PFAS Air Methods Development

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Meet the Scientists Panel
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Goals

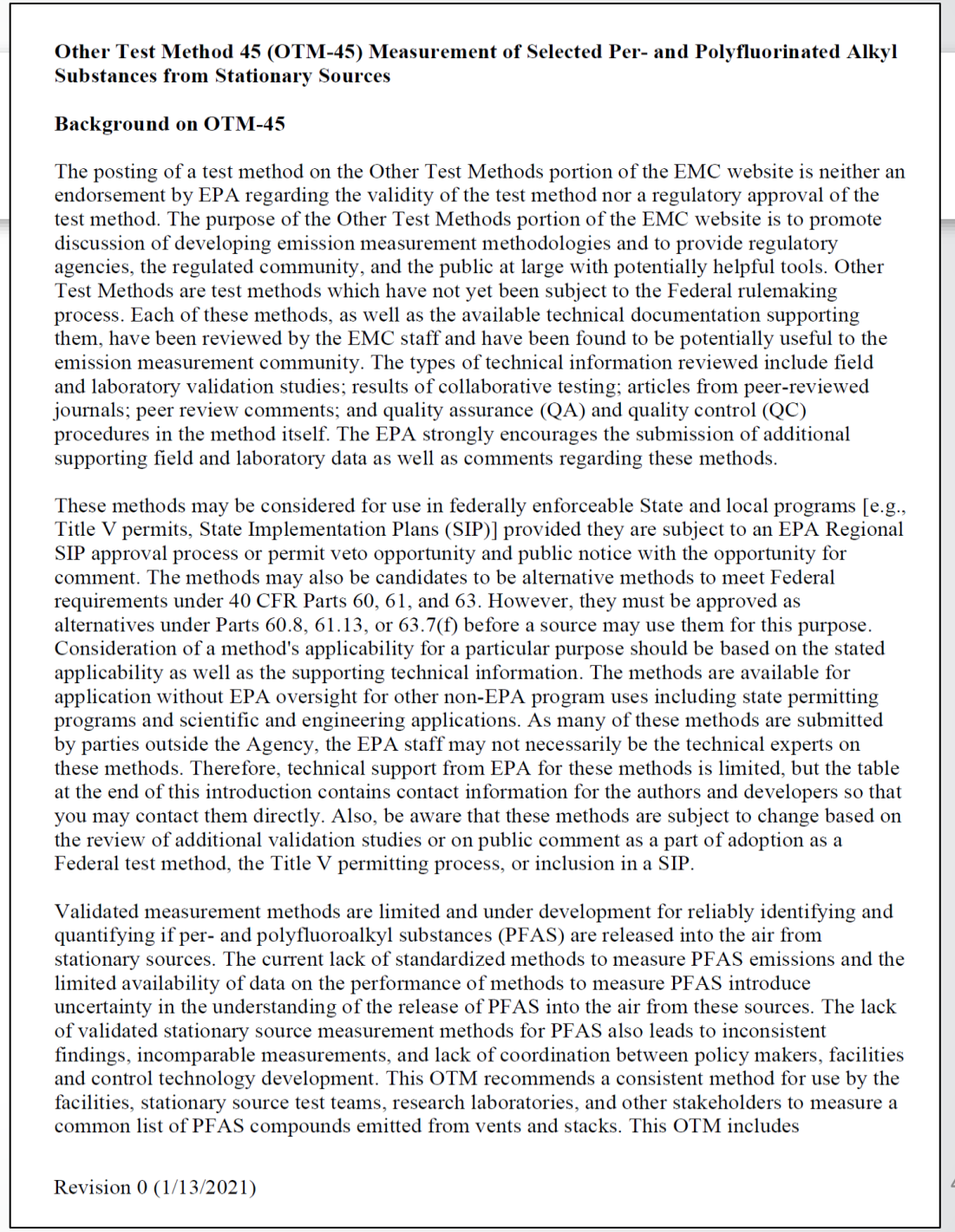
- Reliable and comprehensive emission measurement methods – both targeted and nontargeted – are needed to measure volatile, semivolatile, nonvolatile, polar, and nonpolar PFAS for multiple purposes and sources
- The ability to measure PFAS as a class is a recognized Program Office need
- Field testing is critical to methods development and supports comprehensive source characterizations and technology evaluations
- Collaboration and partnership, both internal and external, is integral to these objectives and comes with challenges

Approach

- Modifications to Method 0010 (MM5) train for polar and nonpolar semi-volatile/non-volatile PFAS
- Canisters and thermal desorption tubes for polar and nonpolar volatile PFAS
- High Resolution Mass Spectrometry nontargeted analyses (NTA) for polar and nonpolar volatile/semi-volatile/non-volatile PFAS
- Total Organic Fluorine (TOF) by combustion/ion chromatography
- Innovative, real-time measurement approaches
- Source measurement approaches also applicable to ambient measurements

Current Status

- Other Test Method (OTM) – 45 now available for polar PFAS compounds (https://www.epa.gov/sites/default/files/2021-01/documents/otm_45_semivolatile_pfas_1-13-21.pdf)
- Modified Method 0010 (MM5) train for nonpolar PFAS compounds in development
  - Evaluating sequential extraction to enable single sample train
- Field evaluations still a critical need and difficult to access



Other Test Method 45 (OTM-45) Measurement of Selected Per- and Polyfluorinated Alkyl Substances from Stationary Sources

Background on OTM-45

The posting of a test method on the Other Test Methods portion of the EMC website is neither an endorsement by EPA regarding the validity of the test method nor a regulatory approval of the test method. The purpose of the Other Test Methods portion of the EMC website is to promote discussion of developing emission measurement methodologies and to provide regulatory agencies, the regulated community, and the public at large with potentially helpful tools. Other Test Methods are test methods which have not yet been subject to the Federal rulemaking process. Each of these methods, as well as the available technical documentation supporting them, have been reviewed by the EMC staff and have been found to be potentially useful to the emission measurement community. The types of technical information reviewed include field and laboratory validation studies; results of collaborative testing; articles from peer-reviewed journals; peer review comments; and quality assurance (QA) and quality control (QC) procedures in the method itself. The EPA strongly encourages the submission of additional supporting field and laboratory data as well as comments regarding these methods.

These methods may be considered for use in federally enforceable State and local programs [e.g., Title V permits, State Implementation Plans (SIP)] provided they are subject to an EPA Regional SIP approval process or permit veto opportunity and public notice with the opportunity for comment. The methods may also be candidates to be alternative methods to meet Federal requirements under 40 CFR Parts 60, 61, and 63. However, they must be approved as alternatives under Parts 60.8, 61.13, or 63.7(f) before a source may use them for this purpose. Consideration of a method's applicability for a particular purpose should be based on the stated applicability as well as the supporting technical information. The methods are available for application without EPA oversight for other non-EPA program uses including state permitting programs and scientific and engineering applications. As many of these methods are submitted by parties outside the Agency, the EPA staff may not necessarily be the technical experts on these methods. Therefore, technical support from EPA for these methods is limited, but the table at the end of this introduction contains contact information for the authors and developers so that you may contact them directly. Also, be aware that these methods are subject to change based on the review of additional validation studies or on public comment as a part of adoption as a Federal test method, the Title V permitting process, or inclusion in a SIP.

Validated measurement methods are limited and under development for reliably identifying and quantifying if per- and polyfluoroalkyl substances (PFAS) are released into the air from stationary sources. The current lack of standardized methods to measure PFAS emissions and the limited availability of data on the performance of methods to measure PFAS introduce uncertainty in the understanding of the release of PFAS into the air from these sources. The lack of validated stationary source measurement methods for PFAS also leads to inconsistent findings, incomparable measurements, and lack of coordination between policy makers, facilities and control technology development. This OTM recommends a consistent method for use by the facilities, stationary source test teams, research laboratories, and other stakeholders to measure a common list of PFAS compounds emitted from vents and stacks. This OTM includes

Revision 0 (1/13/2021)

Current Status

- Canister method frequently used for volatile emissions testing and candidate for Other Test Method to be developed
  - Target PFAS analytes (30) representative of current interest (i.e., Products of Incomplete Combustion [PICs], industrial products, and more)
- NTA capabilities established and supporting multiple projects
- TOF method in early stages of development
  - Characterizing Combustion Ion Chromotography capabilities
  - Identifying candidate sampling sorbents
- Field evaluations still a critical need and difficult to access

Contributors

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