? 3) If we allow them to follow the procedures in Section 8.2, should they subtract the chlorides as analyzed by IC or correct the chlorides to an as ammonium chloride basis by multiplying by the MW of NH4Cl divided by the MW of Cl-? This increases the value by 1.5 times.	This question involves application of the original Method 202. Revisions to Method 202 currently described in Method OTM 28 resolve many of these issues. 1) The way that EPA Method 202 was written, there are seven or more alternatives to the method. Each of these alternatives are included to accommodate one or more State agency's desires when the method was proposed and promulgated in 1990. The accommodation of the weight gain for the addition of the ammonium hydroxide to neutralize SO_3 (really H_2SO_4) and allow for determining constant weight is part of the method. The choice of whether to include the two waters of hydration for H_2SO_4 would be up to the State. With that said, you may want to look at OTM 28 for what we are doing to try to reconcile all the confusion of having a reliable test method for determining condensable PM. In that method we are only subtracting the ammonium ions that are used to neutralize the acids in the collected sample. Any chlorides that remain after the first evaporation at room (85 ˚F) temperature are considered to be particulate matter. We have also made some minor changes to reduce the sulfate artifact and we have selected those procedures in the existing Method 202 that should result in the least unbiased determination of primary particulate matter emissions (does not include secondarily formed PM). 2) I am not sure of the origins of the alternative to subtract the chlorides. In Method 202 there is an alternative that seems counterintuitive. It states that if one considers ammonium chloride a particulate then the inorganic fraction should be evaporated at elevated temperature down to approximately 1 ml of liquid and then to finish the evaporation at room temperature. In Perry's handbook, ammonium chloride is listed as solid at ambient temperatures. This is the

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			reason OTM 28 requires the last 10 ml to be evaporated at room temperature (we thought that stopping at 1 ml would be difficult and result in lower precision or periodic evaporation of samples to dryness at elevated temperature). EPA knows that some States have laws that state that chlorine and chlorides are not to be counted as PM. We are not sure of the basis of these laws. 3) In Section 8.2 in Method 202, the mass of NH_4Cl is to be subtracted. The section also indicates that all of the HCl should have been evaporated. As long as you are allowing the facility to perform the procedures in Section 8.2 it seems reasonable to divide the MW of NH_4Cl by the MW of Cl and then multiply this value by the mass of Cl determined by IC analysis. Recognize that if you continue to base your testing on Method 202, if and when we revise the method this procedure would not be part of the method.
Topic: OTM 27 questions			
10/27/08 (17)	Amiel Boullemant Research Scientist Environmental Technologies	(1) Figure 1 in OTM 27: it is indicated to use a heated probe, but in the method we have only read something on preheating the sampling head (Section 8.6.9). Is this heated probe still necessary? We think no considering a gas with < 2 % humidity. (2) Section 7.1.1 in OTM 27: do you consider a glass fiber adapted to sources with high SO_2 content? (as it is the case for primary Al smelter). Could US EPA precise or propose types of filter that do not react with SO_2? (3) Section 8.5.4.2 in OTM 28: we have decided to do 3 water rinses instead of 2 considering that now, we have dry impingers. Is it acceptable? (4) Section 8.5.4.3 in OTM 28: it is said to have 2 bottles, one for the recovery of acetone, and one for the	(1) The reason that we have recommended preheating the cyclones is to bring them to stack temperature quickly since a lower temperature of the interior surface temperature will cause sampled gas to condense on the surface of the cyclone and be considered part of the cut size captured by the cyclone (10 or 2.5 µm depending on the cyclone where the condensation occurs). While we would prefer to delay condensation to the Method 23 condenser, if the material was to condense on the interior surfaces of the probe, it would still be recovered and considered smaller than the cut size of the smallest cyclone. (2) It is not EPA policy to promote commercial products unless we are reasonably sure that we have listed all the providers of the products. Even then we tend to leave the listing fairly open ended. Generally, the suppliers of filter media that is advertised for air pollution source sampling will indicate their suitability for this type sampling and the absence of artifact formation. (3) First, we require three rinses for both the water rinse and the MeCl rinse. If this is not

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		recovery of MeCl2. But, in the analytical section (11.2.2.1 and 11.2.2.2) it is always mentioned only one bottle. Then, we decided in 8.5.4.3 to put together in one bottle acetone + MeCl2. Is it again acceptable? (5) Section 8.4 in OTM 28: if we sample a same source in triplicate, should we baked all the train glassware between each replicate? The contractor here decided not to do so, considering this is the same source and section 8.4 is only talking about "source" not "trial or replicate". What is your opinion on that? (6) In OTM 28, it is supposed to have 2 boxes (one with 2 dry impingers in a water bath with T <30 C + another one with 2 impingers maintained at T <25 C in an ice bath). Our contractor decided to use only one box with the four impingers maintained in an ice bath at T <15 C. Do you think it is correct?	how the method is written, thanks for the editorial review and we will consider changing the text. We do not specify the maximum number of rinses that should be performed—only the minimum. For those situations where material is very resistant to recovery, additional efforts are recommended. Our experience is that if full recovery is not achieved, the material that is not removed will show up on subsequent runs and create the impression that there is high variability in the source or the test methodology. Generally, additional rinses should be performed whenever visible residue remains on the interior surfaces of the glassware or when the third (or subsequent) rinses show the presence of material. (4) Combining the acetone and MeCl from the field rinse of the train is acceptable. Fresh MeCl should be used to extract the aqueous portion of the field train sample and that extract should be added to the organic rinse of the train. The combined organic portion of the OTM 28 sample should be evaporated to dryness at room temperature and pressure. (5) We considered the requirement to bake the glassware after each sample run. But this would require source testers to have two to three times the inventory of sampling glassware. This would increase the cost of the sampling and may not substantially improve the precision and accuracy of the method. As indicated in a response to an earlier question, material not recovered in the first or second sampling run would potentially be recovered in a later run or in the field blank. However, we do not preclude source samplers taking the additional effort to bake the glassware after each run. (6) As far as compliance with the written method goes, there is nothing that would prohibit the contractor from using a colder bath for the first two impingers. The method calls for the bath to be colder than 30 ˚C. As long as the bath is colder, it is acceptable.
Topic: Methylene Chloride extraction			
11/7/08 (18)	Kevin OHalloren	(1) If sampling is conducted for CPM only, does the train	Since the proposal package is going through its final review cycle we are retaining the

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		need to be operated isokinetically? (This assumes the filterable particulate would be removed using a heated Method 5 probe and filter assembly ahead of the CPM impinger train.) (2) Using an unheated Teflon® line to connect the outlet of the FPM portion of the train to the condenser was brought up at the conference. Wouldn't this line technically have to undergo the same preparation as the CPM portion of the sample train (including baking at 300˚C, which would melt the line)? (3) Is there any reason why it's specified that the nitrogen purge gas be pulled through the train? Is purging with a metered amount of pressurized gas unacceptable? (4) Is recovering the CPM filter into the water sample container an acceptable alternative to putting it into a separate petri dish? (5) The procedure for a field blank discusses "assemble the sampling train as it will be used for testing," but does not specify transporting to the test location, leak checking, etc. Is the intent that a leak check, etc at the sample location should be part of the train blank procedure? (6) For the field blank, is it a better idea to use clean glassware or used (recovered) glassware? (7) Would using unopened, high grade, reagents with lot assessment of reagent quality satisfy the pre-test analytical requirement? (8) Could you please clarify	questions and will treat them like a comment received after the method is proposed. It would be good if you were to also provide a formal comment on the proposal package with these and other questions that you may have with the preamble and the two methods. (1) EPA technical staff is not sure how representative multiple train sampling would be when filterable and condensable are determined by different trains without some measurement of the filterable to ground truth that the two or three trains are operated consistently. Even if all the trains were operated at the same time, the biggest concern would be the filtration temperature. The filtration temperature could potentially have a significant effect on the amount of PM collected on the filters and therefore the CPM presented to the impingers. There may be some situations where the sampling duration required to obtain a quantifiable mass for filterable (either total or by particle size) and condensable would be substantially different. In those cases, one would want to recover the component that is secondary for the specific train and demonstrate that this measurement is at least consistent with the mass concentration measured with the other trains. We would need some examples of when you would need to quantify CPM and not the filterable component to provide a specific response. (2) This question is similar to comments that we have received about using a lower temperature to bake the glassware and the higher cost of an oven that can achieve 300 ˚C. As a preliminary response, there are probably several sampling situations where the use of a jumper is the only viable option available to the stack sampler and there are not any viable alternatives. The purpose of the 300 ˚C baking is to remove material on the glassware which the other preparation operations did not remove (or left behind) and could potentially create a high blank value. When the only option available is to use the jumper, then the preparation steps should be as close as possible to what the method specifies. You should provide a

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		how often used glassware should be replaced with clean (unused) glassware? The method specifies both “per source type” and “per source category.” Strictly speaking, I would interpret this to mean that one should use different glassware when sampling at different processes in the same facility (for example, testing at a FCCU scrubber stack and a process heater stack would require different glassware). I would go one step further and say that it should be required to segregate glassware when sampling at point/locations along the same process as well (like when performing inlet/outlet testing).	comment in the test report that identifies the variation and the potential impact that this variation may have to the results. It would be very helpful to EPA if some stack testers or laboratories would collect information on the amount of residue that would result from the use of jumpers so that we could place that option in the method and potentially include an additional allowance (the maximum blank corrected allowed) if a jumper were used. (3) The promulgated Method 202 allows either pressurized or pumped purge of the condensable train. The important aspect of the procedure is to assure that the collected water is fully purged and that we can know the flow of nitrogen used for purging. The use of the pressure purge presents the potential that the impinger inserts may leak and the purge would not be as effective as it should be. (4) We considered combining the solvent rinses with the water and concluded that was not a good idea because the filter requires both an organic and water extraction. (5) and (6) The blank train should be a train that represents the trains used during the conduct of the test. If you are using one (or two) sampling trains, then you would want to use a train that had been used in the test campaign so as to provide a good indication of the performance of the field crew (recovery and clean up), rather than the performance of the crew getting the equipment ready for use in the field. Also, this field blank is important as a tool to improve the field crew’s techniques. If every test run uses a sampling train straight from the home office and never used on the source, then the field blank could be one of the clean trains. One of the criticisms of the existing Method 202 is the highly variable test results. We believe part of the variability is caused by test crews that do not understand that this method is prone to biases due to inadequate preparation and cleanup techniques. Of course, with all the other aspects of Method 202 as promulgated, no one can definitively characterize how much imprecision is associated with any one aspect of the method.

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			(7) We left the evaluation of the vendor solvents in the method due to the prevalence of testers comments that they assumed a solvent met the specifications provided by the vendor, but when they experienced high blanks and evaluated the reagent after the test, they found that it did not meet the specification. We have included the maximum blank correction in the method as our QA insurance for knowing the impacts associated with the combined reagent blanks and recovery techniques. If you believe that we are being a little too prescriptive to insure that the source test contractors follow good laboratory techniques and that you think it is up to the source tester to assess the reliability that their suppliers are providing quality products, let us know and we will consider removing this requirement from the method. (8) Our intent was that a single set (one or more trains) of equipment is used within a given source type during a field campaign. If you are testing multiple coal-fired boilers and multiple oil-fired boilers, then you would need to keep the equipment segregated so that the potential variabilities associated with retention and recovery of source category specific blank would not interfere with measurement of the other source category. We thought about requiring clean glassware for each run for each emission source and settled on the source category primarily due to the potential for the common emissions characteristics. Again, please provide comments on alternatives with supporting data during the comment period for this proposal.
Topic: Filter porosity			
11/10/08 (19)	J. Bruce Nemet QA Officer Resolution Analytics, Inc.	Would EPA approve use of 90mm 1.0 µm filter use? This is the Teflon® membrane filter that EPA and ERG used for the testing. It differs, however, technically, from the method in that the porosity of this filter is 1.0 µm and the method states a porosity of 0.5 µm to be used.	This e-mail will be addressed in our running commentary. If you want to insure that it is addressed in the response to comments and that we consider an additional statement in the method, please submit a comment after the method is proposed. It would be helpful if you would provide a suggested addition to the method for the clarification. For example, one that indicates that the criteria for acceptance of the filter media is the independent evaluation with 0.3 µm DOP and

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			not the physical pore size of the media. One thing to remember is that unless we have a list of nearly all suppliers of acceptable media and assurances that this list is not likely to change in the future, we would be reluctant to provide a list of acceptable media and suppliers
Topic: Condensable ammonia salt			
11/14/08 (20)	Thomas Maza Air Quality Division, Michigan DEQ	Marathon will install an ammonia injection system on the FCCU regenerator exhaust. They believe that the NH_3 will react with sulfates to form a salt (condensable PM) so they have asked how the ammonia used for control fits into the emissions picture. I want to make sure I'm presenting the correct picture - at least from a measurement perspective. I'm sure there will be other perspectives thrown into the mix. Method 202 allows for compensation if NH_3 is added to control HCl. Is there any thought for something similar for methods CTM 039 and OTM 028?	The test method is designed to measure particulate matter emissions to the atmosphere regardless of whether the emissions are due to the basic process or as a result of a control technology to address emissions of some other pollutant or compound. The atmosphere and more specifically the ambient air monitoring network does not differentiate whether the material measured is due to the process or as a result of some subsequent condition. An example that provides an analogous situation is the use of the combustion to control emissions of other pollutants (CO, PM or VOC) where emissions of NOx are created. Just because the NOx is the result of the control does not exclude that pollutant from being quantified. We do not know under what context that States have excluded ammonium chloride from being counted as particulate matter as an option in Method 202 when it was promulgated in 1991.
Topic: OTM 028 blank procedures			
12/30/08 (21)	Michael Klein	OTM 28 has the tester analyze reagent blanks, but you don't do anything with this information. The calculations only deal with the field train blank determined from processing the field train blank as you would a field train sample (or at least that is what it implies). As in Method 202, there is nothing that says you need to either use the exact same amount of rinse volumes as the samples or do volume corrections from the blank volumes to that used for samples. For example, Method	We've addressed this issue in a previous response. We have not changed the requirements for reagent blanks in the methods about to be released for comments in the Federal Register. We will notify you (and other stakeholders) of the publication in the CFR and hope that you will provide comments on the proposal package.

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		29 specifies using the exact same rinse volumes as blank volumes, so there is no need to volume correct. The reagent blanks (exact known volumes) should be used to process the field train blank. Then each run should volume adjust their blanks based on the rinse volumes (and water added prior to the purge if needed) used for each field sample (volumes to be measured and recorded, which the method does not specify doing for the rinses). The inorganic blank volume should include the 100 ml charged to the 1st impinger plus any water used for rinsing. As currently written, the blank corrections are open to interpretation and could over or under estimate blanks if volumes used are not consistent with those used for samples.	
Topic: Straight-walled condenser			
1/5/09 (22)	Phillip J. McMaster Apex Instruments	Where do I need to go to comment on the rule and ask for acceptance of our straight-walled condenser?	We will try to include directions to our stakeholder list on how they can access the official proposed rule, the "Docket" for the test method proposal, and how to submit a comment on the rule when the rule has been signed by the administrator and when the rule appears in the FR. The critical element is that the sampled gas is cooled to below 85 ˚F, that it is filtered by an acceptable filter after the temperature goes below that critical temperature, and that the collected liquid can be purged. I can imagine many different designs of the condenser, and the "liquid removal vessels" prior to the filter that would satisfy our intent. If the words in the proposed method do not convey that intent, then a specific recommendation on the revised wording would be better than just stating that the wording excludes some designs.

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Topic: OTM 28 filter criteria			
11/14/08 (23)	Joe Jackson, QEP AirNova, Inc.	1) I have been trying to obtain a filter that meets the strict requirements of EPA OTM 28 Section 7.1.1 that will fit into a larger filter holder (64mm diameter). The 0.5 µm Zeflour product (PTFE fluorocarbon but not Teflon®) is only available in 25 and 47 mm. I have been working with Pall to get larger ones cut since August 08. If the efficiency and inertness of the filter is the driving criteria for performance, could I suggest using Pall Tissuquartz 2500QAT-UP filters? It is already 0.3 µm DOP tested and meets the organic free binder criteria. Quartz is accepted for sampling in SO_2 and SO_3 atmospheres (see EPA5 Section 17 Ref 10). We have been using these filters for TSP testing and EPA 201A sampling for years. 2) The 8/11/08 version of OTM 28 has 0.5 µm particles in the DOP test of Section 7.1.1. The Sept. 6, 2007 version has 0.3um. Is the 0.5 a typing error? If not, do you know who is doing this larger diameter DOP method? Also, ASTM D2986 has been withdrawn without replacement. Do you know what the current equivalent method number would be?	1) In our selection of Teflon® membrane filters for the backup (or CPM filter), we identified the following as issues that we needed to address in moving away from the glass or quartz filter media: • about 50 percent or more of the sulfuric acid presented to the condenser and impingers was getting to the backup filter • this percentage varied and would result in variable mass determinations unless we treated the material reaching the filter the same as the material collected in the impingers • sulfuric acid reaching the backup filter created a weighing issue due to its hydroscopic nature • we wanted to insure that all of the material collected on the backup filter was extracted and available for analysis • we wanted the weight of the impinger components to be determined the same as the filter components. As a result, we determined that extraction with water and MeCl should be performed using sonication. This would insure that any nano sized and soluble particulate collected on the filter would likely be released and placed in solution for later weighing. We also noticed that sonication of the bed filters (even the Teflon® coated fiber filters) resulted in filter shards in the supernatant liquid. This required an additional filtration of the liquid to insure that the shards of glass or quartz was not included in the weighings. The extraction of the filter allowed the sulfuric acid to be neutralized and the exact ammonium needed to achieve neutrality to be subtracted from the final inorganic PM weight. 2) The ASTM standard specifies an aerosol diameter of 0.3 µM, not 0.5 µM. We will revise that value in the next version of the method and in what we publish in the CFR. Any suggestions that you have on specifying the filtration efficiency would be welcome.

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			Also, for membrane filters, the pore size does not have to be equal or smaller than the aerosol size that is generated. Below about 1 µM aerosol size, the particle collection is by Brownian motion and so a larger pore size provides acceptable collection of these smaller particles. In the proposal package, we are interested in people suggestions and supporting documentation to show that the general stack testing community and laboratories can achieve better measurements or the same quality with less effort. We suggest that you provide a detailed comment on the FR proposal package and provide complete documentation.
Topic: Cut size			
1/8/09 (24)	Neil M. Nissim NJDEP/Bureau of Technical Services	The method (201A) states: 6.3.5 Acceptable Results. The results are acceptable if two conditions are met. The first is that 9.0 µm < D_{50} < 11.0 µm. The second is that no 50 sampling points are outside Δp_{min} and Δp_{max} , or that 80 percent < I < 120 percent and no more than one sampling point is outside Δp_{min} and Δp_{max} . If D_{50} is less than 9.0 µm, reject the results and repeat the test. What about cut sizes above 11 µm? Do we assume a high bias and, therefore, if the results demonstrate compliance, they are acceptable?	If the cut size is over 11 µm, then the test did not meet the method's requirement. However, it is the regulatory authority's discretion to accept the test as demonstrating compliance if the bias caused by the improper application is in favor of the agency. That is, a cut size over 11 µm would collect a greater mass than one that met the method requirement, but the test still was lower than the applicable requirement. Therefore, if the method was performed correctly, then the facility would demonstrate compliance.
Topic: EPA Method 202 rinse reagent			
1/15/09 (25)	Gary Williams TESTAR, Inc.	New Jersey has told us that we have to use methylene chloride as the rinse reagent even though we proposed toluene in the test protocol. As you know, methylene chloride has been listed as a carcinogen since Method 202 was released. Has EPA allowed the Method 202 methylene chloride rinse to be	In developing the replacement for Method 202 (currently posted to the EMC Web site as OTM 28), we considered including alternatives including the continuation of allowing ether chloroform, which was an alternative in the existing Method 202. Several issues bear upon the decision that we made to specify only methylene chloride as the solvent of choice. First, our knowledge of the organic compounds that constitute the CPM from every type of source that the

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		substituted with toluene or anything similar since methylene chloride is a carcinogen? If not, how could we get approval to use a SAFER substitute rinse reagent?	method will be used would lead us toward a solvent that is good for polar and non-polar compounds. So options to use solvents that are better with one or the other would give inconsistent results should a tester decide to use a solvent that another tester rejected. Second, we wanted to use a solvent that would allow very good separation of the organic and inorganic constituents. Third, we wanted to maximize the precision of the overall test method with a solvent that would evaporate quickly from the samples. One of the conditions that made for the poor precision of the existing Method 202 was all of the optional procedures that are in this method. As a result, the method that we will propose (and which OTM 28 currently demonstrates) is highly prescriptive. The use of alternative solvents with extraction and separation capabilities different from methylene chloride would adversely affect the currently excellent precision and detection limits that we believe OTM 28 provides. Even though Method 202 is a CFR method that EPA published, the call on what solvent that you are required to use is New Jersey's.
Topic: Flexibility for choosing a method for specific source types			
1/23/09 (26)	Kevin J. Crosby The Avogadro Group, LLC	I understand that EPA has sent recommendations for CPM methods in support of the development of the PM2.5 implementation rule as we come out of the transition period in 2011. I am curious whether the recommendations allow some flexibility for choosing a method for specific source types, or whether a specific method is likely to be required for each source. I have clients who want to prepare for the end of transition and I need to give them good advice on which method or methods to use. I am thinking particularly about Method 202, OTM-028, and CTM-039 as future	In the PM2.5 implementation rule, we only state that after January 1, 2011, the States have to consider including condensable PM in any rules that they generate to limit PM emissions for SIPs and NSR/PSD applications. We do not state that they have to use the test method we publish in the Federal Register or that we post to the EMC Web site. They will have to convince the EPA regional office that they have considered filterable particulate by size (PM$_{10}$ or PM$_{2.5}$) and the condensable fraction in the rules they develop.

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		options; perhaps there are others.	
Topic: AP-42 values for coal combustion			
2/5/09 (27)	Anita Lee EPA Region 9	I have a question about AP-42 values for coal combustion: In Table 1.1-5, is the Inorganic Condensable PM emission factor intended to include HCl and HF? For H2SO4, we've been using equations and assumptions taken from, among other places, EPRI and EPA documents on sulfuric acid emissions, which I guess we've been thinking about independently from HCl and HF. For regional haze purposes, we don't expect HCl and HF to change as a result of NOx control (the way that H2SO4 emissions do with SCR), so we haven't paid attention to baseline HCl and HF emissions. However, the FLMs are concerned about the lack of inclusion of HCl and HF into the baseline. Additionally, for the EF for coal-fired boilers with FGD controls, the breakdown of CPM-TOT into the IOR and ORG fractions is listed as "ND", however, I've seen NPS and consultants automatically apply a 80/20 split (which applies to non-FGD units). Is this recommended for units with FGD? It seems like a simplistic assumption if we believe that some of the IOR (like HCl and HF?) will be captured in the FGD? Are there any updated references/emission factors for HCl and HF and how much control FGDs provide for those pollutants?	First, the use of the CPM emissions factor in the AP-42 section is highly suspect. While it was based upon the best data that was available at the time, the industry was more interested in discrediting Method 202 than using the best implementation of Method 202 for improving the emissions factors. As a result, the factor in AP-42 is based upon test methods that predate the promulgation of Method 202 and EPA guidance on the need to purge Method 202 to reduce artifact sulfates. The purge is important because of artifact formation in the impingers. We know now that artifact formation occurs in samples during the test, so even a purge at the end of the test does not remove all of the artifact in Method 202. Sometimes enough artifacts are formed in the impingers during the test to be a problem. However, for coal, the artifact formation is usually small in relation to the overall mass. That is true especially for higher sulfur coals. The best condensable PM emission factors in AP-42 are the coal ones. The worst are the natural gas ones. We hope to improve them all, but until we have better data, we are stuck with what we have. The exception is natural gas, where we developed new EFs that are about one tenth of the ones in AP-42.

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Topic: Sample rate through the OTM 28 back half when coupled with a Method 5 sample train			
2/17/09 (28)	Tom Kuchinski Barr Engineering Co.	My question has to do with sample rate through the OTM 28 back half when coupled with a Method 5 sample train. Normally OTM 28 would be paired with OTM27 which has a pretty low flow rate through the separation head. If we are doing OTM 28 through M5 train is there any concern with sampling with flow rates of typical M5 rates? We are trying to capture a large amount of air in as little time as possible. I'm guessing we will be around 1 cu/minute sample rate whereas with a separation head the rate is more like 0.3 cu/min. Is there any concerns with this approach?	In addition to the increased vacuum due to the higher gas flow through the filter and the increased demand for the condenser to cool the sampled gas to less than 85 F, there will be about a halving of the retention time in the system (from condenser to filter). This may affect the percentage of inorganic and organic material that forms PM for collection in the impinger or on the filter. However, given the very short times at 0.5 cfm, it is unlikely that the reduced time would cause significantly less collection of PM. With the limited funding and other issues that some would want evaluated, it is unlikely that anyone would create enough data under controlled conditions to assess the impact of sampling at rates higher than Method 201A would dictate.
Topic: CPM Filter and pore size			
2/23/09 (29)	William J. Ondriezek, Jr., QSTI Senior Project Scientist II Air/Compliance Consultants, Inc. Rick Szekeres, PaDEP	Ondriezek: We put the method required 47mm Teflon® membrane filter of .5 micron/99.95% eff. In line and the sample train vacuum goes to 18" and Dh= 0.78. This is in the lab with no particulate laden gas stream. How do we proceed Rick Szekeres, PaDEP: Section 6.1.2 of OTM-28 states that you are to "use a commercial filter holder capable of supporting 47 mm or greater diameter filters." Have you tried a filter with a diameter larger than 47 mm? A normal diameter filter (115 mm?) gives you considerably more surface area. Also, it appears that all of the impingers are modified Greenburg-Smith. I am also wondering what the purpose	1) Rick is correct that we did not limit the diameter of the CPM (backup) filter and holder. The normal diameter filter and holder used for Method 5 is acceptable (some would say required to allow sufficient flow). Several source testers have indicated that a 47 mm filter does not provide for sufficient flow. Others have success as long as the Teflon® filter support does not restrict the flow through the membrane filter. 2) The filter following the impingers is to collect CPM created after the Method 5/17/201A filter. The particulate generated through the condensation reactions is a very fine (nanometer diameter) aerosol. This aerosol tends to grow in size up to about 0.75 µm in diameter. Some research indicates that a one minute residence time is required to get most of the nanometer aerosol to the final size. The filter provides the ability to collect this very fine aerosol. Yes, the first two impingers are modified Greenburg-Smith. The first impinger has the stem cut/broken off just below the exit port for the impinger. The purpose of the first impinger is to separate the

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		of the filter is? There is a standard Method 5 filter upstream with a 0.3 micron pore size, so what's the 0.5 micron filter for, just to prevent carryover like in the Method 8 train, where they want to keep IPA droplets out of the peroxide impingers? If carryover is the only purpose, couldn't you use a glass wool plug? These are the thoughts of one who has never used this method. I have copied the OTM-28 guru, Ron Myers, for his wisdom on this matter. I agree that starting a test run with an initial vacuum of 18 inches at a dH of only 0.8 is just asking for problems.	condensed water from the cooled sample gas. The second impinger has the stem down to the bottom of the impinger and that configuration more effectively removes entrained water droplets and conditions the gas to less than 85˚ F. The filter is used because the condensed particulate matter may not necessarily be combined with the condensed water and the filter is there to collect that particulate. In our laboratory experiments using SO_3 (which forms sulfuric acid mist), we have found sulfuric acid throughout the sample train. In fact, some SO_3 escapes collection even with the final filter in place. The collection efficiency appears to be lower for lower concentrations of SO_3. 3) Filters do not operate like sieves. Filters with pore sizes of 1 (or in fact 5) µm may demonstrate very efficient collection efficiencies for aerosols of 0.3 µm. The rationale for challenging filters with 0.3 µm DOP is that these size particles are the most difficult to collect. Particulate larger than 0.3 µm are collected primarily by interception (sieving) while particles smaller than 0.3 µm are collected by Brownian motion. Typical collection efficiencies for highly efficient filters increase on both sides of about 0.3 µm.

From:	<Myers.Ron@epamail.epa.gov>	***Index 1***
To:	"Jason Wolf" <wolfj2@michigan.gov>	
CC:	<Ray.Merrill@erg.com>, "Danny Greene" <Danny.Greene@erg.com>, "Joe Fanjoy" <joe.fanjoy@erg.com>, <Sorrell.Candace@epamail.epa.gov>, <Dewees.Jason@epamail.epa.gov>, <Gary_McAlister/RTP/USEPA/US@mintra02.rtp.epa.gov>	
Date:	7/8/2008 11:05 AM	
Subject:	Re: M202 & Ammonia	

Jason:
I know that in the past, many people have analyzed the contents of the impinger water to determine components that they assumed should not be counted as particulate matter. In fact, the promulgated M202 has a clause that allows people to evaporate the water at elevated temperature if they don't consider ammonium chloride particulate matter. The difficulty with the existing Method 202 is that there were too many opinion based options in the method and that one could get almost any number they wanted. As you might know we are investigating revisions to Method 202 to make the method more accurate and precise. To achieve that end we are using science based information to determine whether a given compound is or is not particulate. We are also employing sampling and analytical procedures that minimize the potential for the formation of artifacts. As a result we do not have some of the "adjustments" or procedures that vaporized collected particulate matter in the improved test method. At this time I can not think of a situation where OTM-28 would create particulate from gasses or vapors in the stack that would not be created after the stack gas is released to the atmosphere. Other than the adjustment for the mass of ammonia added to neutralize the acid component in the sample, the method does not have any adjustment for any acid or base compounds.

We have performed one limited laboratory assessment of the new Dry Impinger Test Method (OTM-28 - see bottom of http://www.epa.gov/ttn/emc/prelim.html) using a synthetic exhaust gas matrix that included the presence of ammonia at a low concentration. We expected the formation of ammonium sulfate (bisulfate, sulfite etc.) but the ammonia did not chemically combine with SO2, NO or NO2. We will repeat this laboratory assessment with some other gas matrices as we explore other matrices without ammonia present. Even if the chemical reaction did take place, I would expect that the reaction would occur upon release to the atmosphere. While the dry impinger method may not exactly replicate particulate formation, it is much closer to reality than alternatives that are comparable in difficulty to perform. For more detail on the process we have gone through to develop OTM-28 see http://www.epa.gov/ttn/emc/methods/method202.html#af .

If there are consultants that are critical of the improved condensable test method, I would support comparative testing with OTM-28 and our dilution sampling system (CTM-39) to identify components that are collected in OTM-28 and that a significant percentage passes through the filter after cooling to a comparable temperature in the dilution sampling system. There may be other alternative laboratory assessments that could identify artifact formation, but one would also want to have the laboratory assessment identify an alternative procedure that eliminates or reduces that artifact without reducing the quantification of particulate matter that should be included.

Let me know if you need additional information.

Ron Myers
U.S. Environmental Protection Agency
Office of Air Quality Planning and Standards
Sector Policy and Programs Division
Monitoring Policy Group, D243-05
RTP NC 27711
Tel. 919.541.5407
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E-mail myers.ron@epa.gov

"Jason Wolf"
<wolfj2@michigan
.gov>
To
Ron Myers/RTP/USEPA/US@EPA
07/08/2008 09:38
cc
AM
Subject
M202 & Ammonia

Ron,

Could you explain how appropriate Method 202 is to use on sources which have ammonia in the flue gas which forms ammonium sulfate in the impingers? My understanding is that the purge will not solve this problem.

Is it reasonable to analyze for ammonia in the inorganic CPM and subtract its weight from the results?

Would the dry impinger method be a better choice?

Thank you,

Jason

Jason Wolf
Michigan DEQ
Air Quality Division
P:517.373.4547
F:517.335.3122
wolfj2@michigan.gov

Index 2

From:	<Zach.Klotovich@deq.idaho.gov>
To:	<Myers.Ron@epamail.epa.gov>
CC:	<Sorrell.Candace@epamail.epa.gov>, <ray.merrill@erg.com>, <danny.greene@erg.com>, <joe.fanjoy@erg.com>, <Dewees.Jason@epamail.epa.gov>, <Mcalister.Gary@epamail.epa.gov>
Date:	7/15/2008 10:46 AM
Subject:	RE: Method 202 - Methylene Choride extraction

Ron and Candace,

Thank you for your response. This helps to confirm that if we allowed the omission of the methylene chloride rinse and extraction/evaporation steps that it would likely miss the organic fraction altogether. There was some thought here that the primary purpose of the methylene chloride extraction was just to separate the organic from the inorganic for informational purposes, and that since we don't regulate organic condensible separately from inorganic condensible that the separation was an unnecessary step.

Thanks for your confirmation that the methylene chloride steps are an integral part of Method 202.

Zach

From: Myers.Ron@epamail.epa.gov [mailto:Myers.Ron@epamail.epa.gov]
Sent: Monday, July 14, 2008 6:54 PM
To: Zach Klotovich
Cc: Sorrell.Candace@epamail.epa.gov; ray.merrill@erg.com; danny.greene@erg.com; joe.fanjoy@erg.com; Dewees.Jason@epamail.epa.gov; Mcalister.Gary@epamail.epa.gov
Subject: RE: Method 202 - Methylene Choride extraction

Zach:

Methylene Chloride is used because it is one of the few solvents that extracts a wide variety of organic solids from both the surfaces and the liquid. It also has the ability to separate these organic compounds from water. So, if only water and acetone was used to recover the sample train, one may not recover some of the organic compounds from the condenser walls, impinger sides and the front half of the filter holder. This may be a small percentage of the mass for some sources but would potentially show up as an artificially high blank. Also, within the laboratory analysis, if one were to omit the separation step and evaporate the combined sample (water with inorganic and organic CPM), one is likely to lose the lower molecular weight organic compounds if the first evaporation was at elevated temperatures. If we were to allow the combined evaporation, we would require that all of the evaporation occur at less than 85°F (the maximum filtration temperature allowed with the method). The evaporation of hundreds of ml's of water would take days or weeks. We are getting a few grumbles as a result of requiring the last 10 ml to be evaporated at room temperature. In revising the method for condensable PM, we have been trying to develop a method that is implemented consistently by ALL source testers and therefore consistent (accurate and precise) results within and among sources. The current Method 202 is highly criticized because of the myriad of options and alternative procedures within the method that provide a range of masses that can be obtained with the method.

Many people believe they know exactly what is the composition of the particulate matter emissions from sources. Unfortunately, my faith in my knowledge and in fact other "experts" has been shattered. Until, there is a lot of evidence that a given source type has essentially no organic (or alternatively inorganic) CPM, I would not want to make assumptions or take short cuts with the sampling and analytical procedures that we have developed. Also, I would think that we would want to know that the entire range of typical operating conditions would not result in any organic (or inorganic) CPM. Perhaps some time in the distant future, a alternative solvent that performs almost a good as MeCl and is devoid of safety and health issues will be found. I assume that Gary McAlister and I will be retired and forgotten by then.

I hope I have answered your question and provided you support to address the comments of those that are proposing to eliminate the organic extraction.

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-----<Zach.Klotovich@deq.idaho.gov> wrote: -----

To: Candace Sorrell/RTP/USEPA/US@EPA
From: <Zach.Klotovich@deq.idaho.gov>
Date: 07/14/2008 03:52PM
cc: Ron Myers/RTP/USEPA/US@EPA
Subject: RE: Method 202 - Methylene Choride extraction

There is not a particular set of sources that we are looking at. Most PM10 tests are required on various combustion sources. The question is whether to allow inorganic-only condensible emissions for state-required PM10 emissions tests.

-----Original Message-----
From: Sorrell.Candace@epamail.epa.gov
[mailto:Sorrell.Candace@epamail.epa.gov]
Sent: Monday, July 14, 2008 1:31 PM
To: Zach Klotovich
Cc: Myers.Ron@epamail.epa.gov
Subject: Re: Method 202 - Methylene Choride extraction

You are correct that the faction of organics to inorganics is dependent on the site and type of source and that difference varies widely. Are you asking this question about a particular source or couple of sources that we might could give you some idea. As for how much would be lost, I would think most if not all of the organic fraction would be lost due to the heating step.

Ron, If I am incorrect or you have additional information to add please feel free.

<Zach.Klotovich@
deq.idaho.gov>
To
07/14/2008 03:25 PM
Candace Sorrell/RTP/USEPA/US@EPA
cc

Subject
Method 202 - Methylene Choride extraction

Hello Candace,

In Idaho, we're contemplating a request from some source testers to excluded the methylene chloride rinse and extraction from Method 202 and handle all condensible emissions as inorganic condensible emissions.

This has come up due to concerns about the toxicity and possible carcinogenic effects of handling methylene chloride by testers, as well as the difficulty some testers claim to have had in getting methylene chloride allowed on site at some test locations.

Do you have any information regarding the amount of condensible particulate that is usually found in the organic fraction vs. inorganic fraction? I know it depends in large part on the source of emissions. Or, do you have information regarding how much of the organic fraction would be lost if the impinger catch is handled as only inorganic particulate? Would all of the organics be lost, or would some of the organics stay in the inorganic fraction?

Any background on this issue would be appreciated.

Zach Q. Klotovich, P.E.
Environmental Engineer
Idaho Dept. of Environmental Quality
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zach.klotovich@deq.idaho.gov

Index 3

From: <Myers.Ron@epamail.epa.gov>
To: "DeAnna Oser" <DeAnna.Oser@dnr.state.ga.us>
CC: <Ray.Merrill@erg.com>, "Danny Greene" <Danny.Greene@erg.com>, "Joe Fanjoy" <joe.fanjoy@erg.com>, <Dewees.Jason@epamail.epa.gov>, <Sorrell.Candace@epamail.epa.gov>, <Gary_McAlister/RTP/USEPA/US@mintra01.rtp.epa.gov>, <Bivins.Dan@epamail.epa.gov>
Date: 7/16/2008 12:49 PM
Subject: Re: Method 202 Question

DeAnna:
For Method 202 there could be a substantial amount of sulfate artifact (really H2SO4) in the impinger contents. If the nitrogen purge is performed one would expect that the sulfate content could be reduced by about 95% (from about 250 mg to 15 to 20 mg). As you may also surmise from this, for some sources 15 to 20 mg of artifact would be a significant percentage of their PM (PM10 or PM2.5) emissions. Yes, our current belief (knowledge) is that the artifact in Method 202 is created from SO2 that is converted to SO3 in the impinger water and then becomes hydrated with between two and eight waters. One could assume that if there were no SO2 then there would be no artifact in Method 202. An IC analysis will not be able to determine which sulfates (nitrates, chlorides etc.) would become PM and which may be artifacts. I'm not sure that our knowledge is that great on what acidic or basic gases and vapors will create particulate matter in the atmosphere and what might create an artifact in the impingers. I think we have come to a belief that the culprit in the artifact formation is liquid water and that more water translates into more artifact.

I would suggest that for the best picture of what are the condensable PM emissions, you recommend the use of OTM28, I would even suggest that for air quality management purposes, you pair that test method with OTM27. If you get resistance on measuring PM10 and PM2.5 using OTM27 because of the port size for access of the cyclone, you could at least get PM2.5 by excluding the larger cyclone that makes it difficult to fit into a 4" port.

Also, if this test is being performed to get an understanding of the ambient air implications, it may be worthwhile to suggest that an ion chromatography analysis of the impinger contents for sulfates, nitrates, chlorides, fluorides so that you could pair that with the ambient air analyses at the PM2.5 ambient air speciation monitors. You may also want to consider the use of a Teflon membrane (or quartz filter) and have the filter analyzed for metals (those included in the speciation samplers). I'm sure that this is more than what the source will want to perform and I'm not sure how important it would be to your State unless there is a likely probability that there will be PM2.5 non attainment areas that are likely to have this source to be a significant contributor to the cause of the high ambient air concentrations.

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"DeAnna Oser"
<DeAnna.Oser@dnr
.state.ga.us>
07/16/2008 10:42
AM

To
Ron Myers/RTP/USEPA/US@EPA
cc

Subject
Method 202 Question

Ron,

I understood from a conversation we had a while back that for Method 202, anything that is a sulfate in the impinger water was not in particulate form in the stack and therefore can be discounted. Did I understand correctly? Is this approach valid only if you do the nitrogen purge as recommended and if there is no sulfur in the fuel to form sulfates in the exhaust? On a wood-fired boiler would you have sulfates that would be seen by the IC analysis and be indistinguishable from other artifacts formed after capture?

We are preparing to do some testing on a wood fired boiler and want to get a good picture of what is condensible.

Thanks.

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 · www.aqmd.gov

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Office of the Executive Officer
Barry R. Wallerstein, D. Env.
909.396.2100 fax 909.396.3340

July 18, 2008

Ron Myers
U.S. Environmental Protection Agency
Office of Air Quality Planning and Standards Sector Policy and Programs Division
Monitoring Policy Group
D243-05
RTP NC 27711

Subject: Solicitation for Comments on Proposed Modified EPA Method 202

Dear Ron,

Thank you for the opportunity to comment on the proposed modifications to U.S. Environmental Protection Agency (EPA) Method 202 for Condensable Particulate Matter (CPM). The South Coast Air Quality Management District (AQMD) comments are similar to comments that we had previously submitted to EPA regarding EPA Method CTM-039. These comments were sent to EPA in an October 11, 2006 letter from Barry Wallerstein to Deborah Jordan of Region IX (copy attached).

In its response to that letter, EPA suggested that AQMD develop regulations with separate limits and testing for primary PM and PM precursors. While we do not disagree that this would be beneficial in terms of providing distinct definitions for the allowable limits and corresponding test methods, we are also concerned with being able to enforce our existing regulations in the interim period. Our concerns are that the proposed modifications to Method 202 may measure less of the PM and PM precursor emissions than the existing AQMD approved methods including Method 202, and, therefore, may lessen the stringency of existing AQMD regulations. Included in these existing regulations is Regulation XIII for our emissions credits and offsets program.

To give a history of AQMD's implementation of PM test method applicability, our agency has always required that PM testing include a CPM contribution even prior to the development of Method 202. When EPA Method 202 was completed in the mid 1990s, AQMD had previously required the use of the AQMD Method 5 series for determining

CPM and condensable PM_{10}. At that time, we were receptive to the use of Method 202 since we had concluded that it would not under-report CPM as compared to AQMD methods. Maintaining that stringency is critical in our District, since the AQMD methods are used for establishing standards in our Air Quality Management Plan and rule development, as well as for compliance with our rules and regulations, and establishing emission credits. The proposed modifications to Method 202 may lessen the apparent (measured) amount of CPM as compared to the existing method and has potential negative air quality ramifications in the South Coast air basin.

We have noticed that EPA has cited the July 3, 2007 test report from the Alliance of Automobile Manufacturers (Alliance) to conclude that there is no statistical difference between results by the existing and proposed modified Method 202. This testing consisted of eight test runs on a transmission manufacturing oil mist filtration device for a comparison between the existing and modified Method 202. Our first concern is that this may not represent the same comparison for facilities in the South Coast including those that involve natural gas combustion and ammonia injection. The condensable contributions can be more significant in these types of sources for which the filterable PM contribution is low and the inorganic condensables account for the largest portion of the CPM. Our second concern is that when considering the raw Alliance data before statistical manipulation, the average emissions are 36% higher by existing Method 202 than the modified method. Additionally, the existing Method 202 yielded higher results in seven out of the eight runs. Because of the 36% average difference, stationary sources on average could potentially increase their emissions by 36% and remain in compliance with their existing limits by switching to the modified method. Unless existing rule and permit limits are changed, a 36% increase in PM emissions from stationary sources may occur. This difference may be more pronounced when considering that higher inorganic contributions are encountered in the South Coast.

The term, "artifact" is often used to describe inorganic formation in Method 202 impingers. We understand that this term is applicable to coal fired and other sources where large amounts of un-purgable SO_2 are collected in Method 202 samples. We do not agree, however, that the term "artifact" applies to many sources in AQMD since our inorganic catches typically consist of both cations and anions that combine to make a solid ionic salt when the water is removed. This is analogous to what occurs in the Los Angeles Basin ambient air and is also typical of that which we find in our resulting ambient air PM2.5 samples. This, along with our offset program in which CPM has historically been included when generating, selling, or using credits, makes it mandatory that we continue to include CPM in all PM tests.

For these reasons, we would not be able to use the proposed modified Method 202 without further comparison tests. If at a later time it can be shown that the modified Method 202 does not underreport CPM as compared to the AQMD Method 5 series for the specific types of sources in AQMD, we might be willing to consider supporting its use for those types of sources. We, therefore, do not oppose the adoption of the modified Method, but ask that existing Method 202 remain as an active test method. If EPA chooses not to keep existing Method 202 active, it is our intention to require the use of the AQMD methods for CPM until such time as equivalency can be demonstrated. Your agreement and support for our test method implementation for these applications in AQMD would be appreciated.

Thank you for your consideration and please contact Mike Garibay at (909) 396-2249 or mgaribay @aqmd.gov if you would like to further discuss the matter.

Sincerely,

Barry R. Wallerstein, D. Env.
Executive Officer

CSL:MN:RWE:MG

Attachment

cc:
Chung Liu
Mohsen Nazemi
Rudy Eden
Stan Tong (EPA Region IX)

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
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Office of the Executive Officer
Barry R. Wallerstein, D. Env.
909.396.2100 fax 909.396.3340

October 11, 2006

Ms. Deborah Jordan, Director
United States Environmental Protection Agency (EPA), Region IX
Air Division
75 Hawthorne Street
San Francisco, CA 94105

Reference: Source Test Methods for Particulate Matter (PM)

Dear Ms. Jordan:

The South Coast Air Quality Management District (AQMD) has recently received requests from General Electric (GE) for approval to use U.S. Environmental Protection Agency (EPA) Conditional Test Method number CTM-039 for fine particulate matter (PM_{10}) source testing within the AQMD jurisdiction. In particular, representatives for GE requested to use CTM-039 for combined cycle gas turbines in response to both the regional demand for electrical generation and the recent rise in local PM_{10} credit costs for new projects. CTM-039 and other alternative test methods were proposed for the primary reason that they will yield substantially lower PM test results as compared to the existing approved source testing methods. Historically, the AQMD approves only PM source testing methods that include the water impinger sample contributions (also known as back half, condensables, secondary PM, or precursors) such as with EPA Method 202 or the AQMD Method 5 series.

Staff believes that use of the proposed alternative method CTM-039 will have a detriment to air quality and make it more difficult to meet federally-mandated particulate standards since:

- The ionic species from PM sources including (ammonium, sulfate, and nitrate), which are considered as secondary PM or PM precursors and contribute to a large portion of our ambient PM, would be under-reported.
- Measured PM emissions would not include all particulate species defined by AQMD Rule 102 as finely divided material that exists as liquid or solid at standard conditions.

- The stringency of AQMD regulations would be diminished since less of the PM is measured as compared to the test methods currently in use. This will jeopardize the integrity of AQMD's compliance program.
- New facilities being proposed or existing permitted facilities would be permitted with fewer particulate ERCs than actual emissions would necessitate.

Since U.S. EPA has designated the South Coast Air Basin as one of the worse non-attainment areas in the nation for particulates, the AQMD requests that U.S. EPA recognizes that it is appropriate for the AQMD to choose which U.S. EPA source test methods are applicable for our regional PM characteristics and sources. Additionally, we request that EPA recognizes that PM test methods, such as CTM-039, that do not include a wet impinger contribution, be considered as not applicable nor acceptable for compliance in the AQMD jurisdiction at this time.

Thank you for your consideration of this matter. If there are any questions or comments please call Mr. Rudy Eden at (909) 396-2391.

Sincerely,

Barry R. Wallerstein, D. Env.
Executive Officer

CSL:MN:HH:RWE:MG

cc: Matt Haber, U.S. EPA
Ron Meyer, U.S. EPA
Tom Logan, U.S. EPA
Steve Fry, U.S. EPA

From: <Myers.Ron@epamail.epa.gov>
To: "Terrance Madden" <MADDENT@michigan.gov>
CC: <Ray.Merrill@erg.com>, "Danny Greene" <Danny.Greene@erg.com>, "Joe Fanjoy" <joe.fanjoy@erg.com>, <Sorrell.Candace@epamail.epa.gov>, <Dewees.Jason@epamail.epa.gov>, <Gary_McAlister/RTP/USEPA/US@mintra01.rtp.epa.gov>, <Bivins.Dan@epamail.epa.gov>
Date: 7/22/2008 4:50 PM
Subject: Re: Ron, I was reading the new SES newsletter and came across the article by Roger Shigehara regarding

In the most recent update of the OTM28 method (really the first time that we have called the dry impinger method OTM28) we provided a broad range of filter sizes for the CPM (backup) filter but specified the use of a Teflon membrane filter. The previous version allowed the use of a fiber filter but since we are extracting the filter with water and MeCl to address a constant weight issue with the weighing of the filter we switched to a membrane filter so we did not have to deal with the fibers. Chuck Duncan and Roy Owens were on a job and were using 47 mm filters. They had to use over 20" suction to achieve the flow rate they wanted with a Method 5 train. They were able to get the sampling train to work but only marginally. We obtained various Teflon membrane filters and ran them in a simulated OTM28 sampling train with an improved filter support compared to what Chuck Duncan was using and with a Method 5 filter ahead of the OTM train. What we found was that at about 0.5 cfm, the vacuum required to pull the sample volume increased to an unacceptable level.

____

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E-mail myers.ron@epa.gov

"Terrance Madden" <MADDENT@michigan.gov>
07/22/2008 11:44 AM

To
i:myers.ron
cc

Subject
Ron, I was reading the new SES newsletter and came across the article by Roger Shigehara regarding

Ron, I was reading the new SES newsletter and came across the article by Roger Shigehara regarding OTM 27 and OTM 28. I copied a small section below in which you had apparently mentioned that 47 mm filters would be of marginal use with Method 5 above flows of 0.5 cfm. Could you explain that a little further? (i.e. why is that?) Thanks.

Method 202 FAQ page, here are the links;

OTM 27 - http://www.epa.gov/ttn/emc/prelim/otm27.pdf
OTM 28 - http://www.epa.gov/ttn/emc/prelim/otm28.pdf
Subsequent to the above, Ron added the following:

There have been a few minor updates. For one, we have looked at the pressure drop across the membrane filters and found that a 47 mm filter will be marginal for use with Method 5 at flows above 0.5 cfm. Ray is performing some additional lab evaluations for EPRI that will give us information on the performance of the method under different gas conditions. Most of the information that I put in the FAQ page and send to the stakeholders is completed work or work that is at a point where input from the stakeholders is timely.

Ray Merrill - Re: Method 202

From: <Myers.Ron@epamail.epa.gov> ***Index 6***
To: "Tom Stolzenburg" <Tom.Stolzenburg@rmtinc.com>
Date: 7/25/2008 2:03 PM
Subject: Re: Method 202
CC: <ray.merrill@erg.com>, <Dewees.Jason@epamail.epa.gov>, <Sorrell.Candace@epamail.epa.gov>, <Mcalister.Gary@epamail.epa.gov>

Tom:
I assume that the boiler was not using ammonia injection. If there was ammonia injection it may be some form of ammonia and sulfur (ammonium sulfate, sulfite, bisulfate, bisulfite etc.)

If there was no ammonia injection, I'm not sure what is the white powder in your inorganic portion of Method 202 sample. We have performed IC analysis of the impinger portion but that would only give you anions and cations. I have heard of a jelly like mass that was due to a lubricant used in natural gas pipeline systems, but not white powder. Was this white powder in every sample? If it was in only the first run, it may have been from contamination in the regulator for the nitrogen purge. If it was in all three samples it may be a contaminated nitrogen cylinder (That is if you used the nitrogen purge, which we highly recommend.). If you have the nitrogen cylinder, do a purge on an impinger with good quality DI water. In OTM-28 (a probable replacement for 202) we specify the use of a high quality nitrogen and the use of a filter between the regulator and the impinger.

What specific procedures that are allowed in M202 did you perform? Some of those may affect the mass you get with M202. What level of PM was collected in the inorganic fraction. If you did not perform the nitrogen purge, you may have considerable sulfate artifact and that may combine with something else in the sample.

I have coppied this reply to several other people that may hazzard a guess at the white powder.

As a suggestion, if you perform future M202's, consider using OTM-28 in its place. You would need to get approval from the regulatory agency (State or EPA region). If you get push back, I would be willing to join the discussion to explore their reason for continuing with M202. As a minimum, I would suggest some specific options in M202 to achieve the most consistent results and that are closest to condensable PM emissions to the atmosphere.

Ron Myers
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Sector Policy and Programs Division
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Tel. 919.541.5407
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E-mail myers.ron@epa.gov

-----"Tom Stolzenburg" <Tom.Stolzenburg@rmtinc.com> wrote: -----

> To: Ron Myers/RTP/USEPA/US@EPA
> From: "Tom Stolzenburg" <Tom.Stolzenburg@rmtinc.com>
> Date: 07/24/2008 05:34PM
> Subject: Method 202
>
> For a natural gas boiler, we found a white powder in the inorganic fraction of the impingers (method 202). We are scratching our heads as to what analysis to perform on it to determine what it is. (We certainly did not expect to find anything). Do you have any advice, given that we have so little to work with?
>
> Thank you.

Index 7

From: <Myers.Ron@epamail.epa.gov>
To: "Jim Schifo" <jfs@keramida.com>
CC: "Keith Baugues" <kab@keramida.com>, "Paul Dubenetzky" <pd@keramida.com>, <Gary_McAlister/RTP/USEPA/US@mintra01.rtp.epa.gov>, <Sorrell.Candace@epamail.epa.gov>, <Dewees.Jason@epamail.epa.gov>, <Ray.Merrill@erg.com>, "Danny Greene" <Danny.Greene@erg.com>, "Joe Fanjoy" <joe.fanjoy@erg.com>, <Westlin.Peter@epamail.epa.gov>
Date: 7/30/2008 10:45 AM
Subject: Re: FW: PM/PM10 Test Protocols

Jim:
The short answer is that Method 5E does not measure PM10 emissions (filterable and condensable). I can not even hazard a guess as to whether Method 5E performed on a wool fiberglass forming line would result in a higher or lower mass compared to Method 202 (or OTM28). You did not mention what is the PSD issue. If it is demonstrating compliance to a limit established in the PSD process, the permit should describe the test method that should be used for compliance. If the PSD issue is one of threshold, then I would think that the combination of Method 201A and 202 would be a good starting point (except for determining which of the myriad of alternative procedures in M202 are applicable).

There are several issues that would make using Method 5E not the best method for showing compliance with PSD (thresholds or limits). First, Method 5E has no particle sizing and the filterable component would include particles that are greater than 10 uM as well as those that are equal or less than 10 uM. Next, the impinger portion is collecting the inorganic and organic fractions in a sodium hydroxide solution and analyzed for TOC using a method that also subtracts inorganic carbon and may not arrive at an actual mass of even the organic carbon that is collected in the sample. I'm not sure where the inorganic carbon comes from (since one might assume that the inorganic carbon would not be volatile and would be collected on the filter unless it is formed in the impingers) and whether the organic carbon mass determined by 5E is the same as the physical mass of organic carbon collected in the impingers.

There are probably more reasons why the impinger analysis used by Method 5E would not yield comparable results to Method 202 (with purge) or to the improved condensable PM test method (OTM28). I have copied this e-mail to others that are more familiar with Method 5E and Method 202 (and OTM28). They may want to add some to my discussion or correct my errors.

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"Jim Schifo"
<jfs@keramida.com>
07/29/2008 04:22 PM

To
Ron Myers/RTP/USEPA/US@EPA

cc
"Paul Dubenetzky" <pd@keramida.com>, "Keith Baugues" <kab@keramida.com>

Subject
FW: PM/PM10 Test Protocols

Ron,

Good afternoon. I hope all is well.

I am Jim Schifo, Keramida Environmental, Inc., out of Indianapolis, IN.

I did an AWMA workshop with you in Indianapolis last year on stack test methods.

I am writing this E-mail to ask for information concerning the use of Method 5E, “Determination of Particulate matter Emissions From the Wool Fiberglass Insulation Manufacturing Industry”.

I am working for a client who is performing compliance testing on a Forming and Collection operation at an unbonded fiberglass manufacturing plant.
We have found some inconsistencies on what test methods are used to showing compliance with PM/PM10 limits. M5E is mentioned in the NSPS, PPP, but it is not clear from the protocol when this test should be used.

Is M5E to be used to determine PM10 to show compliance with PSD? Only to show that they meet the NSPS BACT Limits? Or for all PM10 testing for these processes.

We have reviewed existing permits for this type of facility and in some cases they were required to run M5E and then go back and run a second test with method M5 and M202.

Any help would be appreciated,

Jim Schifo, VP
Keramida Environmental, Inc.
401 North College Ave.
Indianapolis, IN 46202
317-685-6620
317-506-8945 Cell

Index 8

From: <Myers.Ron@epamail.epa.gov>
To: "Beeson,Gary" <hgbeeson@deq.virginia.gov>
CC: <Ray.Merrill@erg.com>, "Danny Greene" <Danny.Greene@erg.com>, <Sorrell.Candace@epamail.epa.gov>, <Dewees.Jason@epamail.epa.gov>, "Joe Fanjoy" <joe.fanjoy@erg.com>
Date: 7/30/2008 11:13 AM
Subject: Re: OTM 27

Gary:
As best as I can remember, the biggest change between CTM-40 and OTM28 is the formatting. OTM28 is formatted with the EMMC format whereas CTM40 used the historical formatting. I do know that from a technical standpoint, we have removed the discussion of using multiple nozzle sizes that was in CTM40 as this diverts from obtaining a proportional sample in the stack. I tried to perform a compare documents between CTM-40 and what we have posted to the web and Word thinks that 90 to 95% of the document has changed. That is because Word is looking at every little detail and when text moves from one area to another it thinks there were two changes.

As a result of requesting comments on the two OTM methods (27 and 28) we will be revising OTM27 to add a figure and table for nozzles when the tester is using only the PM2.5 cyclone. We are also revising some text to clarify some details of the method.

Ron Myers
U.S. Environmental Protection Agency
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Sector Policy and Programs Division
Monitoring Policy Group, D243-05
RTP NC 27711
Tel. 919.541.5407
Fax 919.541.1039
E-mail myers.ron@epa.gov

"Beeson,Gary"
<hgbeeson@deq.virginia.gov>
07/30/2008 08:28 AM

To
Ron Myers/RTP/USEPA/US@EPA
cc

Subject
OTM 27

Mr. Myers:

My name is Gary Beeson and I work for the Commonwealth of Virginia in the Air Division. I was wondering if there was a comparison document between methods CTM 040 and OTM 27. We are trying to do this comparison today for a meeting and if that work has already been completed it would speed up our review of these methods

Thanks,
Gary
P Please consider the environment before printing this message.

Howard G. (Gary) Beeson
Northern Virginia Regional Office
Virginia Department of Environmental Quality
13901 Crown Court
Woodbridge, VA 22193
Phone: (703) 583-3969
FAX: (703) 583-3841

From: <Myers.Ron@epamail.epa.gov> ***Index 9***
To: "Begley, Rick" <rbegley@state.pa.us>
CC: "Clark, David (DEP)" <davclark@state.pa.us>, <Segall.Robin@epamail.epa.gov>, <Dewees.Jason@epamail.epa.gov>, <Ray.Merrill@erg.com>, "Joe Fanjoy" <joe.fanjoy@erg.com>, <Sorrell.Candace@epamail.epa.gov>, <Bivins.Dan@epamail.epa.gov>, "Danny Greene" <Danny.Greene@erg.com>
Date: 8/1/2008 3:04 PM
Subject: Re: Thoughts on Turbine PM Testing

Rick:
I think that is a reasonable modification for gas fired sources since my experience is that the front half filter does not generally get a measurable mass of particulate even when the sampling period is multiple hours (4 to 6). As a result combining all the mass into one portion of the sampling train addresses the issue of having two to four parts of the collected sample being below the detection limit and coming to the conclusion that the emissions is zero or some multiple of the detection limit (or half the detection limit depending on how BDL's are handled in PA). I have heard that some testers have encountered a few isolated rocks (PM > 10 uM) in isolated test runs. No one can think of where these rocks may have come from since the turbines have inlet filters and the blades are not breaking apart. I would have concerns if there was a quantifiable amount of PM collected by the front half filter since it may create analysis problems with the back half material. I would require the use of the back up filter if they use M202 as the particulate that would have been collected on the front half filter would not be collected in the impingers with any great efficiency. I think that OTM28 may be a better method to address the issues of artifact biases and of BDL on multiple components. For long sampling times, the water condensed from the source combined with the water in the impingers may result in a large percentage of artifact compared to the PM emission. Also, if the membrane filter is sonicated without folding it to fit into a small tube it should provide a better ability to dislodge material and get it into suspension in water or MeCl. I would think that the six sonications would get much of the ultrafine PM off the filter and allow it to be a part of either the inorganic or organic fraction that are weighed separately.

If sources in PA use this alternative and OTM28, I would like to know whether this results in an actual measurement of mass from a gas turbine (with or without ammonia injection) as some think that all of the inorganic CPM from gas combustion is an artifact of M202. I would think that the use of M202 even with the nitrogen purge would result in some inorganic CPM.

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"Begley, Rick"
<rbegley@state.pa.us>
08/01/2008 10:11 AM

To
Ron Myers/RTP/USEPA/US@EPA
cc
"Clark, David \(DEP\)" <davclark@state.pa.us>
Subject
Thoughts on Turbine PM Testing

Ron,

What are you thoughts about running a particulate test using just one of the back half methods, M202 or OTM28, (i.e.. no method 5 filter box or cyclone) to determine total PM?

This would be considered only for applications such as natural gas fired combustion turbines where no filterable PM is expected, but are required to test for total PM.

The sampling would be the same, but the probe/heated sample line would be connected directly to the back half and all PM collected would be considered total PM.

This idea came up as a way to eliminate potential error caused by attempting to weigh negligible filterable PM.

What do you think of this proposal?

rb

Index 10

From: <Myers.Ron@epamail.epa.gov>
To: "Skubinna, Paul" <PSkubinna@mt.gov>
CC: <Dewees.Jason@epamail.epa.gov>, <Sorrell.Candace@epamail.epa.gov>, <Oldham.Conniesue@epamail.epa.gov>, <Schell.Bob@epamail.epa.gov>, <Ray.Merrill@erg.com>, "Danny Greene" <Danny.Greene@erg.com>, "Joe Fanjoy" <joe.fanjoy@erg.com>
Date: 8/11/2008 4:41 PM
Subject: Re: OTM27 and 28

Paul:
During the review process, a few editorial glitches were found and a few technical issues were identified. The two technical issues that I remember are that we did not have figures and tables describing the nozzle design for use when only performing PM2.5 measurements (the inlet to the cyclone is smaller in diameter than the inlet to the PM10 cyclone). Also, the factor for the correcting for the amount of ammonium mass used to neutralize the sulfuric acid and arrive at a SO3 mass required changing. I will be posting an updated OTM27 and OTM28 within the next two to three weeks.

At the same time I post the update of OTM27 and 28 I will also be posting an update of the comments (using a very broad definition of comment) that we have received and have developed a response to address the comment.

It is our intent to propose the revision of Method 201A and 202 using OTM27 and 28. I can not guarantee that what I will post as OTM27 and 28 will be what will be proposed for Method 201A and 202 since the proposal package is making its way through the various levels of EPA. Given the lack of technical expertise in stack testing, I would doubt that there will be any substantive changes in the way the method is performed. There will probably be several editorial changes to clarify text or to say something in a different way. Also, recognize that we are proposing the method and will accept comment from a much broader audience. There may be some industry, state, test contractor, consultant etc. that will propose some change to the method to reduce or eliminate some portion of the method. While I can't imagine many modifications that some one might propose that would improve the method significantly and would not entail a lot of additional effort, I would not dismiss this possibility.
In order to convince us that the method should be changed we would want some supporting data or have a good basis to indicate that the modification does improve the precision and accuracy of the method.

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"Skubinna, Paul"
<PSkubinna@mt.gov>
To
Ron Myers/RTP/USEPA/US@EPA
08/08/2008 05:43 PM
cc

Subject
OTM27 and 28

Hello Ron, We are nearly ready to public noticing a NSR PSD PM2.5 specific BACT analysis for new coal fired electric generation facility here in Montana. Prior to setting final permit conditions and requirements I wanted to check with you on the status of OTM27 and 28.

Were there significant results or changes from the comments your received (up to June 27)?
Is there a possibility to review comments received and any EPA responses?
Does EPA intend to promulgate the OTMs or incorporate them as official Reference Methods?

I am certain you are flooded with these same questions from numerous other people, however, any info would be greatly appreciated and very relatively to formulating permit conditions from the 2.5 BACT I am working on. Any help is greatly appreciated.

Thanks

--Paul

Paul Skubinna
Environmental Engineer
Air Resources Management Bureau
Montana Department of Environmental Quality
406.444.6711

Index 11

From:	<Myers.Ron@epamail.epa.gov>
To:	<jackson@airnova.com>
CC:	<Schell.Bob@epamail.epa.gov>, <Sorrell.Candace@epamail.epa.gov>, <Sorrell.Candace@epamail.epa.gov>, <Danny.Greene@erg.com>, "Fred Ballay" <Fred.Ballay@dep.state.nj.us>, Gary_McAlister/RTP/USEPA/US <Gary_McAlister/RTP/USEPA/US@mintra01.rtp.epa.gov>, <Schell.Bob@epamail.epa.gov>, <joe.fanjoy@erg.com>, "John Jenks" <John.Jenks@dep.state.nj.us>, "Michael Klein" <Michael.Klein@dep.state.nj.us>, <Ray.Merrill@erg.com>
Date:	8/13/2008 1:26 PM
Subject:	Re: AirNova - questions about OTM28 dry impinger 202

Joe:
First, the organic methods are heated to those temperatures to reduce the background of those specific chemicals. Those chemicals are parts per million (probably billion) of a milieu of inorganic and organic materials retained on the glassware after washing and rinsing with solvent. It is not unreasonable to believe that these ug and ng quantities of dioxins, PCB's, pesticides etc. are associated with total masses of all compounds in the 4 to 8 mg level. This is the differences that we are seeing in the glassware oven dried at 100 C and 300 C. There may be a lower temperature that would achieve the same results as the overnight preparation at 300 C but we have no data to substantiate the efficacy of a lower temperature. We have in the method a maximum blank value that one is allowed to subtract. This blank value is based upon overnight oven drying at 300 C, the use of very high quality solvents and the use of impeccable technique. A source tester that does not use the same quality of preparation, reagents and field technique is potentially exposing their client to adverse results since any excessive blank results will be attributed to the sources emissions and not subtracted. The test method could have been written without any quality specifications for glass preparation, solvent quality, verification of solvent quality or attention to technique and the blank results would reveal those situations where testers were remiss in their application of the level of cleanliness that this method puts into place. All of the specifications that we have incorporated into the method assist the tester and the laboratory to achieve the quality indicator that we have established using the maximum blank correction.

With respect to the comparison of blank values in M202 and OTM 28, Method 202 only used residue blanks from the solvents used in the method. Some of the variability observed in the method may actually be partially due to the variable residues associated with the glassware. It was probably not a significant component of the total variability of the method since the inorganic mass is dependent on the relative amount of SO_2 converted to SO_3 and the ability to weigh the H_2SO_4 created, the residues that may be added with lower quality nitrogen and the lack of filtration, the higher residue levels allowed in Method 202 and the individual testers selection of the alternative methods M202 allows.

I do not think that Teflon baggies were used. If they were used, I do not know the kind of balance static control that was use in the weighing of the Teflon baggies. Ray Merrill or Joe Fanjoy may be able to let you know their weighing methodology.

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<jackson@airnova.com>

To

08/13/2008 11:31 AM
"John Jenks" <John.Jenks@dep.state.nj.us>, Ron Myers/RTP/USEPA/US@EPA
cc
"Fred Ballay" <Fred.Ballay@dep.state.nj.us>, "Michael Klein" <Michael.Klein@dep.state.nj.us>, Jason Dewees/RTP/USEPA/US@EPA, Conniesue Oldham/RTP/USEPA/US@EPA, Bob Schell/RTP/USEPA/US@EPA, Candace Sorrell/RTP/USEPA/US@EPA, <Danny.Greene@erg.com>, <joe.fanjoy@erg.com>, <Ray.Merrill@erg.com>, Gary_McAlister/RTP/USEPA/US <Gary_McAlister/RTP/USEPA/US@mintra01.rtp.epa.gov>
Subject
Re: AirNova - questions about OTM28 dry impinger 202

Standard Methods give a bunch of oven drying temps (400C for 15-20 min. for pesticides, overnight @ 500C for PCBs). These SOPs are for analysis of ug to ng quantities. I am still not sure why the blank glassware in the dry impinger method would give more variable results than the same glassware in the wet 202 method. What kind of balance static control was used during the program and was Teflon baggie usage attempted for low level mass weighing?

Joe Jackson, QEP
AirNova, Inc.

----- Original Message -----
From: "John Jenks" <John.Jenks@dep.state.nj.us>
To: <jackson@airnova.com>; <Myers.Ron@epamail.epa.gov>
Cc: "Fred Ballay" <Fred.Ballay@dep.state.nj.us>; "Michael Klein" <Michael.Klein@dep.state.nj.us>; <Dewees.Jason@epamail.epa.gov>; <Oldham.Conniesue@epamail.epa.gov>; <Schell.Bob@epamail.epa.gov>; <Sorrell.Candace@epamail.epa.gov>; <Danny.Greene@erg.com>; <joe.fanjoy@erg.com>; <Ray.Merrill@erg.com>; <Gary_McAlister/RTP/USEPA/US@mintra01.rtp.epa.gov>
Sent: Monday, August 11, 2008 10:40 AM
Subject: Re: AirNova - questions about OTM28 dry impinger 202

Doesn't Standard Methods use 180 degrees C? Pyrene and related compounds are some of the ones we need to be concerned about to insure cleanliness.
Pyrene has a mp of 150oC, not sure of the bp but probably +100oC higher.
I'm uncomfortable making blank corrections (it's my organic analysis background). We can discuss this.

John Jenks
Bureau Chief
NJDEP/Bureau of Technical Services
609-530-4041 (Scotch Rd.)
609-633-1113 (401 E. State)
.

>>> <Myers.Ron@epamail.epa.gov> 8/4/2008 2:57 PM >>>
Joe:
I have received this request from a couple of source testers and labs.
At this juncture, I do not want to respond definitively to the comments and possibly revise the OTM method to use a lower temperature and incorporate a note concerning the potential impact. If these comments are made after the method is proposed in the FR, I can decide whether to leave the temperature at 300°C or to revise it to a lower temperature.

A little explanation may be in order. At this time we have data based upon several laboratory tests that at 100°C that there is a highly variable blank value that adversely impacts the performance of the method. We also have data based upon several laboratory tests that at 300°C that the blank value is lower and more consistent and therefore does not adversely impact the performance of the method. We have no data between these two temperatures to provide us with definitive information on the temperature at which the glassware's previous exposures have been eliminated and one has removed the residue that adversely affects the performance of the test method. We do have a requirement to perform field blanks that would potentially identify situations where one may question some components of the conduct of the emissions test. We have also provided a safety back stop to encourage source testers to use glassware, solvents and techniques representative of good performance of the test method. This is done by limiting the blank correction allowed in the method. I would like to have additional data on the performance of one or more alternative glassware preparation procedures to more clearly characterize when acceptable performance could be expected. Without this additional data, I will be faced with making a decision between leaving the temperature at 300°C (with the potential cost impact to the source tester to purchase an oven that can achieve this temperature) or to revise the requirement to a lower temperature and include a note to the effect that the source tester may encounter high results due to the inability to completely clean the glassware and achieve low blank values.

With respect to your request for a vendor, I can not recommend any specific vendor. I do know that Pall (http://labfilters.pall.com/catalog/924_20061.asp) has a wide variety of filters that would meet the requirement for the method. There are probably other lab supply companies that provide comparable filters at competitive prices. For your information I am attaching the web pages from the pall catalog. You will have to contact Pall for their documentation of their results of the ASTM tests.

(See attached file: labfilters_pall_com_catalog_924_20061.pdf)

I can understand NJ wanting to abide by the strict requirements of the OTM 28 method. But if you want to discuss alternatives to the method as we have posted it to the OTM web site and NJ is willing to discuss the alternatives you propose, I would be willing to participate as well.
You realize that my position will be that you, the source tested and the source test contractor will be liable for any possible high test results that may occur as a result of inadequate glass cleaning. I would inform NJ that the blank requirements included in the method would offer them indication that some component of the source tester's effort may be in question as evidenced by a high blank value which according to the method can not be completely subtracted from the sample run masses.

I do not know of anyone that has used H_2O_2 in the moisture drop out impingers to quantify SO_2 emissions. In our laboratory experiments, we have used over kill by using a CEM (FTIR I believe) to quantify the SO_2, NO, NO_2 concentrations as well as the SO_3 and NH_4 concentrations.

As you can see, I have copied this e-mail to several people. I am sure that if there needs any additional clarification, they will provide you with the additional information that they think should be provided.

Ron Myers
U.S. Environmental Protection Agency
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<jackson@airnova.com>
08/04/2008 11:20 AM

To
Ron Myers/RTP/USEPA/US@EPA

cc

Subject
AirNova - questions about OTM28 dry impinger 202

Hi Ron,

I talked with Gary McAlister on Friday about some of the newer additions that were added to the May 1, 2008 OTN28 version.

I was hoping that the 300 degree Celsius oven requirement was meant to be 300F. Gary told me that the contract lab happened to have an oven that went that high and most likely did not investigate lower temperatures. I am concerned that most labs do not have this capability (my oven only goes to 475F). Bill Howe was at the stakeholders meeting and thought it was 300F. I know the comment period has ended which will make it difficult to change in the method. Could you verify that temperature? Maybe an addition statement to the method (to include the glassware baking temp instead of having an absolute temp) could be added.

Also, could you tell me the vender name for the Teflon membranes that meet the 99.95% efficiency of 0.5 micron particles. Could you send me the supplier's quality control test data for the EPRI results? I normally use Zitex "fibrous" Teflon membranes.

NJ DEP wants to implement the dry 202 method ASAP and they also want firms to strictly follow the method. As we move towards the dry impinger method, we are hoping to establish reasonable company SOPs that can be followed without being overburdened. If you have any information that describes the variable blank issue that led to the oven bakeout procedure, I would like to see it and present it to NJ DEP. I hope the issue of static control of the analytical balance has played a big part of blank issue discussions. I have worked very hard to eliminate our variability in balance measurements (in the tenths to hundredths of a milligram range) through static control. We perform the wet 202 method routinely and see no problems with blank results in the aqueous and MeCl2 fractions (MDL= 0.3 mg).

Finally, do you know if anyone has tried to place H2O2 in the moisture knockout impingers to also obtain the SO2 concentration? This seems like an easy addition to the method to allow for SO2 determination also.

Thanks for any help,

Joe Jackson, QEP

Laboratory Director

AirNova, Inc., 5845 Clayton Ave., Pennsauken, NJ 08109

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From: <Myers.Ron@epamail.epa.gov> ***Index 12***
To: <Ray.Merrill@erg.com>, "Joe Fanjoy" <joe.fanjoy@erg.com>
CC: <Dewees.Jason@epamail.epa.gov>, <Sorrell.Candace@epamail.epa.gov>, "Danny G
reene" <Danny.Greene@erg.com>
Date: 8/15/2008 10:20 AM
Subject: Fw: OTM-027

Team:
I would like a reality check before I respond to Rob.

The terms in Equation 24 are:

Δpm = Observed velocity pressure using S-type pitot tube in preliminary traverse, in. W.C.
Δps = Velocity pressure calculated in Equation 24, in. W.C.
Cp = Pitot coefficient for the combined cyclone pitot, dimensionless.
Cp' = Coefficient for the pitot used in the preliminary traverse, dimensionless.

And the Equation is

```
            -    ¬2
           | Cp |
Δps = Δpm |-- |     Eq 24
            | Cp' |
            L    -
```

This equation looks fine to me. It seems reasonable to me that to correct for the effect of the cyclones, one would take the Δp measured during the preliminary traverse, divide it by the influence of that pitots coefficient and then multiply it by the effect of the pitot used to make the final measurements.

Unless someone that I have copied says that I am wrong, I propose to tell Rob that the equation is correct. I will use the above logic.

By the way in assessing this, I noticed two typos in Equation 26. The numbers 1 and 2 should be subscripts with the Δps terms. I will change this is OTM 27, but remember this typo should OPEI or OMB want changes in the preamble.

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----- Forwarded by Ron Myers/RTP/USEPA/US on 08/15/2008 09:56 AM -----

"Rob Lisy"
<rob@aircomp.com
> To
Ron Myers/RTP/USEPA/US@EPA
08/15/2008 09:42 cc
AM
Subject
OTM-027
Please respond
to
<rob@aircomp.com
>

Ron:

I have a question regarding Equation 24 in OTM-027.

I think the squaring of the Cp's needs to be inverted in the equation with
the Cp' in the numerator and Cp in the denominator.

If you could contact me regarding this it would be appreciated.

Regards,

Robert J. Lisy, Jr.
Air Compliance Testing, Inc.
PO Box 41156
Cleveland OH 44141
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Fax: 216-525-0901

Index 13

From: <Myers.Ron@epamail.epa.gov>
To: "Jim Schifo" <jfs@keramida.com>
CC: <Westlin.Peter@epamail.epa.gov>, <Dewees.Jason@epamail.epa.gov>, <Segall.Robin@epamail.epa.gov>, <Parker.Barrett@epamail.epa.gov>, <Ray.Merrill@erg.com>, "Danny Greene" <Danny.Greene@erg.com>, "Joe Fanjoy" <joe.fanjoy@erg.com>
Date: 8/19/2008 2:21 PM
Subject: RE: Update of PM fine Stationary Source Test Method (OTM 27 & OTM 28)

Jim:
The first part of any source test program is to describe the goals of the test program and to develop quality assurance criteria to insure that those goals are met. Part of the plan development for compliance tests is to identify the emissions limitations that the source is required to meet, to identify the quantification capabilities of the one or more sampling and analytical methods that are available for the pollutant, the potential for matrix effects that would inhibit the methods from accurately quantifying the pollutant, to estimate the concentrations of the pollutant and then to determine the sample flow rate and duration that will achieve the goal. It is unfortunate that the companies that hire the testing contractors tend to select the lowest bidder to perform the testing, do not go through the data quality objectives process and then the source testing company (since they were the low bidder and need to make a profit) also does not go through the data quality objectives process.

We have for as many years as I can remember supported the acceptance of test programs that result in below detection limit values being used to demonstrate compliance with emissions limits that should have been quantified with the volume of sample collected using the appropriate test method. From a prospective perspective, I have typically suggested that the tester target about 10 to 25% of the emissions limitation for the detection limit for a test program. At this level of detection, there is little argument whether the source would or would not be in compliance with the applicable requirement. I am not sure whether the Agency has published any guidance that states what we have accepted.

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"Jim Schifo"
<jfs@keramida.com>
08/19/2008 12:37 PM

To
Ron Myers/RTP/USEPA/US@EPA
cc

Subject
RE: Update of PM fine Stationary Source Test Method (OTM 27 & OTM 28)

Ron,

Thank you for the update.
I am an environmental consultant, former industry engineer, and our sister company, Technikon LLC, ran tests on the new methods in Sacramento a couple of weeks ago.

I am not an expert on the protocols but spend a lot of time trying to interpret the results.

But -- I have a simple question that bugs us consultants working with State regulators on emission testing. It involves the fact that, as some of comments in your update alluded to, that we run into a problem with being able to collect a sample weight sufficient to properly quantify the catch.

From a pure mathematical standpoint the longer the time the more the catch, or the higher the sampling volume the higher the catch weight.

But it would seem that it should all depends on what the objective of the test is. If it is to prove the effectiveness of new technology then very accurate results are needed.

If it is to prove compliance with a specific state or federal limit then the test should be set up to show compliance with the specific limit in question. But this is not always what is done.

In this day and age we frequently run up against a problem where new air pollution control equipment is capable of very low gain loading. Not unusual to see three or four zeros. The problem that we run into is proving the performance of equipment. We have run into a case where a state agency wanted to statistically validate a new baghouse's performance rather than just proving that it was in compliance with the PM10 limit applied to it. In one case a state agency started out insisting on three 24 hour tests to guarantee enough catch to properly quantify the emissions.

There are of course recommended catch weights.

My question is -- Is there any EPA guidance that would allow someone set up a sampling protocol to prove that a source "is not above" a certain emissions limit rather than insisting on actually collecting a certain minimum catch weight. This, in some cases, would allow significantly reduced sampling times and problems trying to keep sources running at high capacities during long periods of time.

I know it is a crazy question but we sometimes spend a lot of time on this type of thing.

Thanks,

Jim Schifo
KERAMIDA Environmental, Inc.
317-685-6620

From: Myers.Ron@epamail.epa.gov [mailto:Myers.Ron@epamail.epa.gov]
Sent: Tue 8/19/2008 10:07 AM
To: undisclosed-recipients
Subject: Update of PM fine Stationary Source Test Method (OTM 27 & OTM 28)

PM fines test method stakeholders:

This is a note to update you on the progress to develop improved test methods for characterizing PM10 and PM2.5 emissions from stationary sources. This is in response to our request for comments on Other Test Method 27 (OTM 27) and OTM 28 that was posted to the Other Test Methods web site (http://www.epa.gov/ttn/emc/prelim.html).

Several comments on the conduct of the dry impinger test method for CPM were evaluated. We revised the dry impinger test method to accommodate those comments. Most are changes in the method are to correct typographical errors and to clarify some issue associated with the conduct of the method. In assessing and addressing the comments from stakeholders we noticed that in Equation 1, the constant used for the correction of the addition of ammonia hydroxide was 18.03 when it should be 17.03. We have reposted OTM 28 (http://www.epa.gov/ttn/emc/prelim/otm28.pdf)to the Other Test Method web site with the revisions.

Several comments were received on the conduct of OTM 27. OTM 27 uses a pair of cyclones to size the filterable material. Several of the comments were associated with the physical size of the combined PM10 and PM2.5 cyclones and the ability to use these in exhaust systems that are typical for their industry. Some of these same commenter's also requested some modification to address the potential for low sample weigh collection. They indicated that the current method would require extending the sample time in order to collect a weighable mass for PM 10 and PM2.5. With existing particle sizing technology reducing the size of the cyclones would require a substantial reduction in the flow rates of the sampler to achieve proper particle sizing. Reducing the flow rate would adversely impact the duration of the sampling campaign needed to collect weighable masses. As with OTM 28, there are many corrections to address typographical mistakes. We have also made revisions to clarify the need to maintain the sampling conditions necessary to collect a good sample and address some of the size issues associated with the hardware. Here is a direct link to go to OTM 27 (http://www.epa.gov/ttn/emc/prelim/otm27.pdf).

We have compiled a summary of the comments that we received, our response to their comments and copies of the comment letters or e-mails that we received. A copy of the combined file containing the summaries, responses and full comments is available at http://www.epa.gov/ttn/emc/methods/m202comments.pdf .

Both OTM 27 and OTM 28 as revised have been reposted to the Other Test Method web site. These two methods will provide the template for future proposed revisions to EPA Test Methods 201A and 202. We do not expect that there will be any revisions to these methods until we propose revisions to Methods 201A and 202. We recognize that several stakeholders are using these two test methods to characterize their emissions and prepare for future requirements. We are interested in information on the performance of the test methods and for suggested changes that would improve the reliability and precision of these methods. We are also interested in obtaining source test data using these methods so that the emissions factors for the processes being tested can be evaluated for revision. In order to facilitate the ability to use these test data, we strongly encourage stakeholders to use the Electronic Reporting Tool (ERT, http://www.epa.gov/ttn/chief/ert/ert_tool.html) to document the conduct of the emissions test and the operation of the source.

As always, we are interested in your experiences with these test method and encourage comments on the performance of these methods.

Ron Myers
U.S. Environmental Protection Agency
Office of Air Quality Planning and Standards
Sector Policy and Programs Division
Monitoring Policy Group, D243-05
RTP NC 27711
Tel. 919.541.5407
Fax 919.541.1039

E-mail myers.ron@epa.gov

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From: <Myers.Ron@epamail.epa.gov>
To: Scott Evans <sevans@cleanair.com>
CC: <Ray.Merrill@erg.com>, "Danny Greene" <Danny.Greene@erg.com>, "Joe Fanjoy" <joe.fanjoy@erg.com>, <Sorrell.Candace@epamail.epa.gov>, <Dewees.Jason@epamail.epa.gov>, <Gary_McAlister/RTP/USEPA/US@mintra02.rtp.epa.gov>, <Westlin.Peter@epamail.epa.gov>, <Segall.Robin@epamail.epa.gov>
Date: 8/20/2008 8:10 AM
Subject: Re: Update of PM fine Stationary Source Test Method (OTM 27 & OTM 28)
Attachments: pic16366.gif

Scott:
Thanks for the accolades. Is this the Scott Evans that glorifies the EPA at SES meetings?

We are planning a field evaluation of the precision of the combined OTM 27 (probably using only the 2.5 cyclone) and OTM 28. I hope to be able to present very preliminary data at the November AW&MA conference in Chapel Hill, NC. Mike Hartman, Daryl and Chuck Dunkan (the younger) will be the test crew and Ray Merrill's people will do the analytical lab work. I would hope that some other stakeholders (utilities, pulp & paper) will supplement our Method 301 validation with similar work at their sources.

With respect to Sections 9.5 and 9.7 they do say similar things. Section 9.7 does focus on the weighing of the CPM while 9.5 would also cover any water weights done in the field. We'll look into potential revisions. You will notice that I have said that OTM 27 and 28 will probably not change until we propose revisions to Methods 201A and 202. The changes that will be made are those that are needed to get the method through the bureaucratic morass. I would rather compile comments on OTM 27 and 28 from outside the Agency as part of comments on Method 201A and 202.

In the method that you have look at the date on the first page and in the upper right hand corner of every other page to check that the date is August 11, 2008. The correction is 17.03 in that version.

Ron Myers
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Office of Air Quality Planning and Standards
Sector Policy and Programs Division
Monitoring Policy Group, D243-05
RTP NC 27711
Tel. 919.541.5407
Fax 919.541.1039
E-mail myers.ron@epa.gov

Scott Evans
<sevans@cleanair.com>
08/19/2008 11:35 PM

To
Ron Myers/RTP/USEPA/US@EPA
cc

Subject
Re: Update of PM fine Stationary Source Test Method (OTM 27 & OTM 28)

Hi Ron,

This is great work on these methods. I am anxious to see precision and bias data. This information should be included in the method.

I have one question. Are Sections 9.5 and 9.7 saying the same thing? In Section 9.5, what do the words "each time they are used" mean? Does the once per day calibration check in Section 9.7 meet this requirement? Can Section 9.5 be eliminated?

Also, in the version I downloaded the ammonium hydroxide correction constant was still 18.03.

Scott

Scott Evans
Clean Air Engineering
500 W. Wood St.
Palatine, Illinois 60041

847-654-4569 - voice
847-991-3385 - fax
sevans@cleanair.com

(Embedded image moved to file: pic16366.gif)

On Aug 19, 2008, at 10:07 AM, Myers.Ron@epamail.epa.gov wrote:

>
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>
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> Ron Myers
> U.S. Environmental Protection Agency
> Office of Air Quality Planning and Standards
> Sector Policy and Programs Division
> Monitoring Policy Group, D243-05
> RTP NC 27711
> Tel. 919.541.5407
> Fax 919.541.1039
> E-mail myers.ron@epa.gov

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From: <Myers.Ron@epamail.epa.gov>
To: "J. Bruce Nemet" <Resolute1@charterinternet.com>
CC: <Ray.Merrill@erg.com>, "Danny Greene" <Danny.Greene@erg.com>, "Joe Fanjoy" <joe.fanjoy@erg.com>, <Dewees.Jason@epamail.epa.gov>, <Sorrell.Candace@epamail.epa.gov>, <Gary_McAlister/RTP/USEPA/US@mintra01.rtp.epa.gov>
Date: 8/25/2008 3:14 PM
Subject: Re: Update of PM fine Stationary Source Test Method (OTM 27 & OTM 28)
Attachments: labfilters_pall_com_catalog_924_20061.pdf

Bruce:
Our experience with Teflon coated glass fiber filters is that the sonication releases many shards of glass which would be impossible to remove from the solvents (MeCl and H2O). We did not believe that filtering the solvents to remove the glass shards is a viable option because any solids collected in the Teflon coated filter would be more difficult to extract than to dislodge from the surface of the membrane filter and filtering the solvents after sonication would capture non soluble solids which would be retained on the filter use to remove the glass shards. At this point we would advise that the Teflon membrane filter be used until there is ample data to indicate that the use of fiber filters will not result in a high bias caused by periodic fiber losses from the back up filter.

In our telephone conversation you mentioned that you could only find 8 x 10 filters that you would have to cut down. Attached is a product description for filters that come in 90mm diameter in addition to the smaller diameter sizes and the 8 x 10 size.

(See attached file: labfilters_pall_com_catalog_924_20061.pdf)

Ron Myers
U.S. Environmental Protection Agency
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Sector Policy and Programs Division
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RTP NC 27711
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Fax 919.541.1039
E-mail myers.ron@epa.gov

"J. Bruce Nemet"
<Resolute1@charterinternet.com>
08/20/2008 03:16 PM

To
Ron Myers/RTP/USEPA/US@EPA
cc

Subject
Re: Update of PM fine Stationary Source Test Method (OTM 27 & OTM 28)

Ron,

One quick question regarding the use of teflon membrane vs teflon-coated

filters. I realize posting this comment to the ERT would probably be more

appropriate but unfortunately I have a deadline for this answer. We
have
been supplying teflon-coated filters to several of our client for
OTM-028
use and have had good success particularly with regards to low filter
"fragment shedding" due to a special procedure we use to minimize this
shedding.

Would we be free to utilize these teflon-coated filters (Pallflex Part#
TX40HI45) in lieu of teflon membrane filters if we can indicate a low
offshedding of filter fragments. The teflon coating should also prevent

SO2/SO3 reaction as well I would think. These are membrane filters that
are
teflon coated on the front side.

The teflon-coated filters are more realiably obtained, less expensive,
and
have less pressure drop issues than do the membrane filters.

I would appreciate your comments on this matter and will be happy to
post
future comments and/or any data findings on ERT.

Thank you.

J. Bruce Nemet
QA Officer
Resolution Analytics, Inc.
2733 Lee Avenue
Sanford, NC 27332
Phone (919) 774-5557
Fax (919) 776-6785
Resolute@resolutionanalytics.com
----- Original Message -----
From: <Myers.Ron@epamail.epa.gov>
To: <undisclosed-recipients:>
Sent: Tuesday, August 19, 2008 11:07 AM
Subject: Update of PM fine Stationary Source Test Method (OTM 27 & OTM
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> Tel. 919.541.5407
> Fax 919.541.1039
> E-mail myers.ron@epa.gov

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Description | Applications | Specifications | Ordering Information

Description	Zefluor™ Membrane	Teflo Membrane
Filter Media/Support	PTFE with PTFE support	PTFE with PMP (polymethylpentene) support ring
Typical Thickness	0.5 µm: 178 µm (7 mils) 1 µm: 165 µm (6.5 mils) 2 and 3 µm: 152 µm (6 mils)	1 µm: 76 µm (3 mils) 2 µm: 46 µm (1.8 mils) 3 µm: 30.4 µm (1.2 mils)
Typical Air Flow Rate (L/min/cm^2 at 0.7 bar (70 kPa, 10 psi))	0.5 µm: 1 1 µm: 14.6 2 µm: 25.3 3 µm: 53	1 µm: 17 2 µm: 53 3 µm: 90
Minimum Bubble Point - IPA bar (psi)	Not Applicable	Not Applicable
Water Breakthrough bar (psi)	Not Applicable	Not Applicable
Typical Aerosol Retention*	0.5, 1, and 2 µm: 99.99% 3 µm: 99.98%	1 and 2 µm: 99.99% 3 µm: 99.79%

Description	Zylon™ Membrane	TF (PTFE) Membrane
Filter Media/Support	Unsupported PTFE	PTFE on a polypropylene support
Typical Thickness	140 µm (5.5 mils)	0.2 µm: 139 µm (5.5 mils) 0.45 and 1 µm: 135 µm (5.3 mils)
Typical Air Flow Rate (L/min/cm^2 at 0.7 bar (70 kPa, 10 psi))	5 µm: 13	0.2 µm: 2 0.45 µm: 3 1 µm: 7
Minimum Bubble Point - IPA bar (psi)	Not Applicable	0.2 µm: 1.0 (15) 0.45 µm: 0.4 (6) 1 µm: 0.1 (2)
Water Breakthrough bar (psi)	Not Applicable	0.2 µm: 2.8 (40) 0.45 µm: 1.1 (16) 1 µm: 1.0 (15)
Typical Aerosol Retention*	Not Applicable	Not Applicable

**Following ASTM D 2986-95A 0.3 µm (DOP) at 32 L/min/100 cm^2 filter media.*

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PTFE Membrane Disc Filters

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Description | Applications | Specifications | Ordering Information

Part Number	Description	Pkg	Price	Qty
Zefluor™ Membrane				
P5PQ025	0.5 µm, 25 mm	100/pkg	279.19	0
P5PQ047	0.5 µm, 47 mm	50/pkg	185.38	0
P5PL025	1 µm, 25 mm	100/pkg	258.69	0
P5PL037	1 µm, 37 mm with support pads	50/pkg	147.41	0
P5PL047	1 µm, 47 mm	50/pkg	171.98	0
P5PL090	1 µm, 90 mm	50/pkg	618.68	0
P5PL001	1 µm, 8 x 10 in.	25/pkg	1,089.95	0
60048	2 µm, 25 mm	100/pkg	261.63	0
P5PJ037	2 µm, 37 mm, with support pads	50/pkg	148.53	0
P5PJ047	2 µm, 47 mm	50/pkg	171.98	0
P5PJ001	2 µm, 8 x 10 in.	25/pkg	1,115.67	0
P5PI001	3 µm, 8 x 10 in.	25/pkg	1,094.42	0
Teflo Membrane				
R2PL037	1 µm, 37 mm	50/pkg	290.36	0
R2PL047	1 µm, 47 mm	50/pkg	313.80	0
R2PJ037	2 µm, 37 mm	50/pkg	290.36	0
R2PJ041	2 µm, 41 mm	50/pkg	303.76	0
R2PJ047	2 µm, 47 mm	50/pkg	313.80	0
R2PI025	3 µm, 25 mm	50/pkg	287.01	0
60146	3 µm, 47 mm	50/pkg	315.55	0
Zylon™ Membrane				
P4PH037	5 µm, 37 mm, with support pads	50/pkg	155.23	0
P4PH047	5 µm, 47 mm	50/pkg	170.86	0
TF (PTFE) Membrane				

66141	TF 200, 0.2 µm, 13 mm	100/pkg	175.07	0
66142	TF 200, 0.2 µm, 25 mm	100/pkg	233.42	0
66143	TF 200, 0.2 µm, 47 mm	100/pkg	306.36	0
66630	TF 200, 0.2 µm, 50 mm	100/pkg	325.44	0
66145	TF 200, 0.2 µm, 142 mm	25/pkg	341.68	0
66146	TF 200, 0.2 µm, 293 mm	25/pkg	1,109.30	0
66147	TF 450, 0.45 µm, 13 mm	100/pkg	175.07	0
66148	TF 450, 0.45 µm, 25 mm	100/pkg	233.42	0
66149	TF 450, 0.45 µm, 47 mm	100/pkg	306.36	0
66631	TF 450, 0.45 µm, 50 mm	100/pkg	325.44	0
66151	TF 450, 0.45 µm, 142 mm	25/pkg	341.68	0
66152	TF 450, 0.45 µm, 293 mm	25/pkg	1,109.30	0
66153	TF 1000, 1 µm, 13 mm	100/pkg	175.07	0
66154	TF 1000, 1 µm, 25 mm	100/pkg	233.42	0
66159	TF 1000, 1 µm, 37 mm, with support pads	100/pkg	307.10	0
66155	TF 1000, 1 µm, 47 mm	100/pkg	306.36	0
66158	TF 1000, 1 µm, 293 mm	25/pkg	1,076.98	0

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From: <Myers.Ron@epamail.epa.gov>
To: "Neil Nissim" <Neil.Nissim@dep.state.nj.us>
CC: <Sorrell.Candace@epamail.epa.gov>, <Dewees.Jason@epamail.epa.gov>, <Gary_Mc Alister/RTP/USEPA/US@mintra01.rtp.epa.gov>, <Bivins.Dan@epamail.epa.gov>
Date: 10/23/2008 4:47 PM
Subject: Re: Fw: Method 202 question

Neil:
By my read of paragraph 8.2 in Method 202 the mass of NH4Cl is to be subtracted. The paragraph also indicates that all of the HCl should have been evaporated. As long as you are allowing the facility to perform the procedures in paragraph 8.2 it seems reasonable to divide the MW of NH4Cl by the MW of Cl and then multiply this value by the mass of Cl determined by IC analysis. You recognize that if you continue to base your testing on Method 202, if and when we revise the method this procedure would not be part of the method.

Ron Myers
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E-mail myers.ron@epa.gov

"Neil Nissim"
<Neil.Nissim@dep
.state.nj.us>
To
Ron Myers/RTP/USEPA/US@EPA
10/23/2008 04:29
PM
cc

Subject
Re: Fw: Method 202 question

Ron:

Thanks for you help up to this point. One last follow up question: If we allow them to follow the procedures in 8.2, should they subtract the chlorides as analyzed by IC or correct the chlorides to an as ammonium chloride basis by multiplying by the MW of NH4Cl divided by the MW of Cl-? This increases the value by 1.5 times.

Thanks again,
Neil

>>> <Myers.Ron@epamail.epa.gov> 10/21/2008 12:29 PM >>>
Neil:
I am not sure of the orignis of the alternative to subtract the chlorides. I Method 202 there is an alternative that to me is counter intuitive. It states that if one considers ammonium chloride a particulate then the inorganic fraction should be evaporated at elevated temperature down to 1ml of liquid and then to finish the evaporation at room temperature. In my Perry's handbook, ammonium chloride is listed as solid at ambient temperatures. This is why OTM 28 requires the last 10 ml to be evaporated at room temperatures (we thought that stopping at 1 ml would be difficult and result in lower precision).

I know that some States have laws that state that chlorine and chlorides are not to be counted as PM. I'm not sure of the basis of these laws. Perhaps Candace Sorrell or Gary McAlister could provide you some background on why the alternative was included in Method 202 and why some States allow subtraction of the chlorides from Method 202.

Ron Myers
U.S. Environmental Protection Agency
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Monitoring Policy Group, D243-05
RTP NC 27711
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-----"Neil Nissim" <Neil.Nissim@dep.state.nj.us> wrote: -----

To: Ron Myers/RTP/USEPA/US@EPA
From: "Neil Nissim" <Neil.Nissim@dep.state.nj.us>
Date: 10/21/2008 08:39AM
Subject: Re: Fw: Method 202 question

Thanks, Ron. We make the accommodation of the weight gain for the addition of the ammonium hydroxide always. But we have never allowed a chloride correction. Does the facility make a good argument (see below) with the elevated HCl concentration in their stack gas? If so, can you subtract the chloride gain in addition to the sulfate correction? I guess you can since you stated the sulfate correction is part of the method. Could you reveal a little more about the genesis of the chloride correction?

Thanks again,
Neil

Neil M. Nissim
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(609) 203-6643 (mobile)
neil.nissim@dep.state.nj.us

>>> <Myers.Ron@epamail.epa.gov> 10/20/2008 9:53 PM >>>
Neil:
The way that EPA Method 202 was written, there are seven or more alternatives to the method. Each of these alternatives are included to accomodate one or more State agencies desires when the method was proposed and promulgated in 1990. The accomodation of the weight gain for the addition of the ammonium hydroxide to neutralize SO3 (really H2SO4) and allow for determining constant weight is part of the method. The choice of whether to include the two waters of hydration for H2SO4 would be up to the State.

With that said, you may want to look at OTM 28 for what we are doing to try to reconcile all the confusion of having a reliable test method for determinig condensable PM. In that method we are only subtracting the ammonium ions that are used to neutralize the acids in the collected sample. Any chlorides that remain after the first evaporation at room (85 F) temperatute are considered to be particulate matter. We have also made some minor changes to reduce the sulfate artifact and we have selected those procedures in the existing Method 202 that should result in the least unbiased determiniation of primary particulate matter emissions (does not include secondarily formed PM).

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-----Candace Sorrell/RTP/USEPA/US wrote: -----

To: Ron Myers/RTP/USEPA/US@EPA
From: Candace Sorrell/RTP/USEPA/US
Date: 10/16/2008 04:19PM
Subject: Fw: Method 202 question

----- Forwarded by Candace Sorrell/RTP/USEPA/US on 10/16/2008 04:18 PM

"Neil Nissim" <Neil.Nissim@dep.state.nj.us>
10/16/2008 03:37 PM
To

Candace Sorrell/RTP/USEPA/US@EPA
cc

Subject

Method 202 question
Candace:

I'm looking at a report for a facility in NJ and the facility is claiming that due to HCl contamination in the stack gas, there are excessive chlorides in the back-half condensibles. They have added the NH_4OH and are subtracting both the ammonium ion associated with the SO_4 and subtracting the chlorides associated with the NH_4. The method doesn't explicitly say you can't do both but I assumed they couldn't since the chloride correction was in Section 8 which is alternative procedures. What's the official word from EPA?

Thanks,
Neil

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From: <Myers.Ron@epamail.epa.gov>
To: <amiel.boullemant@riotinto.com>
CC: <Sorrell.Candace@epamail.epa.gov>, <Bivins.Dan@epamail.epa.gov>, <Mcalister.Gary@epamail.epa.gov>, <George.Marson@ec.gc.ca>, <Dewees.Jason@epamail.epa.gov>, <ray.merrill@erg.com>
Date: 10/27/2008 6:34 PM
Subject: Re: OTM27+28 - precisions

Amiel:
As far as compliance with the written method goes, there is nothing that would prohibit the contractor from using a colder bath for the first two impingers. The method calls for the bath to be colder than 30 C. As long as the bath is colder, it is acceptable. With that said, the work that George Marson has done indicates that the lower temperature would increase the concentration of SO2 in the collected water. At a higher concentration, more SO2 could convert to SO3 and cause an increase in the artifact formation. If there were emissions standards applicable to the facility, we would not be concerned if the source collected a sample with a high bias since if they demonstrated compliance with a high bias, then they complied with the standard. On the other hand, if the objective was to achieve the most accurate result, one would want to have the first two impingers as close to 30 C as possible without exceeding that temperature. I suspect that your next question may be what is the magnitude of the bias caused by the lower water temperature. Without conducting laboratory assessments to compare the performance at the two different temperatures, I could not give you a reasonable answer. You could look at the data presented in the original paper by John Richards (which is available on the Method 202 FAQ page.

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To
10/27/2008 03:37 PM
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cc
Dan Bivins/RTP/USEPA/US@EPA,
Jason Dewees/RTP/USEPA/US@EPA,
George.Marson@ec.gc.ca, Gary
McAlister/RTP/USEPA/US@EPA,
ray.merrill@erg.com, Candace
Sorrell/RTP/USEPA/US@EPA
Subject
Re: OTM27+28 - precisions

Hi,

First, thanks for your quick answer.
Second, I forgot one question:
in OTM 28, it is supposed to have 2 boxes (one with 2 dry impingers in a

water bath with T < 30 C + another one with 2 impingers maintained at T
<
25 C in an ice bath).
Oour contractor decided to use only one box with the four impingers
maintained in an ice bath at T < 15 C. Do you think it is correct?

I remain,

Amiel Boullemant, Ph.D.
Scientifique de recherche / Research Scientist
Technologies environnementales / Environmental Technologies

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A
2008-10-24 19:31 Amiel Boullemant/Alcan

cc
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Mcalister.Gary@epamail.epa.gov,

Bivins.Dan@epamail.epa.gov,

ray.merrill@erg.com,

George.Marson@ec.gc.ca

Objet
Re: OTM27+28 - precisions

Amiel:
My responses to your questions follow your questions. I have made my
responses in blue.
____
Ron Myers
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Sector Policy and Programs Division

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-----amiel.boullemant@riotinto.com wrote: -----

To: Ron Myers/RTP/USEPA/US@EPA
From: amiel.boullemant@riotinto.com
Date: 10/23/2008 05:12PM
Subject: OTM27+28 - precisions

Dear Mister Myers,

As you may be aware, Rio Tinto Alcan and the Aluminum Association are currently testing OTM 27 & 28 at the Sebree facility.
Some points concerning what is indicated in these methods appear not clear:

1) Figure 1 in OTM 27: it is indicated to use a heated probe but in the method we have only read something on preheating the sampling head (section 8.6.9). Is this heated probe still necessary? We think no considering a gas with < 2 % humidity.

Response: The reason that we have recommended preheating the cyclones is
because the metal of the cyclones do not reach the stack temperature quickly and the lower temperature of the interior surface temperature will
cause the condensable material in the sampled gas to condense on the surface of the cyclone and be considered larger than the cut size of the
cyclone (10 or 2.5 uM depending on the cyclone where the condensation occurs). While we would prefer to delay condensation to the Method 23 condenser, if the material was to condense on the interior surfaces of the
probe, it would still be recovered and considered smaller that the cut size of the smallest cyclone.

2) Section 7.1.1 in OTM 27: do you consider a glass fiber adapted to sources with high SO2 content? (as it is the case for primary Al smelter).
Could US EPA precise or propose types of filter that do not react with SO2?

Response: It is not EPA policy to promote commercial products unless we
are reasonably sure that we have listed all the providers of the products.
Even then we tend to leave the listing fairly open ended. Generally, the
suppliers of filter media that is advertised for air pollution source sampling will indicate their suitability for this type sampling and the absence of artifact formation.

3) Section 8.5.4.2 in OTM 28: we have decided to do 3 water rinses instead
of 2 considering that now, we have dry impingers. Is it acceptable?

Response: First, I believe we require three rinses for both the water rinse and the MeCl rinse. If not, thanks for the editorial review which we will consider changing. We do not specify the maximum number of rinses that should be performed only the minimum. For those situations where material is very resistant to recovery, additional efforts are recommended. My experiance is that if full recovery is not achieved, the material that is not removed will show up on subsequent runs and create the impression that there is high variability in the source or the test methodology. Generally, additional rinses should be performed whenever visible residue remains on the interior surfaces of the glassware or when the third (or subsequent) rinses show the presence of material.

4) Section 8.5.4.3 in OTM 28: it is said to have 2 bottles, one for the recovery of acetone, and one for the recovery of MeCl2. But, in the analytical section (11.2.2.1 and 11.2.2.2) it is always mentioned only one bottle. Then, we decided in 8.5.4.3 to put together in one bottle acetone + MeCl2. Is it again acceptable?

Response: Combining the Acetone and MeCl for the initial recovery will result in excessive difficulty to seperate the organic and inorganic fractions. The presence of acetone in the MeCl will allow the organic fraction to become miscible in the water. The presence of organic material in the water fraction may allow organic material to evaporate during the high temperature portion of the evaporation of the aqueous fraction.

5) Section 8.4 in OTM 28: if we sample a same source in triplicate, should we baked all the train glassware between each replicate? The contractor here decided not to do so, considering this is the same source and section 8.4 is only talking about "source" not "trial or replicate". What is your opinion on that?

Response: We considered the requirement to bake the glassware after each sample run. But this would require source testers to have two to three times the inventory of sampling glassware. This would increase the cost of the sampling and may not substantially improve the precision and accuracy of the method. As indicated in a response to an earlier question, material not recovered in the first or second sampling run would potentially be recovered in a later run or in the field blank. However, we do not preclude source samplers taking the additional effort to bake the glassware after each run.

Your comments and help will be very appreciated.

I thank you in advance for your collaboration.

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From: <Myers.Ron@epamail.epa.gov> ***Index 18***
To: "Kevin OHalloren" <kohalloren@cleanair.com>
CC: <Schell.Bob@epamail.epa.gov>, <Sorrell.Candace@epamail.epa.gov>, <Oldham.Conniesue@epamail.epa.gov>, "Danny Greene" <Danny.Greene@erg.com>, <Gary_McAlister/RTP/USEPA/US@mintra02.rtp.epa.gov>, <Dewees.Jason@epamail.epa.gov>, " Joe Fanjoy" <joe.fanjoy@erg.com>, <Ray.Merrill@erg.com>
Date: 11/7/2008 2:47 PM
Subject: Re: Questions from AWMA Symposium re: OTM-028

Kevin:
I would think that even for an engineering assessment, one would want to know the FPM component and the filtration temperature for measuring the FPM component. The primary reason is that for many semivolatile organic and inorganic compounds, the temperature could have a significant effect on what gets to the impingers.

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"Kevin OHalloren" <kohalloren@cleanair.com>
11/07/2008 02:16 PM

To
Ron Myers/RTP/USEPA/US@EPA
cc
Jason Dewees/RTP/USEPA/US@EPA, Candace Sorrell/RTP/USEPA/US@EPA, Gary_McAlister/RTP/USEPA/US@mintra02.rtp.epa.gov, "Joe Fanjoy" <joe.fanjoy@erg.com>, Ray.Merrill@erg.com, "Danny Greene" <Danny.Greene@erg.com>, Conniesue Oldham/RTP/USEPA/US@EPA, Bob Schell/RTP/USEPA/US@EPA
Subject
Re: Questions from AWMA Symposium re: OTM-028

Ron,

Thank you for the thorough reply. We are definitely interested in reviewing and commenting on the proposal package once it becomes available.

Regarding your puzzlement about Question 1.: We have only been asked to quantify CPM and not FPM a few times for diagnostic purposes. The only time we ever had separate FPM/CPM trains during a compliance test was at a secondary aluminum smelter. We were perfomring Methods 5, 26A, and 202. FPM and HCl were the primary pollutants of interest and it was decided that we should get a complete traverse for these compounds rather than run a FPM/CPM train with a single point HCl. I think this may have been IDEM's request, but I don't remember. In any case, I agree that single-point non-isokinetic OTM-028 testing should be avoided in the interest of minimizing variation in CPM results as much as possible.

Again, thank you for all of the information. It has given us all lots to think about.

Regards,

KO

---------- Forwarded message ----------
From: <Myers.Ron@epamail.epa.gov>
Date: Fri, Nov 7, 2008 at 8:54 AM
Subject: Re: Questions from AWMA Symposium re: OTM-028
To: Kevin OHalloren <kohalloren@cleanair.com>
Cc: Dewees.Jason@epamail.epa.gov, Sorrell.Candace@epamail.epa.gov, Gary_McAlister/RTP/USEPA/.US@mintra02.rtp.epa.gov, Joe Fanjoy < joe.fanjoy@erg.com>, Ray.Merrill@erg.com, Danny Greene < Danny.Greene@erg.com>, Oldham.Conniesue@epamail.epa.gov, Schell.Bob@epa.gov

Kevin:
I'm sorry we did not get to meet during the conference. Some of your questions are puzzling to me and some are good and we need to think about them a little more diligently than I am at this time. As I indicated during my presentation, the proposal package is going through a review cycle which I have little control over. In addition, if I change some detail (other than a small typo) in the package, the review cycle starts over and I have lost about 90 days. As a result, I am retaining the questions and will treat them like a comment received after the method is proposed. It would be good if you were to also provide a formal comment on the proposal package with these and other questions that you may have with the preamble and the two methods.

I have provided preliminary responses to your questions in the body of your message.

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"Kevin
OHalloren"
<kohalloren@clea
nair.com>
To
Ron Myers/RTP/USEPA/US@EPA
cc
11/04/2008 07:08
PM
Subject
Questions from AWMA Symposium re:
OTM-028

Hi Ron,

My name is Kevin O'Halloren. I'm a project manager for Clean Air Engineering. I've been working with Scott Evans to evaluate the new dry impinger CPM method (focusing on the field work / project execution end). I was at your presentation at the AWMA conference today. I'm sorry I didn't introduce myself in person, but I wanted to thank you for the informative presentation.

I had a number of questions that I was hoping to ask you, but time seemed to be at a premium and my list was long. Thankfully, most of these were addressed by your presentation or the comments of others. However, there are a few lingering issues that I was wondering if you had any thoughts on. I would appreciate it if you could comment on these at your earliest convenience.

1. If sampling is conducted for CPM only, does the train need to be operated isokinetically? (This assumes the filterable particulate would be removed using a heated Method 5 probe and filter assembly ahead of the CPM impinger train.)
   Response: I am not sure how representative multiple train sampling would be when filterable and condensable are determined by different trains without some measurement of the filterable to ground truth that the two or three trains are operated consistently. Even if all the trains were operated at the same time, the biggest concern would be the filtration temperature. The filtration temperature could potentially have a significant effect on the amount of PM collected on the filters and therefore the CPM presented to the impingers. There may be some situations where the sampling duration required to obtain a quantifiable mass for filterable (either total or by particle size) and condensable would be substantially different. In those cases, one would want to recover the component that is secondary for the specific train and demonstrate that this measurement is at least consistent with the mass concentration measured with the other trains. If you could give me some examples of when you would need to quantify CPM and not the filterable component, I could give you a more educated response.

2. Using an unheated Teflon line to connect the outlet of the FPM portion of the train to the condenser was brought up at the conference. Wouldn't this line technically have to undergo the same preparation as the CPM portion of the sample train (including baking at 300C, which would melt the line)?
   Response: This is a great question which we need to put some more brain power to respond. This would fit in with the comments that we have received about using a lower temperature to bake the glassware and the higher cost of an oven that can achieve 300 C. As a preliminary response, there are probably several sampling situations where the use of a jumper is the only viable option available to the stack sampler and there are not any viable alternatives. The purpose of the 300C baking is to remove material on the glassware which the other preparation operations did not remove (or left behind) and could potentially create a high blank value. I think the only option available is to use the jumper only when necessary and then to use preparation steps that are a close as possible to what the method specifies AND provide a comment in the test report that identifies the variation and the potential impact that this variation may have to the results. It would be very helpful if some stack testers or laboratories would collect information on the amount of residue that would result from the use of jumpers so that we could place that option in the method and potentially include an additional allowance (the maximum blank corrected allowed) if a jumper were used.

3. Is there any reason why it's specified that the N2 purge gas be pulled through the train? Is purging with a metered amount of pressurized gas unacceptable?
   Response: This is a great comment. I believe that the promulgated Method 202 allows this and it was not our intention to

prevent this. The important aspect is that there be assurances that the collected water be fully purged and that we can know the flow of nitrogen used for purging. The use of the pressure purge presents the potential that the top of the impinge be loose and the purge would not be as effective as it should be.

4. In your opinion, is recovering the CPM filter into the water sample container an acceptable alternative to putting it into a separate petri dish?
Response: Good comment. I'll have to think on this some more. We did think about combining the solvent rinses with the water and concluded that was not a good idea.

5. The procedure for a field blank discusses "assemble the sampling train as it will be used for testing", but does not specify transporting to the test location, leak checking, etc. Is the intent that a leak check, etc at the sample location should be part of the train blank procedure?
6. For the field blank, is it a better idea to use clean glassware or used (recovered) glassware?
Response for 5 & 6: The blank train should be a train that represents the trains used during the conduct of the test. If you are using one (or two) sampling trains, then you would want to use a train that had been used in the test campaign so as to provide a good indication of the performance of the field crew (recovery and clean up) rather than the performance of the crew getting the equipment ready for use in the field. Also, this field blank is important as a tool to improve the field crews techniques. If every test run uses a sampling train straight from the home office and never used on the source, then the field blank could be one of the clean trains. One of the criticisms of the existing Method 202 is the highly variable test results. I believe part of the variability is caused by test crews which do not understand that this method is prone to biases due to lax preparation and clean up techniques. Of course, with all the other aspects of Method 202 as promulgated no one can definitively characterize how much imprecision is associated with any one aspect of the method.

7. Would using unopened, high grade, reagents with lot assessment of reagent quality satisfy the pre-test analytical requirement?
Response: We left the evaluation of the vendor solvents in the method due to the prevalence of testers comments that they assumed a solvent met the specifications provided by the vendor, but when the got high blanks and evaluated the reagent after the test found that it did not meet the specification. We have included the maximum blank correction in the method as our QA insurance for knowing the impacts associated with the combined reagent blanks and recovery techniques. If you believe that we are being a little too prescriptive to insure that the source test contractors follow good laboratory techniques and that you think it is up to the source tester to assess the reliability that their suppliers are providing quality products, let us know and we will consider removing this requirement from the method.

8. Could you please clarify how often used glassware should be replaced with clean (unused) glassware? The method specifies both "per source type" and "per source category". Strictly speaking, I would interpret this to mean that one should use different glassware when sampling at different processes in the same facility (for example, testing at a FCCU scrubber stack and a process heater stack would require different glassware). I would go one step further and say that it should be required to segregate glassware when sampling at point/locations along the same process as well (like when performing inlet/outlet testing).
Response: Our intent was that a single set (one or more trains) of equipment be used within a given source type during a field campaign. If you are testing multiple coal fired boilers and multiple oil fired boilers then you would need to keep the equipment segregated so that the potential variabilities associated with retention and release of "gunk" from one source

> category would not interfere with measurement of the other source category. We thought about requiring new clean glassware for each run (very expensive and I'm not sure I would want to go to several SES meetings following this proposal), for each emission source (better but still expensive) and settled on the source category primarily due to the potential for the common emissions characteristics. Again, we are open to suggestions from the people that will have to use the methods and the emitting sources.

Any assistance you could provide would be a huge help.

Regards,

Kevin O'Halloren
Project Manager

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Index 19

From: <Myers.Ron@epamail.epa.gov>
To: <Resolute1@charterinternet.com>
CC: <Ray.Merrill@erg.com>, "Danny Greene" <Danny.Greene@erg.com>, "Joe Fanjoy" <joe.fanjoy@erg.com>, <Dewees.Jason@epamail.epa.gov>, <Sorrell.Candace@epamail.epa.gov>, <Oldham.Conniesue@epamail.epa.gov>, <Schell.Bob@epa.gov>
Date: 11/10/2008 11:10 AM
Subject: Re: Filter Porosity (OTM-028)

Bruce:
As you appear to understand, the porosity of a filter for particulate less than about 1uM in diameter is not necessarily a direct relationship to the size of the holes in the media. The existence of a method to evaluate the collection efficiency of the media at 0.3 uM is a time honored scientific basis for evaluating a host of filter media. It is fortunate that the suppliers of filter media can still provide guarantees that media for air monitoring meets a given high efficiency for particulate of 0.3 uM as this is the particle size that is the greatest challenge (the poorest collection efficiency) for all types of media. This e-mail will be addressed in our running commentary. If you want to insure that it is addressed in the response to comments and that we consider an additional statement in the method, please submit a comment after the method is proposed. It would be helpful if you would provide a suggested addition to the method for the clarification. For example one that indicates that the criteria for acceptance of the filter media is the independent evaluation with 0.3 uM DOP and not the physical pore size of the media. One thing to remember is that unless we have a list of nearly all suppliers of acceptable media and assurances that this list is not likely to expand in the near future, we would be reluctant to provide a list of acceptable media and suppliers.

I hope you don't mind me deleting your logo, in my response it stayed on top of my response.

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"J. Bruce Nemet"
<Resolute1@charterinternet.com>
11/07/2008 04:32 PM

To
Ron Myers/RTP/USEPA/US@EPA
cc

Subject
Filter Porosity (OTM-028)

Ron,

Enjoyed your paper/presentation on OTM-028 last Tuesday at A&WMA. I thought it was well done.

I was hoping I could eventually get from you a letter of approval for the 90mm 1.0 µm filter use. This is the teflon membrane filter that the EPA and ERG used for the testing. It differs, however, technically, from the method in that the porosity of this filter is 1.0 µm and the method states a porosity of 0.5 µm to be used.

I have clients that are a little concerned over this matter and I've explained that the efficiency from the manufacturer meets or exceeds method requirements and that is the important thing. Our clients would still feel a little better if we can send them some letter of approval from EPA regarding the use of these filters.

The filter we've been using is ZEFLUOR PTFE 1UM 90MM PALL P/N P5PL090

Thanks Ron!

J. Bruce Nemet
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Index 20

From: <Myers.Ron@epamail.epa.gov>
To: "Thomas Maza" <mazat@michigan.gov>
CC: "Jorge Acevedo" <AcevedoJ1@michigan.gov>, <Sorrell.Candace@epamail.epa.gov>, <Dewees.Jason@epamail.epa.gov>, <Oldham.Conniesue@epamail.epa.gov>, <Schell.Bob@epa.gov>, <Gary_McAlister/RTP/USEPA/US@mintra01.rtp.epa.gov>, <Ray.Merrill@erg.com>, "Joe Fanjoy" <joe.fanjoy@erg.com>, "Danny Greene" <Danny.Greene@erg.com>
Date: 11/14/2008 11:33 AM
Subject: Re: condensable ammonia salt

Tom:
The test method is designed to measure particulate matter emissions to the atmosphere irregardless of whether the emissions are due to the basic process or as a result of a control technology to address emissions of some other pollutant or compound. The atmosphere and more specifically the ambient air monitoring network does not differentiate whether the material measured is due to the process or as a result of some subsequent condition. An example that provides an analogous situation is the use of the combustion to control emissions of other pollutants (CO, PM or VOC) where emissions of NOx are created. Just because the NOx is the result of the control does not exclude that pollutant from being quantified.

I do not know under what context that States have excluded ammonium chloride from being counted as particulate matter and was put in Method 202 when it was promulgated in 1991.

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"Thomas Maza"
<mazat@michigan.gov>
11/14/2008 11:11 AM

To
Ron Myers/RTP/USEPA/US@EPA
cc
"Jorge Acevedo" <AcevedoJ1@michigan.gov>
Subject
condensable ammonia salt

Hi Ron,
Marathon will install an ammonia injection system on the FCCU regenerator exhaust. They believe that the NH_3 will react with sulfates to form a salt (condensable PM) so they have asked how the ammonia used for control fits into the emissions picture. I want to make sure I'm presenting the correct picture - at least from a measurement perspective. I'm sure there will be other perspectives thrown into the mix.

M 202 allows for compensation if NH_3 is added to control HCl. Is there any thought for something similar for methods CTM 039 and OTM 028?

(how? I don't see a way.)

Do you know how the regulation writers are dealing with this?
Thanks-
Tom

Thomas Maza
Air Quality Division, MDEQ
Cadillac Place
3058 West Grand Boulevard
Detroit, Michigan 48202

(v) 313.456.4709
(f) 313.456.4692

Index 21

From: <Myers.Ron@epamail.epa.gov>
To: "Michael Klein" <Michael.Klein@dep.state.nj.us>
CC: <Ray.Merrill@erg.com>, "Danny Greene" <Danny.Greene@erg.com>, "Joe Fanjoy" <joe.fanjoy@erg.com>, <Dewees.Jason@epamail.epa.gov>, <Sorrell.Candace@epamail.epa.gov>, <Gary_McAlister/RTP/USEPA/US@mintra01.rtp.epa.gov>
Date: 12/30/2008 8:37 AM
Subject: Re: OTM-028 blank procedures

Michael:
I remember you providing this comment earlier and I know we discussed the proposed changes. It is a good comment and we will consider it again. The proposal package is passed all but one step of the process to be published in the Federal Register so you will see that this is an issue with our proposed method. I will notify you (and other stakeholders) of the publication in the CFR and hope that you will provide these (and other comments that you feel should be made) comments on the proposal package (this will make the comment official although this e-mail may suffice).

Ron Myers
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E-mail myers.ron@epa.gov

"Michael Klein" <Michael.Klein@dep.state.nj.us>
12/29/2008 02:25 PM

To
Ron Myers/RTP/USEPA/US@EPA
cc

Subject
OTM-028 blank procedures

Hi Ron. While looking at a RM202 report, I got to thinking about the problems in the way that method discusses blanks (I once brought this to your attention), which made me take a look at the OTM-028 procedures. I find similar and additional problems with OTM-028.

1) The method has you take and analyze reagent blanks, but you don't do anything with this information. The calculations only deal with the field train blank determined from processing the field train blank as you would a field train sample (or at least that is what it implies).

2) As in RM202, there is nothing that says you need to either use the exact same amount of rinse volumes as the samples or do volume corrections from the blank volumes to that used for samples. For example, RM29 specifies using the exact same rinse volumes as blank volumes, so there is no need to volume correct.

The way I see it, the reagent blanks (exact known volumes) should be used to process the field train blank. Then each run should volume adjust their blanks based on the rinse volumes (and water added prior to the purge if needed) used for each field sample (volumes to be measured and recorded, which the method does not specify doing for the rinses). The inorganic blank volume should include the 100 ml charged to the 1st impinger plus any water used for rinsing.

As currently written, the blank corrections are open to interpretation and could over or under estimate blanks if volumes used are not consistent with those used for samples.

Michael A. Klein
NJDEP - BTS
michael.klein@dep.state.nj.us

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From: <Myers.Ron@epamail.epa.gov>
To: <phillip@apexinst.com>
CC: <Dewees.Jason@epamail.epa.gov>, <Sorrell.Candace@epamail.epa.gov>, <Ray.Merrill@erg.com>, "Danny Greene" <Danny.Greene@erg.com>, "Joe Fanjoy" <joe.fanjoy@erg.com>
Date: 1/5/2009 11:17 AM
Subject: Re: Comenting on the proposed rule and our straight wall condenser

I will try to include directions to those people on my stakeholder list how they can access the official proposed rule, the "Docket" for the test method proposal and how to submit a comment on the rule when the rule has been signed by the administrator and when the rule appears in the FR. As I indicated in my earlier e-mail, the specific glassware design is not the most critical issue in the method. The critical element is that the sampled gas is cooled to below 85 F, that it is filtered by an acceptable filter after the temperature goes below that critical temperature and that the collected liquid can be purged. I can imagine many different designs of the condenser, and the "liquid removal vessels" prior to the filter that would satisfy our intent. If the words in the proposed method do not convey that intent, then a specific recommendation on the revised wording would be better than just stating that the wording excludes some designs.

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Sector Policy and Programs Division
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E-mail myers.ron@epa.gov

<phillip@apexinst.com>
01/05/2009 09:31 AM

To
Ron Myers/RTP/USEPA/US@EPA
cc

Subject
Comenting on the proposed rule and our straight wall condenser

Ron,

Where do I need to go to comment on the rule and ask for acceptance of our straight walled condenser?

--Phillip J. McMaster

Phillip J. McMaster

Apex Instruments, Inc.
Phone 919-557-7300
Direct 919-346-5027
Fax 919-557-7110
Web www.apexinst.com

From: <Myers.Ron@epamail.epa.gov> ***Index 23***
To: <jackson@airnova.com>
CC: <Ray.Merrill@erg.com>, "Danny Greene" <Danny.Greene@erg.com>, "Joe Fanjoy" <joe.fanjoy@erg.com>, <Dewees.Jason@epamail.epa.gov>, <Sorrell.Candace@epamail.epa.gov>
Date: 1/6/2009 2:33 PM
Subject: Re: Fw: Fw: AirNova - OTM028 filter criteria

Joe:
The ASTM standard specifies an aerosol diameter of 0.3 µM not 0.5. I will revise that value in the next version of the method and in what we publish in the CFR. Thanks for the notice that we had a typo. Any suggestions that you have on specifying the filtration efficiency would be welcome. As a secondary note, this ASTM specification is used in most if not all of the PM and metals methods. Also, for membrane filters, the pore size does not have to be equal or smaller than the aerosol size that is generated. Below about 1 µM aerosol size the particle collection is by Brownian motion and so a larger pore size provides acceptable collection of these smaller particles.

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E-mail myers.ron@epa.gov

<jackson@airnova.com>
01/06/2009 02:01 PM

To
Ron Myers/RTP/USEPA/US@EPA
cc

Subject
Fw: Fw: AirNova - OTM028 filter criteria

Ron,

Any word on the difference in particle diameter in the OTM028 versions?

Joe Jackson

----- Original Message -----
From: jackson@airnova.com
To: Myers.Ron@epamail.epa.gov
Cc: Mike Klein ; Ray Merrill ; Gary McAlister
Sent: Friday, December 12, 2008 8:53 AM
Subject: Re: Fw: AirNova - OTM028 filter criteria

Ron,

The ASTM method specifies 0.3um. The 2008 version OTM28 changed the particle diameter from 0.3um (in 2007 version of OTM28) to 0.5um. Is this a typing error?

Also, the vendor for the original studies (Pall Zefluor) does not offer an official certificate. I have spoken to sales reps and they only go by the rating given on the web site. J. Bruce Nemet of Resolution Analytics, Inc. has also tried to obtain a certificate and received the same response.

I would like to get their efficiency study to compare with another vendor who is in the process of evaluating their PTFE filter membrane efficiencies for OTM28 use.

Thanks,
Joe Jackson, QEP
AirNova, Inc.
----- Original Message -----
From: Myers.Ron@epamail.epa.gov
To: jackson@airnova.com
Cc: Mcalister.Gary@epamail.epa.gov ; Ray Merrill
Sent: Thursday, December 11, 2008 5:30 PM
Subject: Re: Fw: AirNova - OTM028 filter criteria

Joe:
I am not in the office and so can not tell you definitively whether the ASTM method specified the use of 0.5 or 0.3 uM DOP. We will check the ASTM method and if OTM28 is in error, we will revise this when we propose revision of Method 202. There is no update of the ASTM method. It is my understanding that the committee with oversight did not ask any other committee if it was still being used and unilaterally decided to not update it. My understanding is that the vendors of filters stil use the method for certification of their filters. We think that even though the method has not been recertified, since the vendors are still providing certification using this method, it is acceptable for citation in the method.

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Sector Policy and Programs Division
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Tel. 919.541.5407
Fax 919.541.1039
E-mail myers.ron@epa.gov

<jackson@airnova.com>
12/11/2008 03:52 PM

To Ron Myers/RTP/USEPA/US@EPA
cc Gary McAlister/RTP/USEPA/US@EPA, "Ray Merrill" <ray.merrill@erg.com>
bcc
Subject Re: Fw: AirNova - OTM028 filter criteria

Hi Ron,
Â
Quick question.Â The Aug. 11, 2008 version of OTM28 has 0.5um particles in the DOP test of Section 7.1.1. The Sept. 6, 2007 version has 0.3um.Â Is the 0.5 a typing error?Â If not, do you know who is doing this larger diameter DOP method.Â Also, ASTM D2986 has been withdrawn without replacement.Â Do you know what the current equivalent method number would be?
Â
Thanks,
Joe Jackson
----- Original Message -----
From: jackson@airnova.com
To: Joe Jackson
Sent: Saturday, December 06, 2008 3:45 PM
Subject: Fw: Fw: AirNova - OTM028 filter criteria

Â
----- Original Message -----
From: Myers.Ron@epamail.epa.gov
To: jackson@airnova.com

Cc: Mike Klein ; Ray.Merrill@erg.com ; Dewees.Jason@epamail.epa.gov ; Sorrell.Candace@epamail.epa.gov ; Mcalister.Gary@epamail.epa.gov
Sent: Saturday, December 06, 2008 12:50 AM
Subject: Re: Fw: AirNova - OTM028 filter criteria

Joe:

We are open to any information supported by well documented and thought out support on alternatives to what we have drafted in OTM28. Â In our selection of Teflon membrane filters for the back up (or CPM filter) we identified the following as issues that we needed to address in moving away from the glass or quartz filter media:

1) We noticed that a significant (about 50% or more) of the sulfuric acid presented to the condenser and impingers was getting to the back up filter.

2) This percentage varied and would result in variable mass determinations unless we treated the material reaching the filter the same as the material collected in the impingers.

3) Sulfuric acid reaching the back up filter created a weignig issue due to its hydrocopic nature. Â Combined with the variable percentage reaching the filter, and the high potential for determining the weight of sulfuric acid and whatever waters of hydration would be included, this did not give us much comfort that testers and laboratories could achieve consistent results.

4) We wanted to insure that all of the material collected on the back up filter was extracted and available for analysis.

5) We wanted the weight of the impinger components to be determined the same as the filter components.

As a result we determined that each of the three extraction steps (water and MeCl) should be performed under sonication. Â This would insure that any nano sized particulate collected on the fitler would likely be released and placed in solution for later weighing. Â We also noticed that sonication of the bed filters (even the Teflon coated filters) resulted in filter shards in the supernatent liquid (some filters were completely disaggregated). Â This required an additional filtration of the liquid to insure that the shards of glass or quartz was not inculded in the weighings. Â This also allowed the sulfuric acid to be neutralized and the exact ammonium needed to achieve neutrality to be subtracted from the final inorganic PM weight.

Â

I hope to have the proposal package in the que for publication in the FR by Jan 1. Â Because of the review process and having to go back to the beginning of the review que if I change the method, the proposal will be essentially what is in OTM-28. Â You will notice in the proposal package that we are interested in peoples suggesting and supporting documentation to show that the general stack testing community and laboratories can achieve better measurements or the same quality with less effort. Â Your earlier proposal did not have much supporting documentation to demonstrate that everyone could achive consistent results, what the filter specifications were required and what were the specifics for sonication and extraction of the filter. Â I would suggest that you provide a detailed comment on the FR proposal package and provide complete documentation. Â You may wish to call me, Ray Merrill and Gary McAlister to identify the most critical information that we think we need to make the fairest assessment of the alternative filter and extraction procedure that you are proposing.

RonÂ Myers
U.S.Â Environmental Protection Agency
OfficeÂ of Air Quality Planning and Standards
SectorÂ Policy and Programs Division
MonitoringÂ Policy Group, D243-05

RTPÂ NC 27711
Tel.Â 919.541.5407
FaxÂ 919.541.1039
E-mailÂ myers.ron@epa.gov

<jackson@airnova.com>
12/05/2008 02:40 PM

Â To Â Ron Myers/RTP/USEPA/US@EPA, <Ray.Merrill@erg.com>
Â cc Â "Mike Klein" <michael.klein@dep.state.nj.us>
Â bcc Â
Â Subject Â Fw: AirNova - OTM028 filter criteria
Â

Hi Ron,
Ã?Â
Have you thought about the quartz filter option that I have suggested?Ã?Â
We would like to perform a few side by side trial comparisons of Dry 202 with Wet 202 soon.Ã?Â YourÃ?Â input would be appreciated.
Ã?Â
Joe Jackson, QEP
AirNova, Inc.
Ã?Â
Ã?Â
----- Original Message -----
From: jackson@airnova.com
To: Ron Myers
Cc: Ray.Merrill@erg.com
Sent: Friday, November 14, 2008 11:17 AM
Subject: AirNova - OTM028 filter criteria
Hi Ron,
Ã?Â
Ã?Â Ã?Â Ã?Â I have been trying to obtain a filter that meets the strict requirements of EPA OTM028Ã?Â Section 7.1.1 that will fit into a larger filter holder (64mm diameter).Ã?Â The 0.5um Zeflour product (PTFE fluorocarbon but not Teflon) is only available in 25 and 47mm.Ã?Â I have been working with Pall to get larger ones cut since August 08.
Ã?Â Ã?Â Ã?Â Ã?Â If the efficiency and inertness of the filter is the driving criteria for performance, could I suggest using Pall Tissuquartz 2500QAT-UP filters?Ã?Â It is already 0.3um DOP tested and meets the organic free binder criteria.Ã?Â Quartz is accepted for sampling in SO2 and SO3 atmospheres (see EPA5 Section 17 Ref 10).Ã?Â We have been using these filters for TSP testing and EPA201A sampling for years.
Ã?Â
Let me know what you think,
Joe Jackson, QEP
Ã?Â
AirNova,Â Inc., 5845 Clayton Ave., Pennsauken, NJ 08109

Phone:Â 856-486-1500 Fax: 856-486-9896Ã?Â www.airnova.com

=

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From: <Myers.Ron@epamail.epa.gov>
To: "Neil Nissim" <Neil.Nissim@dep.state.nj.us>
CC: <Sorrell.Candace@epamail.epa.gov>, <Dewees.Jason@epamail.epa.gov>, <Ray.Merrill@erg.com>, "Joe Fanjoy" <joe.fanjoy@erg.com>, "Danny Greene" <Danny.Greene@erg.com>
Date: 1/8/2009 4:47 PM
Subject: Re: Cut size

If the cut size is over 11, then the test did not meet the methods requirement. However, it is the regulatory authorities discretion to accept the test as demonstrating compliance if the bias caused by the improper application is in favor of the agency. That is a cut size over 11 would collect a greater mass than one that met the method requirement but the test still was lower than the applicable requirement and therefore if the method was performed correctly the facility would demonstrate compliance.

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"Neil Nissim" <Neil.Nissim@dep.state.nj.us>
01/08/2009 02:28 PM

To
Ron Myers/RTP/USEPA/US@EPA
cc

Subject
Cut size

Ron:

Quick question about PM-10 cut size (no chlorides, I promise!) The method (201A) states:

6.3.5 Acceptable Results. The results are acceptable if two conditions are met. The first is that 9.0 *m < D < 11.0 *m. The second is that no 50 sampling points are outside)p and)p , or that 80 percent < I < 120 min max
percent and no more than one sampling point is outside)p and)p . If D min max 50
is less than 9.0 *m, reject the results and repeat the test.

What about cut sizes above 11? Do we assume a high bias and, therefore, if the results demonstrate compliance, they are acceptable?

Thanks,
Neil

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(609) 203-6643 (mobile)
neil.nissim@dep.state.nj.us

Index 25

From: <Myers.Ron@epamail.epa.gov>
To: "testarinc@netzero.com" <testarinc@netzero.com>
CC: <Mcalister.Gary@epamail.epa.gov>, <Dewees.Jason@epamail.epa.gov>, <Sorrell.Candace@epamail.epa.gov>, <Ray.Merrill@erg.com>, "Danny Greene" <Danny.Greene@erg.com>, "Joe Fanjoy" <joe.fanjoy@erg.com>, <Michael.Klein@dep.state.nj.us>, <fballay@dep.state.nj.us>, "John Jenks" <John.Jenks@dep.state.nj.us>
Date: 1/15/2009 11:44 AM
Subject: Re: Fw: EPA Method 202 rinse reagent

Gary:
Thanks for the reminder to respond to your question. In developing the replacement for Method 202 (currently posted to the EMC web site as OTM-028) we considered including alternatives including the continuation of allowing Ether Chloriform which was an alternative in the existing Method 202. Several issues bear upon the decision that we made to specify only Methylene Chloride as the solvent of choice. First, our knowledge of the organic compounds which constitute the CPM from every type of source that the method will be used would lead us toward a solvent that is good for polar and non polar compounds. So options to use solvents that are better with one or the other would give inconsistent results should a tester decide to use a solvent that another tester rejected. Second. we wanted to use a solvent which would allow very good separation of the organic and inorganic constituents. Third, we wanted to maximize the precision of the overall test method. One of the conditions that made for the poor precision of the existing Method 202 was all of the optional procedures that are in this method. As a result, the method that we will propose (and which OTM-028 currently demonstrates) is highly proscriptive. The use of alternative solvents with extraction and seperation capabilities different from Methylene Chloride would adversely affect the currently excellent precision and detection limits that we believe OTM-028 provides.

Even though M202 is an FR method that EPA published, the call on what solvent that you are required to use is New Jersey's. I have copied them this e-mail for their information.

Ron Myers
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"testarinc@netzero.com" <testarinc@netzero.com>
01/15/2009 10:55 AM

To
Ron Myers/RTP/USEPA/US@EPA
cc

Subject
Fw: EPA Method 202 rinse reagent

---------- Forwarded Message ----------
Hi Ron,

We have an EPA Method 202 project coming up the week of February 2nd in the state of New Jersey for compliance purposes. They have told us that we have to use methylene chloride as the rinse reagent even though we proposed toluene in the test protocol. As you know, methylene chloride has been listed as a carcinogen since Method 202 was released. We have performed some engineering testing in the past and used toluene and hexane for the rinse at the recommendation of our analytical lab. Also, EPA Method 23 now uses toluene as the final rinse and has allowed the methylene chloride rinse to be dropped.

Has the EPA allowed the Method 202 methylene chloride rinse to be substituted with toluene or anything similar since methylene chloride is a carcinogen? If not, how could we get approval to use a SAFER substitute rinse reagent?

Thank you for your timely response,
Gary Williams
TESTAR, Inc.
919/957-9500 work
919/524-5579 cell

Index 26

From: <Myers.Ron@epamail.epa.gov>
To: "Kevin J. Crosby" <kcrosby@avogadrogroup.com>
CC: <Sorrell.Candace@epamail.epa.gov>, <Dewees.Jason@epamail.epa.gov>, <Gary_McAlister/RTP/USEPA/US@mintra02.rtp.epa.gov>, <Ray.Merrill@erg.com>, "Danny Greene" <Danny.Greene@erg.com>, "Joe Fanjoy" <joe.fanjoy@erg.com>, <Schell.Bob@epa.gov>, <Oldham.Conniesue@epamail.epa.gov>
Date: 1/23/2009 11:49 AM
Subject: Re: Condensable PM methods

Kevin:
As you may realize, there are some States that are wedded to their historical method of measuring emissions. In the recent past, EPA has not exerted significant pressure on States to use those test methods that we publish in the Federal Register except where there is an emissions limit and test method cited in a Federal rule (NSPS, NESHAP, MACT etc standards). IN the PM2.5 implementation rule we only state that after Jan 1, 2011, the states have to consider including condensable PM in any rules that they generate to limit PM emissions for SIP's and NSR/PSD applications. We do not state that they have to use the test method we publish in the Federal Register or that we post to the EMC web site. They will have to convince the EPA regional office that they have considered filterable particulate by size (10 or 2.5) and the condensable fraction in the rules they develop. For SIP applications, there may be limited situations where a State could continue to regulate only total filterable PM and convince the EPA regional office that this will result in emissions reductions sufficient to bring the area into attainment. I expect that those States than do not currently address the condensable fraction would adopt the future Method 202 for those rules that they change to project emissions reductions necessary to model attainment. Those State that already include the condensable fraction in their emissions limits, will be a mixed bag. Some, like the South Coast Air District in CA, will be very resistant to change and will likely be allowed to continue to use their method until there is overwhelming political pressure within their area to change. Other States or local agencies will probably weigh the advantages of revising their emissions limits and the test method used to demonstrate compliance with the effort that they have to expend to get this approved.

At this time, EPA is primarily encouraging industries and States to adopt the improved methods (OTM-27 and 28) but the decision is with the State. We are hesitant (resistant) to return to accepting options in the sampling and analysis of the condensable fraction as this would return us to the problems that have caused much of the variability in what Method 202 measurements. We are however, supportive of sources and States that would be willing to expend the extra resources to adopt the dilution sampling method (CTM-39). At this time, we believe that CTM-39 and the combination of OTM-28 and 28 would result in essentially the same mass emissions for most stationary sources.

I know this has not exactly provided you with a clear answer. But I hope that it gives you a better idea of where we may be going after Jan 2011. Give me a call or e-mail me if you would like to discuss this in more detail.

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"Kevin J. Crosby" <kcrosby@avogadrogroup.com>
01/22/2009 02:50 PM

To
Ron Myers/RTP/USEPA/US@EPA
cc

Subject
Condensable PM methods

Ron,

I understand that EPA has sent recommendations for CPM methods in support of the development of the PM2.5 implementation rule as we come out of the transition period in 2011. I am curious whether the recommendations allow some flexibility for choosing a method for specific source types, or whether a specific method is likely to be required for each source. I have clients who want to prepare for the end of transition and I need to give them good advice on which method or methods to use.

I am thinking particularly about 202, OTM-028 and CTM-039 as future options; perhaps there are others.

Thanks for your help!

Kevin J. Crosby, QSTI
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From: <Huntley.Roy@epamail.epa.gov>
To: <Myers.Ron@epamail.epa.gov>
CC: <Lee.Anita@epamail.epa.gov>, <Parker.Barrett@epamail.epa.gov>, <Sorrell.Candace@epamail.epa.gov>, <Fellner.Christian@epamail.epa.gov>, "Danny Greene" <Danny.Greene@erg.com>, <Dewees.Jason@epamail.epa.gov>, <Mcalister.Gary@epamail.epa.gov>, "Joe Fanjoy" <joe.fanjoy@erg.com>, <Ray.Merrill@erg.com>
Date: 2/5/2009 10:31 AM
Subject: Re: Fw: Coal AP-42 question

Anita, this is Roy and I am doing a follow on to Ron Myers's response. I was the one working on the condensible emission factors. Ron is correct that many of the data points in the AP42 database were not collected by Method 202, but they all were collected by similar methods. We threw out numerous reports where the method was not similar enough. So while the data predated Method 202, in our judgement, the methods were similar.

The purge is important because of artifact formation in the impingers. We know now that artifact formation occurs during the test also so even with a purge at the end of the test, sometimes enough artifacts are formed in the impingers during the test to be a problem. However, for coal, the artifact formation is usually small in relation to the overall mass. That is true especially for higher sulfur coals.

In short, the best condensible PM emission factors in AP42 are the coal ones. The worst are the natural gas ones. We hope to improve them all, but until we have better data, we are stuck with what we have. Except for natural gas. With the help of Ron Myers, we came up with new efs that are about one tenth the size of the ones in AP42.

Roy Huntley
Environmental Engineer
Emission Inventory and Analysis Group
Mail Drop (C339-02)
Environmental Protection Agency
RTP, NC 27711
Voice - 919 541-1060
Fax - 919 541-0684
Office C341H

Ron Myers/RTP/USEPA/US
02/05/2009 08:55 AM

To
Anita Lee/R9/USEPA/US@EPA

cc
Roy Huntley/RTP/USEPA/US@EPA, Christian Fellner/RTP/USEPA/US@EPA, Barrett Parker/RTP/USEPA/US@EPA, Dewees.Jason@epamail.epa.gov, Candace Sorrell/RTP/USEPA/US, Gary McAlister/RTP/USEPA/US, Ray.Merrill@erg.com, "Danny Greene" <Danny.Greene@erg.com>, "Joe Fanjoy" <joe.fanjoy@erg.com>

Subject
Re: Fw: Coal AP-42 question (Document link: Roy Huntley (SEARCH ONLY))

Anita:
First, the use of the CPM emissions factor in the AP-42 section is highly suspect. While it was based upon the best data that was available at the time, the industry was more interested in discrediting Method 202 than using the best implementation of Method 202 for improving the emissions factors. As a result the factor in AP-42 is based upon test methods that predate the promulgation of Method 202 and EPA guidance on the need to purge Method 202 to reduce artifact sulfates. For more detail on the artifact issue you can go to http://www.epa.gov/ttn/emc/methods/method202.html#af . The issue of HCl and HF being measured as CPM is a little unclear when the source also has ammonia in the flue gas. Without the presence of ammonia, HCl and HF are excluded from Method 202 by the first evaporation of the inorganic condensable samples. In the presence of ammonia in the flue gas, there is a likelihood that ammonia will combine with some of the more reactive acid gases to form salts and would be quantified by several test methods as particulate matter. There may be some test methods that would be less likely to create artifacts. Some implementations of the promulgated Method 202 may have the greatest likelihood of artifact formation under these conditions. As is explained in some of the documents contained in the above link, we have investigated and developed a minor modification of Method 202 that minimizes sulfate artifact formation and is likely to also minimize artifacts of other compounds as well. This method is posted to the web site as OTM-28. We are nearing the proposal in the FR of methods to replace Method 201A (filterable particulate sizing) and Method 202. This improved test method will result in significantly less inorganic CPM than the test methods that were used to develop the AP-42 emissions factors and probably less than tests conducted over a year ago at coal fired power plants.

We tend to want to use test results from actually operating facilities as support for emissions limitations for future facilities. However, this is not always possible for NSR/PSD and BART evaluations. You did not mention what controls were being evaluated for the BART analysis. In both the Deseret Power and Desert Power analyses the sources assembled the various components of the flue gas that may likely and estimated the formation of particulate compounds that would occur as a result of cooling and dilution of the flue gas. In the analysis, it was assumed that the ammonia combined with the acid gases until either all of the ammonia or all of the acid gases were zero. The difficulty in this analysis was assessing the sequence with which acid gases would react with the ammonia. The acid gases included SO2, SO3, NO, NO2, HCl, HF, HBr. Also, the semi volatile metals As, Sb, Se, Sb, B were assessed to estimate the mass of these compounds that may be included in the inorganic CPM. I believe that there was also an assessment of the control effectiveness of the scrubbers to reduce the CPM emissions to arrive at a total PM10 emissions that would be included in the NSR permit. It was not exactly and easy deliberation but did come to completion after a couple of months discussion.

Ron Myers
U.S. Environmental Protection Agency
Office of Air Quality Planning and Standards
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RTP NC 27711
Tel. 919.541.5407
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Anita
Lee/R9/USEPA/US
To
02/04/2009 06:14 Roy Huntley/RTP/USEPA/US@EPA, Ron

PM Myers/RTP/USEPA/US@EPA

cc

Subject

Fw: Coal AP-42 question

Hello Roy and Ron,

Since you were both so helpful with some plywood/veneer questions I had in the past, I was wondering if you can refer me to the AP-42 coal folks (or do you also work with coal?)? I sent an email and VM to Christian Fellner - I'm not sure he's the right person to ask, and I haven't heard back from him yet.

Thanks very much for any help you can provide!

anita

* *
ph: (415) 972-3958
fax: (415) 947-3579

US EPA, Region 9
Air Permits Office
75 Hawthorne Street (AIR-3)
San Francisco, CA 94105
* *

----- Forwarded by Anita Lee/R9/USEPA/US on 02/04/2009 03:09 PM -----

From: Anita Lee/R9/USEPA/US

To: Christian Fellner/RTP/USEPA/US@EPA

Cc: Walt Stevenson/RTP/USEPA/US@EPA

Date: 02/02/2009 02:50 PM

Subject: Coal AP-42 question

Hi Christian,

I'm working on regional haze BART for Four Corners PP and Navajo Generating Station, and I have a question about AP-42 values for coal combustion:

In Table 1.1-5, is the Inorganic Condensable PM emission factor intended to include HCl and HF?

For H2SO4, we've been using equations and assumptions taken from, among other places, EPRI and EPA documents on sulfuric acid emissions, which I guess we've been thinking about independently from HCl and HF. For regional haze purposes, we don't expect HCl and HF to change as a result of NOx control (the way that H2SO4 emissions do with SCR), so we haven't paid attention to baseline HCl and HF emissions. However, the FLMs are concerned about the lack of inclusion of HCl and HF into the baseline.

Additionally, for the EF for coal-fired boilers with FGD controls, the breakdown of CPM-TOT into the IOR and ORG fractions is listed as "ND", however, I've seen NPS and consultants automatically apply a 80/20 split (which applies to non-FGD units). Is this recommended for units with FGD? It seems like a simplistic assumption if we believe that some of the IOR (like HCl and HF?) will be captured in the FGD?

Are there any updated references/emission factors for HCl and HF and how much control FGDs provide for those pollutants?

Thanks very much for your help!

anita

* *
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US EPA, Region 9
Air Permits Office
75 Hawthorne Street (AIR-3)
San Francisco, CA 94105
* *

Index 28

From: <Myers.Ron@epamail.epa.gov>
To: "Tom Kuchinski" <tkuchinski@barr.com>
CC: <Dewees.Jason@epamail.epa.gov>
Date: 2/17/2009 11:52 AM
Subject: Re: OTM 28 Question

Tom:
In addition to the increased vacuum due to the higher gas flow through the filter and the increased demand for the condenser to cool the sampled gas to less than 85 F, there will be about a halving of the retention time in the system (from condenser to filter). This may affect the percentage of inorganic and organic material that forms PM for collection in the impinger or on the filter. However, given the very short times at 0.5 cfm, it is unlikely that the reduced time would cause significantly less collection of PM. With the limited funding and other issues that some would want evaluated, it is unlikely that anyone would create enough data under controlled conditions to assess the impact of sampling at rates higher than Method 201A would dictate.

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Jason Dewees/RTP/USEPA/US
02/17/2009 10:09 AM

To
"Tom Kuchinski" <tkuchinski@barr.com>
cc
Ron Myers/RTP/USEPA/US@EPA
Subject
Re: OTM 28 Question

Tom,

The only issue that I foresee with trying to run an OTM28 train at 1 cfm would be the vacuum caused by the Teflon membrane CPM filter or trying to cool a very high moisture stack gas to less than 85 deg F. I've cc'd Ron Myers in case he has anything to add.

Jason M DeWees
USEPA/OAQPS/AQAD/MTG
109 TW Alexander Drive (E143-02)
Research Triangle Park, NC 27711
(919)541-9724(Voice)/(919)541-0516(Fax)
email: dewees.jason@epa.gov

"Tom Kuchinski" <tkuchinski@barr.com>
02/13/2009 04:40 PM

To
Jason Dewees/RTP/USEPA/US@EPA
cc

Subject

OTM 28 Question

Hi Jason,
Wondering if you can help out with questions on OTM 28? If not can you forward to someone?
My question has to do with sample rate through the OTM 28 back half when coupled with a Method 5 sample train. Normally OTM 28 would be paired with OTM27 which has a pretty low flow rate through the separation head. If we are doing OTM 28 through M5 train is there any concern with sampling with flow rates of typical M5 rates? We are trying to capture a large amount of air in as little time as possible. I'm guessing we will be around 1 cu/minute sample rate whereas with a separation head the rate is more like 0.3 cu/min. Is there any concerns with this approach?
Thanks for your assistance
Tom Kuchinski
Barr Engineering Co.
(952)832-2727

From: <Myers.Ron@epamail.epa.gov> ***Index 29***
To: "Baker, David (DEP)" <davbaker@state.pa.us>, "Szekeres, Richard" <riszekeres@state.pa.us>, 'William Ondriezek' <wondriez@air-comp.com>
CC: "Joe Fanjoy" <joe.fanjoy@erg.com>, "Begley, Rick" <rbegley@state.pa.us>, "Danny Greene" <Danny.Greene@erg.com>, Eric White <ewhite@air-comp.com>, Rob Frey <rfrey@air-comp.com>, <Ray.Merrill@erg.com>, <Sorrell.Candace@epamail.epa.gov>, <Dewees.Jason@epamail.epa.gov>, <Gary_McAlister/RTP/USEPA/US@mintra01.rtp.epa.gov>
Date: 2/23/2009 9:07 AM
Subject: RE: OTM28

William, Rick, David:

I would have responded sooner but was up to my eyes in other things.

First, Rick is correct that we did not limit the diameter of the CPM (backup) filter and holder. The normal diameter filter and holder used for Method 5 is acceptable (some would say required to allow sufficient flow). Several source testers have indicated that a 47 mm filter does not provide for sufficient flow.

Second: The filter following the impingers is to collect CPM created after the Method 5/17/201A filter. The particulate generated through the condensation reactions is very fine (nanometer diameter) aerosol. This aerosol tends to grow in size up to about 0.75uM in diameter. Some research indicates that a one minute residence time is required to get most of the nanometer aerosol to the final size. The filter provides the ability to collect this very fine aerosol. Yes the first two impingers are modified Greenburt-Smith. The first impinger has the probe cut/broken off just below the exit port for the impinger. The purpose of the first impinger is to separate the condensed water from the cooled sample gas. The second impinger has the probe down to the bottom of the impinger and that is to more effectively remove entrained water droplets and condition the gas to less than 85 F. The filter is used because the condensed particulate matter will not necessarily go with the condensed water and the filter is there to collect that particulate. In our laboratory experiments using SO3 (which forms sulfuric acid mist) we have found sulphuric acid throughout the sample train. In fact, some SO3 escapes collection even with the final filter in place. The collection efficiency appears to be lower for lower concentrations of SO3.

Third: Filters do not operate like sieves. Filters with pore sizes of 1 (or in fact 5) uM may demonstrate very efficient collection efficiencies for aerosols of 0.3 uM. The rationale for challenging filters with 0.3 uM DOP is that these size particles are the most difficult to collect. Particulate larger than 0.3 are collected primarily by interception (sieving) while particles smaller than 0.3 are collected by Brownian motion. Typical collection efficiencies for highly efficient filters increase on both sides of about 0.3 uM.

____
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"Baker, David (DEP)" <davbaker@state.pa.us>
02/23/2009 08:35 AM

To
'William Ondriezek' <wondriez@air-comp.com>, "Szekeres, Richard" <riszekeres@state.pa.us>

cc
Rob Frey <rfrey@air-comp.com>, Eric White <ewhite@air-comp.com>, Ron Myers/RTP/USEPA/US@EPA, "Begley, Rick" <rbegley@state.pa.us>
Subject
RE: OTM28

i remind you that as the organics condense out of the gas stream, they may tend to coalesce into larger-than-pore size particles

dave
"the best way to defeat your enemy is to befriend him"
"a true leader shares responsibility for victories and bears responsibility for defeats"
"to see the future, one only need look into the eyes of a child"
"be aware of wonder"
"a man who fails to listen is blind"

-----Original Message-----
From: William Ondriezek [mailto:wondriez@air-comp.com]
Sent: Friday, February 20, 2009 1:35 PM
To: Szekeres, Richard; Baker, David (DEP)
Cc: Rob Frey; Eric White; myers.ron@epa.gov
Subject: RE: OTM28

We narrowed it to the filter itself, without the filter membrane in line sampling train operates normally. I think we are misreading the 0.5 micron i.e. data from vendor shows that up to 3 micron filter has a 99.95% eff. On the 0.5 micron size according to Pallflex.

Rob see if you explain this better than “me”

From: Szekeres, Richard [mailto:riszekeres@state.pa.us]
Sent: Friday, February 20, 2009 1:31 PM
To: William Ondriezek
Cc: Rob Frey; Eric White; myers.ron@epa.gov
Subject: RE: OTM28
Importance: High

Section 6.1.2 of OTM-28 states that you are to " use a commercial filter holder capable of supporting 47 mm or greater diameter filters". Have you tried a filter with a diameter larger than 47 mm? A normal diameter filter (115 mm?) gives you considerably more surface area. Also, it appears that all of the impingers are modified Greenburg-Smith. I am also wondering what the purpose of the filter is? There is a standard Method 5 filter upstream with a 0.3 micron pore size, so what's the 0.5 micron filter for, just to prevent carryover like in the Method 8 train, where they want to keep IPA droplets out of the peroxide impingers? If carryover is the only purpose, couldn't you use a glass wool plug? These are the thoughts of one who has never used this method. I have copied the OTM-28 guru, Ron Myers, for his wisdom on this matter. I agree that starting a test run with an initial vacuum of 18 inches at a dH of only 0.8 is just asking for problems.
P.S. What is the diameter of the spiral tubing inside the in-line condenser? Are there condensers with larger internal tubing?
Rick Szekeres, M.S. | Source Testing Section
Department of Environmental Protection
Rachel Carson State Office Building
400 Market Street | Harrisburg, PA 17101
Phone: 717.772.3938 | Fax: 717.772.2303
www.depweb.state.pa.us
-----Original Message-----
From: William Ondriezek [mailto:wondriez@air-comp.com]
Sent: Friday, February 20, 2009 12:45 PM

To: Baker, David (DEP); Szekeres, Richard
Cc: Rob Frey; Eric White
Subject: OTM28
Okay next question for “you” or are you “we” anyway, we put the method required 47mm Teflon membrane filter of .5 micron/99.95% eff. In line and the sample train vacuum goes to 18” and Dh= 0.78, this is in the lab with no particulate laden gas stream. How do “you” or “we” propose proceeding? “I” would appreciate any help you can offer “me”.

William J. Ondriezek, Jr., QSTI
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(412) 826 - 3636

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"Only speak if you can improve on the silence."
"Failure is not defeat, it is the process of learning how."