



# **Clean Water Act Methods Update**

## **Overview of EPA's CWA Method Update Rule and CWA Method Activities**

August 2016 • Adrian Hanley, U.S. EPA

# CWA Analytical Methods Program



- Many industries and municipalities permitted under CWA NPDES program to discharge pollutants
- They use analytical methods to analyze the chemical, physical and biological components of wastewater and other environmental samples
- CWA requires EPA, through rulemaking, to establish test procedures to measure pollutants in CWA programs
- EPA promulgates such procedures in 40 CFR Part 136



# Method Update Rule (MUR)



- Clean Water Act Methods Update Rule for the Analysis of Effluent
  - Update to 40 CFR Part 136
  - Proposed February 19, 2015
  - Comment period closed May 20, 2015
  - 175 sets of comments
  - Approximately 400 pages of comments



# 2015 MUR Proposal Summary



- Proposed ~100 method revisions from ASTM International and Standard Methods
- 6 Alternate Test Procedures (ATPs)
- 1 USGS Method (based off of an ATP)
- Revisions to Methods 608, 624, and 625
- Method Detection Limit (MDL) Revision
- WET methods errata



# Finalization Process



- Rule proposed and comments received
- Respond to comments
  - Modifications may occur
- Internal Review of Final Rule
  - Multi-office EPA workgroup, Office of General Counsel, senior management, Office of Policy, the Administrator
  - Further modifications may occur
- Rule finalized



Important Note: Items in the proposed rule are generally accepted, rejected, or modified. New items outside of the scope of the proposed rule are generally not added to the final rule.



# Revised ASTM and SM Methods



- Proposed ASTM and SM Revisions
  - Editorial changes
  - Minor QC changes
  - Technical clarification
- Proposal Comments Summary (not all inclusive)
  - Many are highly specific and not repeated by other commenters
  - Question which method version should be in 40 CFR Part 136
  - Typographical and reference corrections

# Proposed ATPs



- **5 General use ATPs**

- The Nitrate Elimination Company Inc. (NECi) Method N07-0003, “Nitrate Reductase Nitrate-Nitrogen Analysis”
- Timberline Instruments, LLC Method Ammonia-001, “Determination of Inorganic Ammonia by Continuous Flow Gas Diffusion and Conductivity Cell Analysis”
- IDEXX Laboratories, Inc., Colilert®-18, “Coliform/*E. coli* Enzyme Substrate Test for Fecal Coliforms in Wastewater”
- Hach Company Method 10242, “Simplified Spectrophotometric Measurement of Total Kjeldahl Nitrogen in Water and Wastewater”
- Hach Company Method 10206, “Spectrophotometric Measurement of Nitrate in Water and Wastewater”

- **1 industry specific ATP**

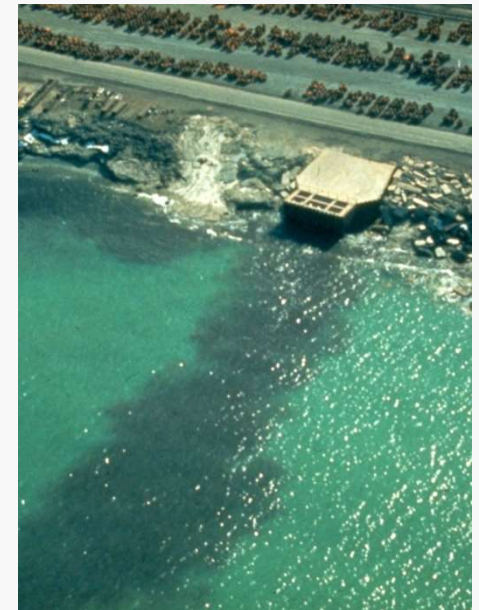
- National Council for Air and Stream Improvement, Inc. (NCASI) Method TNTP-W10900, “Total (Kjeldahl) Nitrogen (TKN) and Total Phosphorus in Pulp and Paper Biologically Treated Effluent by Alkaline Persulfate Digestion”

# Methods 608.3, 624.1, and 625.1



## Revision – limited changes

- Updated technology
  - Capillary columns, updated references
- Method Flexibility
  - Allows more changes with internal documentation (no ATP required)
- Method Harmonization
  - Altered some QA/QC frequencies and standards to match OGWDW and SW-846 methods





# Proposed MDL Revision Summary



- Originally Submitted by TNI
- MDL Calculation of spiked data remains unchanged.
- Addresses background contamination and multiple instrument MDLs
- Quarterly spike samples
- Annual calculation

Diverse Comments!



# MDL - Common Misconceptions



- The laboratory has to run MDL samples every quarter, even if no client samples are analyzed
- The laboratory has to recalculate the MDL every quarter
- The laboratory will have to run more blanks than before

All three of these statements are incorrect



# MDL Sample Count Comparison



| Samples Required    | Current 1983 MDL | Proposed 2015 MDL    |
|---------------------|------------------|----------------------|
| Sample Spikes       | 7/year*          | 8/year (2/quarter)** |
| Method Blanks (MBs) | 0                | Use routine MBs      |

\*Most commercial laboratories that currently participate in analyses supporting the National Pollutant Discharge Elimination System (NPDES) run MDLs for each method/instrument combination once per year

\*\*Assumes at least 2 SDGs per quarter, less samples are required if the analysis is run infrequently

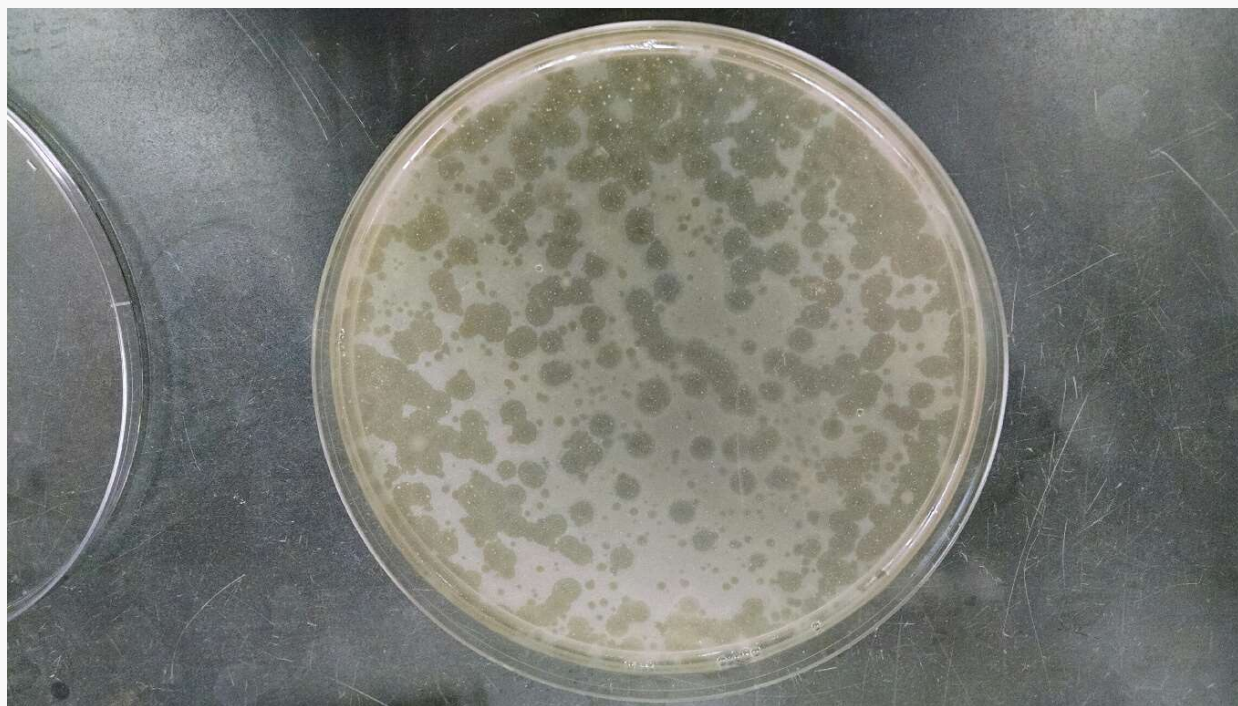


# **Other Clean Water Act Method Activities**

# CWA Microbiology Method Activities



- Currently multi-lab validating coliphage methods in wastewater and recreational waters





# CWA Chemistry Method Activities



- Method Prioritization
- PCB Congener Method
- ATP Reviews



# Contaminant Research



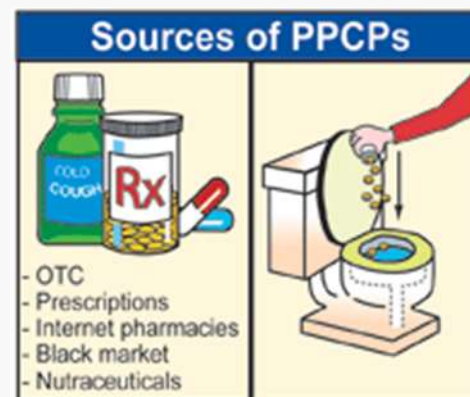
- EPA Survey Studies
- USGS Water Quality Surveys
- 304(m)
- TSCA Work Plan
- GAO Reports
- DMR Pollutant Loading Tool
- OGWDW UCMR Reports
- CDC – Common Diseases
  - Link to WW discharge or ambient water?
- Outreach



# High Priority Chemistry Methods



- Polychlorinated biphenyl (PCB) congeners
- Polyfluorinated alkyl substances (PFAS)
- Evaluation of continuous monitoring methods
- Total nitrogen
- Peracetic acid
- Pharmaceutical and personal-care products (PPCPs)



# Other New Method Needs



The list is lengthy!

Plastic industry chemicals, phthalates, non-legacy pesticides, brominated flame retardants, food additives, creosote, amines, fatty acids and alcohols, chlorinated paraffin, perchlorate, nanomaterials, polychlorinated naphthalenes, toluene diamine, hormones, mining discharges, halogenated methane, ozone, hydrazine, bromine, urea, tolyltriazole...

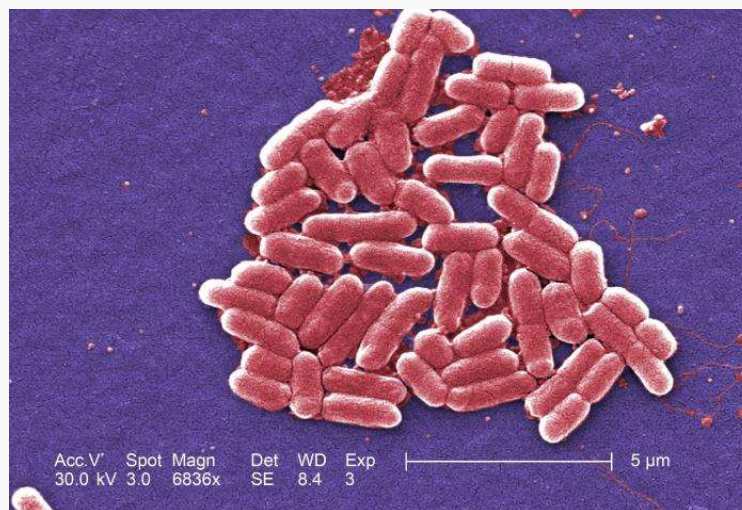


# High Priority Microbiology Methods



## Ambient Waters

- Coliphage, Male-specific and somatic
  - Undergoing multi-laboratory Validation
- *E. coli* by qPCR
  - Completed single laboratory validation
- *Cyanotoxins*





# PCB Congener Method

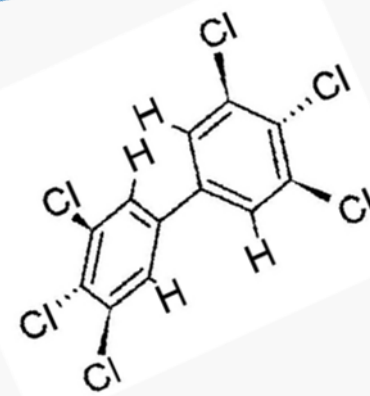


- EPA workgroup assembled
- Low resolution GC-MS select ion monitoring laboratory SOP selected; goals:
  - Identifies and quantifies PCB contamination using individual congeners
  - Improves sensitivity over Method 608, less sensitive than typical laboratory background
  - Implementable at a typical mid-sized full-service environmental laboratory
- Single laboratory work plan and QAPP finalized
- Single Laboratory testing initiated

# Snapshot of Method



- **Separation**
  - DB-5 capillary chromatography column
- **Quantification**
  - 30 carbon-13 isotope dilution standards
  - Calibration of approximately 60 congeners
  - Other congeners quantified by response factors
- **Extraction**
  - Testing 2 SPE procedures and 1 LLE procedure
- **Sensitivity Goal**
  - Minimum level of 1 ng/L for each congener (except monochloro congeners)



# Projected Method Projects



- Multi-Laboratory Validation of PCB Congener Method
- Multi-Laboratory Validation of 608.3, 624.1, and 625.1

# Contact Information



**For more information or additional feedback, please contact:**



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