Frequently Asked Questions about EMC

10/5/16

What is EPA's definition of Volatile Organic Compounds (VOC)?

The term "VOC - Volatile Organic Compounds" has a special regulatory meaning for EPA. It is defined in 40 CFR 51.100(s). You can find this document on-line at this link: Government Printing Office.

The definition reads as follows: "(s) Volatile organic compounds (VOC) means any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions." Immediately following the definition is a list of exempt organic compounds that "have been determined to have negligible photochemical reactivity..." This list includes mostly chlorofluorocarbons. Two of the most important non-chlorofluorocarbon organic compounds that are not classified as VOC are methane and ethane.

What is the Test Methods Numbering System?

There are several offices within the EPA that develop methods for measuring air pollution emissions. The numbering system for these methods is quite confusing. It is important that you understand the numbering system to know methods for which EMC has responsibility. The EMC cannot answer questions for those methods which are not our responsibility.

Which methods are EMC's responsibility?

The EMC is responsible for methods that have method numbers between 1 and 399. These methods have between 1 and 3 digits with no decimal points. For example, EPA Methods 5 or EPA Method 308. Occasionally a method will have variations which are denoted by letters. For example, EPA Method 5C.

Method numbers or Performance Specifications between 1 and 100 are for New Source Performance Standards (NSPSs). These methods are found in 40 CFR Part 60, Appendix A.

Method numbers in the 100 series are for the National Emission Standards for Hazardous Air Pollutants (NESHAPs). These methods are found in 40 CFR Part 61, Appendix B.

Method numbers in the 200 series are example State Implementation Plans (SIPs). These methods are found in 40 CFR Part 51, Appendix M.

And method numbers in the 300 series are for the Maximum Achievable Control Technology (MACT) standards. These methods are found in 40 CFR Part 63, Appendix A.

Who is responsible for other air methods?

The EMC is commonly asked questions regarding other air pollution methods that are not our direct responsibility. These methods are listed below. If your question regards one of these listed methods the EMC will not be able to answer your question.

Office of Solid Waste (OSW) Methods - These methods are always 4 digits with no decimal points. For example, EPA Method 0010 or EPA Method 8240.

Office of Water (OW) Methods - These methods are either 4 digits with a decimal point (if the number is under 500) or 3 digits (over 600). For example, EPA Method 101.1 or EPA Method 608. The only exception is the 1600 series which is 4 digits with no decimal points.

Ambient Air Methods for Air Toxics - These methods are always preceded by a TO (Toxic Organics). For example, EPA Method TO-15.

Where can I get a list of testing firms and laboratories that perform emissions testing/monitoring?

A list of Emission Testing Firms with most of the environmental testing firms in the U.S. can be found at this Source Evaluation Society link . Look for the "Stack Testing Companies" link under the "General Information" category.
SEE DISCLAIMER

How can I get a copy of a test method or performance specification?

Electronic copies of EMC's test methods are available through the Test Method Section of the EMC home page. Electronic copies of EMC's performance specifications can be obtained through the Monitoring Section of the EMC home page. Promulgated Test Methods are printed in the Code of Federal Regulations (CFR). EXIT Disclaimer The official printed bound edition of the CFR is available for purchase through the U.S. Government printing office by phone, fax, or mail.

How does the EMC view analytical lab results that indicate nondetectable or below the detection limit values?

Conceptually, the "limit of detection" is the smallest amount of a substance that an analytical method can reliably distinguish from zero. More formally, it is the minimum concentration or amount of a target analyte that produces a signal the tester can distinguish, at a specified confidence level, from the signal produced by a blank. Testers sometimes mistakenly use the term "limit of quantification" when they mean "limit of detection." The limit of quantification is the minimum concentration or amount of an analyte that a method can measure with a specified degree of precision. One procedure for calculating the limit of detection is to collect and analyze a series of at least seven blank or very low-level samples. The tester then calculates the standard deviation of the results. If the tester used seven samples multiplying the standard deviation by three will produce a limit of detection at roughly the 99% confidence level (please see NOTE below).

Each laboratory should report its limit of detection, identify its procedure for measuring the limit of detection, and label results below the detection limit as "below detection limit (BDL)." As the measured results approach the estimated limit of detection, it becomes critical for the tester to determine the limit of detection for each test program. The tester must report the experimentally

measured limit of detection and the procedure used to measure it whether or not individual results are above or below the detection limit. If the user averages results of samples from the same "test," where some results are BDL and other results are above the detection limit, then the user should substitute the estimated detection limit for the BDL results. The user should then report the average as "equal to or less than" the averaged result. If all results are BDL, the user should report the average as BDL also.

When designing a test program for a particular purpose, you should not use a method whose limit of detection will affect your decision. In other words, you should design the test program so substituting any value from zero through the limit of detection for BDL results will not affect the primary data user's ability to make decisions based on the data. If your test program uses methods that measure multiple pollutants, you must decide how to treat the results from all the potential targets of the test method that are not detected. Some methods designed to measure multiple pollutants can have many potential targets. Substituting a value other than zero for all potential measurement targets that are not detected may result in a total that exceeds regulatory limits even when the method has low limits of detection. No general guidance can address all the possibilities, so you must decide how to handle this on a case-by-case basis. In addition, when designing a test program, the data user and his tester may want to consider potential secondary uses of the data. Some examples of secondary uses are as inputs for risk assessments, for characterizing emissions by non-regulatory groups and for developing emission factors.

Using data gathered for other purposes or "secondary data" to support a decision may present special problems related to detection limits. The secondary data user may find published data sets where substituting a value from zero through the limit of detection for BDL values would affect the user's decision. The potential effect of the decision should dictate which value (zero through the detection limit) to substitute. This is best shown with examples. The examples are for illustrative purposes; they are not the only right ways to evaluate BDL data. In the end, the data user must decide what is the most suitable way to treat results reported as BDL.

If the data are used to perform a risk analysis for emissions from a particular facility, the value of the limit of detection could be substituted for any BDL results. This would give the highest (worst case) value for the emissions which would protective of the public health. Some risk assessment evaluations use uncertainly estimations to produce probabilistic estimations of emissions.

If the data are used to develop an emissions factor, half of the limit of detection is typically substituted for BDL results. This is consistent with developing emissions factors to represent average emissions per unit of production across the industry category.

If the data are used to set emissions limits, different procedures may be used for different source categories. However, the procedure used to determine compliance with the emission limit should be consistent with the procedure used during testing to set the emission limit. For example, when measuring dioxin/furan emissions from municipal waste combustors, EPA substituted zero for BDL results during the testing to gather data to support the emission limit. To be consistent, the Agency allows testers to substitute zero for BDL results when determining compliance with the

municipal waste combustor dioxin/furan emission limit provided the test run duration is four or more hours.

NOTE: This information was derived from the American Chemical Society Committee on Environmental Improvement, "Guidelines for Data Acquisition and Data Quality Evaluation in Environmental Chemistry"; *Analytical Chemistry* 1980, 52, pp.2242-2248.

What are Guideline Documents?

The EMC's Guideline Documents are developed to clarify undefined technical areas of methods, performance specifications and related measurement requirements as well Information Collection Requests. Guideline documents also include more general documents on specific technical areas including remote sensing and measurement of VOC from corn wet-milling operations.

What are Information Documents?

The EMC's Information Documents are developed to explain the derivation of factors, equations, and procedures, and to provide technical information necessary for regulatory agencies to make decisions about acceptance of data and alternative methods and monitoring.

How do I take significant figures into account in calculating and reporting emission rates and concentrations when determining compliance with NSPS, NESHAP, and MACT regulations?

See the 1990 guideline memo entitled, "Performance Test Calculation Guidelines (PDF)" .