Clean Water Act Methods

Overview of EPA's CWA Method Activities

August 2022, Adrian Hanley, U.S. EPA

CWA Analytical Methods Program

- Many industries and municipalities are permitted to discharge pollutants under the CWA NPDES
- They use analytical methods to analyze the chemical, physical, and biological components of wastewater and other environmental samples for monitoring compliance
- CWA requires that EPA establish test procedures to measure pollutants for CWA programs through rulemaking, including taking public comments
- EPA promulgates test procedures in 40 CFR Part 136. A method is approved for national use in NPDES permits when it is promulgated.



EPA's CWA Methods Team

Jesse Pritts – Branch Chief and Manager for method activities in the Engineering and Analysis Division

Team Members:

Adrian Hanley – Methods Team Leader, Chemist

Lemuel Walker – National ATP Coordinator, Chemist

Bekah Burket – Chemist

Tracy Bone – Microbiology Lead, Microbiologist

Meghan Hessenauer – Whole Effluent Toxicity Lead, Biologist

Methods Update Rules (MURs)

- Plan to propose and finalize MURs more frequently
  - Smaller rules
  - Less wait time for revisions, Alternate Test Procedures (ATPs), corrections
- A “Routine MUR” every 1-3 years
  - Routine MURs will contain non-controversial items
  - ATPs, minor editorial updates and revisions to methods (EPA, VCSBs, etc.)
- Full MURs will contain more controversial items (i.e., new methods) and be proposed separately and less frequently

Routine MURs

- 2021 Routine MUR
  - Proposed October 2019
  - Signed on May 3, 2021 by Administrator Michael S. Regan
  - Effective July 19, 2021

  https://www.epa.gov/cwa-methods/methods-update-rule-2021
- Next Routine MUR EPA
  - Materials received by VCSBs and ATP applicants
  - Proposal likely in early 2023

CWA Microbiology Method Activities

Update EPA Microbial Methods in the 2022 rMUR

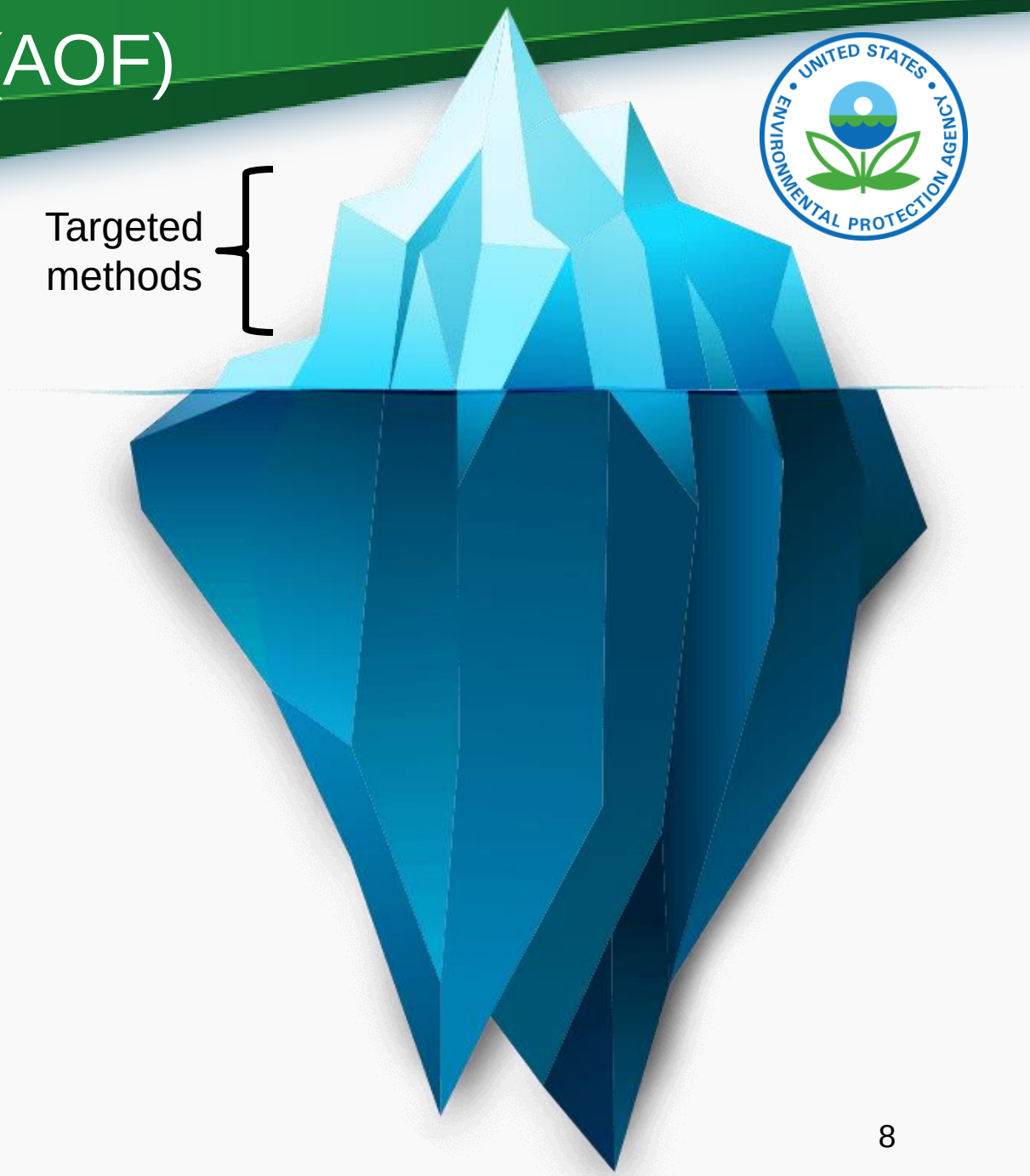
- Planning to update some of the older EPA Micro Methods
- Revisions include:
  - Update equipment (e.g., no mercury thermometers, disposable culture dishes)
  - Standardize language between methods e.g., QA, scope, legal disclaimer

CWA Microbiology Method Activities

- Rapid methods for *E. coli* and enterococci by droplet digital PCR in ambient water
- Single-laboratory validation completed
  - Two laboratories participated
- Shortens response time for swimming advisories

Absorbable Organic Fluorine (AOF) Draft Method 1621

- Thousands of PFAS exist
- Increasing demand for aggregate methods like AOF
- Naturally occurring organofluorines are rare
- Collaborated with ASTM D19 and EPA ORD on single-laboratory validation of AOF screening method



AOF, Draft Method 1621 (cont.)

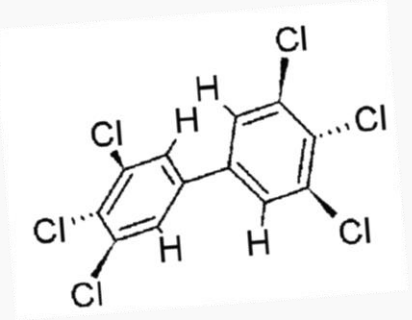
- Single-Laboratory Validation Included:
  - Calibration and sorbent testing
  - Recovery of individual PFAS, mixed PFAS, and non PFAS organofluorines
  - Initial precision and recovery and method detection limit studies
  - Ten wastewater and surface water matrices were tested at two spike concentrations
  - Organofluorine compounds were retained on a granular activated carbon (GAC) sorbent
  - Then measured by combustion ion chromatography (CIC)
- Yields a single result that estimates an aggregate concentration of any organofluorine compounds in the sample

Multi-Laboratory Validation

- Finalizing Study Plan and collecting test matrices
- Over a dozen labs with CICs have expressed interest in participating
- For more draft method details:
  - https://www.epa.gov/cwa-methods

Method 1628 PCB Congener Multi-Lab Validation

- Study completed
  - 12 laboratories recruited, 7 finished
  - 6 Commercial and 1 state laboratories
- Identifies and quantifies individual PCB congeners using low resolution GC/MS
- Wastewater, biosolids, sediment, and fish tissue
- 48 congeners calibrated, all 209 monitored
- 29 isotope dilution standards
- Multi-laboratory validation study report and EPA Method 1628 completed. https://www.epa.gov/cwa-methods

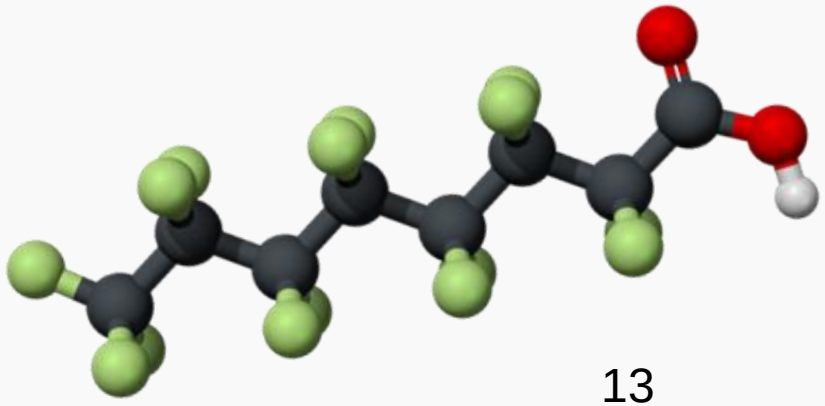


PFAS Method 1633 Validation

- Solid-phase extraction isotope dilution method
  - Based on an SOP originally developed by SGS AXYS
  - DoD is funding and managing both single and multi-laboratory validation studies of the method, EPA OW and OLEM are providing review
  - The goal is to provide EPA OW with the documentation needed to consider publication of this method as a CWA method. OLEM plans to also leverage the validation data to support an SW-846 method.
  - Test matrices: wastewater, surface water, groundwater, landfill leachate, soil, sediment, biosolid, and fish tissue (includes shellfish)
- Single-Laboratory Validation Completed
  - Draft Method 1633 and single laboratory validation study report are both posted on the web: https://www.epa.gov/cwa-methods

PFAS Method 1633 Validation (cont.)

- Multi-Laboratory Validation
  - Currently underway, study includes 10 participant laboratories, referee laboratory, and data validators
  - Received initial calibration and initial demonstration of capability data
  - Aqueous (wastewater, surface water, and groundwater) samples analyzed
  - Soil, sediment, biosolid, tissue, and landfill leachate sample analysis forthcoming
  - Data review and statistical analysis ongoing



608.3, 624.1, 625.1 QC Criteria Update

- TNI, ACIL, APHL, and WEF have volunteered to provide data to update QC criteria
  - Initial calibration, MDLs, calibration verification, ongoing precision and recovery, surrogate recovery, MS/MSDs
- Secondary Data Collection
  - Use existing data anonymously
  - Volunteer laboratories
    - Perform NPDES compliance monitoring
    - Have an SOP and formal quality system
  - Coordinate with laboratory associations
- Over 20 laboratories recruited
- Data collection this fall

Gross Alpha Beta Method 900.0 Revision

- EPA's OGWDW approved a revision to EPA Method 900.0 (Revision 1) in 2018 for drinking water at 40 CFR 141.66(c)
- Clean Water Act approved EPA method for Gross Alpha Beta is the original Method 900.0 published in 1980
- Plan to evaluate the performance of the method in wastewater with high total dissolved solids (TDS)
- Study plan finalized and we have recruited volunteer labs
- Testing to start this year

Continuous Monitoring Collaboration

- Total residual chlorine pilot study
- Based on EPA Drinking Water Method 334.0
- Hampton Roads Sanitation District's (HRSD) SOP for Online Total Residual Chlorine Analysis approved as a limited use ATP by VA DEQ for compliance analysis of total residual chlorine (TRC) in the contact tank to meet VPDES permit requirements.
- Collaborating with Standard Methods Joint Task Group to develop an approach for validating the calibration and measurements resulting from online analyzer technology

ATP Reviews

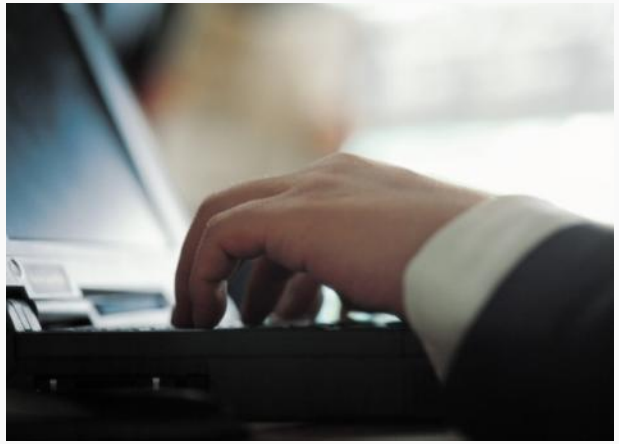
- Alternate test procedures (ATPs) for nationwide use are submitted to EPA HQ for review
  - Codified at 40 CFR 136.4 and 136.5

- Protocols for EPA review of ATPs and new methods are available at:

https://www.epa.gov/cwa-methods/alternate-test-procedures

Contact Information

For more information or additional feedback, please contact:



Adrian Hanley, US EPA
CWA Methods Team Leader
Office of Science and Technology
Office of Water
Phone: 202-564-1564
E-Mail: hanley.adrian@epa.gov