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)

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Topics to be Covered

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

Hazardous Waste Test Methods / SW-846

The Resource Conservation and Recovery Act (RCRA) governs waste management and materials recovery and reuse, including the disposal of both hazardous and non-hazardous solid waste. In support of RCRA, EPA developed test methods for the analysis of various environmental media. These test methods can be found in the EPA publication, Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, also known as SW-846.

Can't Find What You Are Looking For?

- Search the EPA Archive for older methods
- Read the SW-846 Frequent Questions
- Search the SW-846 Database for answers to technical questions
- Learn more about the Resource Conservation and Recovery Act

What's New with SW-846

- Update VI to SW-846 - Public Comment Period Open NEW
- Validated Methods (including LEAF Methods)
- SW-846 Database of Technical Questions & Answers

What is SW-846 and How Is It Organized?

- SW-846 Basics
- Which Method(s) Should I Use?
- Chapters and Methods in the SW-846 Publication

Technical Guidance

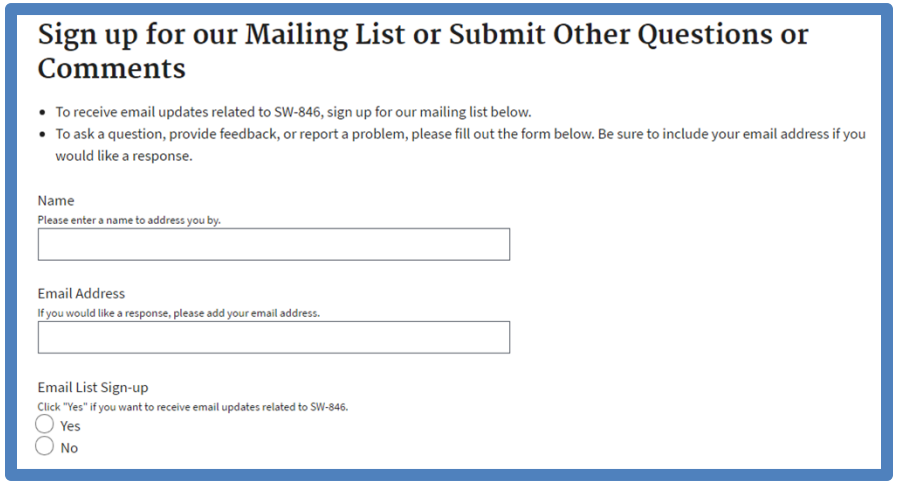
- Waste Sampling Guidance
- Test Method Development Process

Regulations, Rules and Policies

- Federal Register Notices Related to SW-846
- The Methods Innovation Rule and Method

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*



Sign up for our Mailing List or Submit Other Questions or Comments

- To receive email updates related to SW-846, sign up for our mailing list below.
- To ask a question, provide feedback, or report a problem, please fill out the form below. Be sure to include your email address if you would like a response.

Name
Please enter a name to address you by.

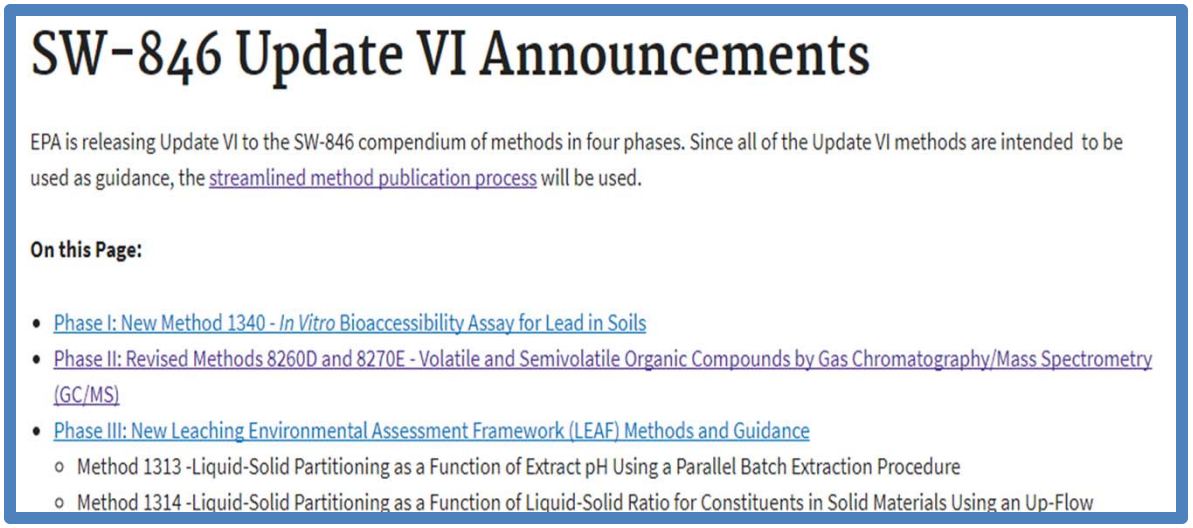
Email Address
If you would like a response, please add your email address.

Email List Sign-up
Click "Yes" if you want to receive email updates related to SW-846.
Yes
No

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

Update VI

Phased Release for Public Comment



SW-846 Update VI Announcements

EPA is releasing Update VI to the SW-846 compendium of methods in four phases. Since all of the Update VI methods are intended to be used as guidance, the streamlined method publication process will be used.

On this Page:

- Phase I: New Method 1340 - *In Vitro* Bioaccessibility Assay for Lead in Soils
- Phase II: Revised Methods 8260D and 8270E - Volatile and Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)
- Phase III: New Leaching Environmental Assessment Framework (LEAF) Methods and Guidance
  - Method 1313 -Liquid-Solid Partitioning as a Function of Extract pH Using a Parallel Batch Extraction Procedure
  - Method 1314 -Liquid-Solid Partitioning as a Function of Liquid-Solid Ratio for Constituents in Solid Materials Using an Up-Flow

- 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

Update VI Phase I – Method 1340

- 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
  - Posted at: https://www.epa.gov/hw-sw846/sw-846-test-method-1340-vitro-bioaccessibility-assay-lead-soil

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

Update VII

- **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

Update VII – Method Defined Parameters

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

Update VII - Inorganic

- 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*

Update VII - Inorganic

- 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*

Update VII - Inorganic

- 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)

Update VII - Organic

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*

Update VII - Organic

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
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