SW-846 Methods Program Update and Path Forward

U.S. Environmental Protection Agency, Washington, D.C.  
Office of Land and Emergency Management (OLEM) 
Office of Resource Conservation and Recovery (ORCR)

Christina Langlois-Miller
Topics to be Covered

- SW-846 Methods Publication
- Update VI
- Update VII
  - PFAS Methods
  - Ignitability Characteristic Proposed Rule
- Future Projects
- Contact Information
SW-846 Methods Publication

• Method Publication Process Approved September 2016
  ❑ Streamlined to take less time from method completion to publication
    – OMB currently reviewing all methods – adds 3-6 months
  ❑ Methods posted for public comment on SW-846 website (via EPA Docket)
  ❑ Method users are notified via mailing list (improved communication)
    – Contact orcrSW846@epa.gov to sign up for mailing list

• Will Still Notify the Public via FR for Publication of Methods That Are Required by Regulations (i.e., MDPs)
Phased Release for Public Comment

- Phase I – Method 1340: In Vitro Bioaccessibility Assay for Lead in Soil
- Phase II – Methods 8260D and 8270E: Volatile and Semivolatile Organic Compounds by GC/MS
- Phase III – 4 Inorganic LEAF Methods (1313, 1314, 1315, 1316) and the User Guide
Method 1340 – In-Vitro Bioaccessibility Assay (IVBA) for Lead in Soil

- New Method - Characterization of lead in soil under 50,000 mg/kg in concentration
- Public Comment Period: March 31 – May 1, 2017
- OMB waived review
- Finalized November 28, 2017

Update VI Phase I – Method 1340
Update VI Phase II - Organic Methods

Methods 8260D and 8270E - Volatile and Semivolatile Organic Compounds by GC/MS

• Revised to include:
  - Analytes frequently found in Superfund sites
  - Updated performance data
  - Optional use of hydrogen as carrier gas to address helium supply shortage
  - Advanced measurement technologies (SIM, CI, GC-MS/MS)
  - Updated tuning requirements

• Public Comment Period: April 28 – June 28, 2017
• OMB review slightly delayed publication
• Finalized July 12, 2018
Update VI Phase III - LEAF Inorganic Leaching Tests

- **Public Comment Period:** Nov 2 – Jan 31, 2018
  
  - **Equilibrium-based leaching tests**
    - Method 1313 – pH dependence & titration curve
    - Method 1316 – LS dependence
  
  - **Percolation (column) leaching test**
    - Method 1314 – upflow column, local equilibrium (LS ratio)
  
  - **Mass transport rate-based leaching test**
    - Method 1315 – monolith & compacted granular options
  
  - **LEAF User Guide**

- **Expected publication:** late 2018/early 2019
• **Method-Defined Parameters (rulemaking)**
  - Methods 1010B and 1020C – Flashpoint methods
  - Methods 0010, 0011, 0020, 0023A, and 0051 – Air emissions and stack sampling methods

• **Inorganic**
  - Method 3050C – Acid digestion for soils
  - Method 1340A – Pb and As bioavailability
  - Method 3060B – Alkaline digestion for Cr(VI)
  - Methods 6850A and 6860A – Perchlorate

• **Organic**
  - Methods 8327, 8328, and 8329 – PFAS
The Agency identified a need to revise the RCRA ignitability characteristic for hazardous waste, 40 CFR 261.21

Currently developing a proposed rule to address:

- Flashpoint methods for ignitable liquids
  - Methods 1010A (Pensky Martens) and 1020B (Setaflash) are required by 40 CFR 261.21(a)(1) and refer to ASTM standards from 1978-1980
    - Outdated, instrumentation no longer commercially available
    - Require Hg thermometers
  - Possible clarification of alcohol exclusion for ignitable liquids

Proposed rule expected Fall 2018
• Method 3050C – Acid Digestion of Sediments, Sludges, and Soils
  ❑ Strong acid digestion to dissolve almost all elements that could become “environmentally available”
  ❑ Updates include:
    – One procedure for ICP-OES and ICP-MS analysis
    » Reduced amount of HCl added earlier in the procedure
    – New Appendix B – added to address Incremental Sampling
  ❑ Problems arose during proof of concept study
    – Focus group established to work out kinks
    – Method will go back to SW-846 workgroup once the draft is revised
    – Multi-lab validation pending method revisions
Method 1340A – In Vitro Bioaccessibility Assay for Lead and Arsenic in Soil
  - OSRTI validated the Method 1340 procedure for arsenic in addition to lead

Method 3060B – Alkaline Digestion for Hexavalent Chromium
  - USGS recently published modifications to 3060A in ES&T
    - Smaller particle size
    - Use PTFE instead of glass
    - 48-hour extraction
• Method 6850A - Perchlorate in Water, Soils, and Solid Wastes Using High Performance Liquid Chromatography/Electrospray Ionization/Mass Spectrometry (HPLC/ESI/MS)

• Method 6860A - Perchlorate in Water, Soils, and Solid Wastes Using Ion Chromatography/Electrospray Ionization/Mass Spectrometry (IC/ESI/MS)
PFAS Background

- EPA developed Method 537 for drinking water in 2009
  - 14 PFAS compounds using solid-phase extraction (SPE) followed by LC/MS/MS
- In May 2016, EPA issued drinking water health advisories for PFOA and PFOS (70ppt)
- A cross-agency workgroup (OLEM, OW, ORD, and Regions) was charged with the development of:
  - Multi-lab validated method(s) for the analysis of PFAS in various environmental media (groundwater, surface water, wastewater treatment influent and effluent, soils, sediments, biosolids)
  - Sampling, handling and storage protocols
  - Data management
  - Internal and external lab capacity assessment
SW-846 PFAS Methods

- Three LC/MS/MS methods for 24 PFAS compounds
  - **Method 8327** – *direct injection and external standard method for non-potable waters*
    - Uses isotopically labeled compounds as surrogates
    - Initial assessment complete: 6 EPA labs validated
    - Multi-lab validation study ongoing: 5 labs (3 states, 2 commercial)
    - Anticipated method release for public comment: September 2018
  - **Method 8328** – *solid phase extraction and isotope dilution method for non-potable waters*
    - Addition of isotopically labeled internal standards prior to SPE
    - Multi-lab validation study expected in Fall 2018
  - **Method 8329** – *TBD method for solids*
Possible Future Projects

- **Organic**
  - Method 5030D - Purge-and-Trap for Aqueous Samples
  - Method 5035B - Closed-System Purge-and-Trap and Extraction for Volatile Organics in Soil and Waste Samples
  - Method 8261B - Volatile Organic Compounds by Vacuum Distillation in Combination with Gas Chromatography/Mass Spectrometry (VD/GC/MS)

- **Inorganic**
  - Method 6200A – Field Portable X-Ray Fluorescence Spectrometry for the Determination of Elemental Concentrations in Soil and Sediment
    - Remove confirmation requirement, replace with optional comparability study
    - Method will have two modes of operation: In-situ – screening, Ex-situ – quantitative
  - Method 3110 – Extraction of Seafood for Arsenic Species (Region 10)
  - Method 6870 – Arsenic Speciation Analysis in Seafood Using IC/ICP-MS (Region 10)
Resources and Contact Information

• Methods Home Page: https://www.epa.gov/hw-sw846

• Kim Kirkland – Chief for the Waste Characterization Branch
  ➢ Phone: (703) 308-0490
  ➢ E-mail: Kirkland.Kim@epa.gov

• Christina Langlois-Miller – Chemist, Quality Assurance Manager
  ➢ Phone: (703) 308-0744
  ➢ E-mail: Langlois-Miller.Christina@epa.gov