



SW-846 Methods Program Update and Path Forward

U.S. Environmental Protection Agency, Washington, D.C.

Office of Land and Emergency Response (OLEM)

Office of Resource Conservation and Recovery (ORCR)

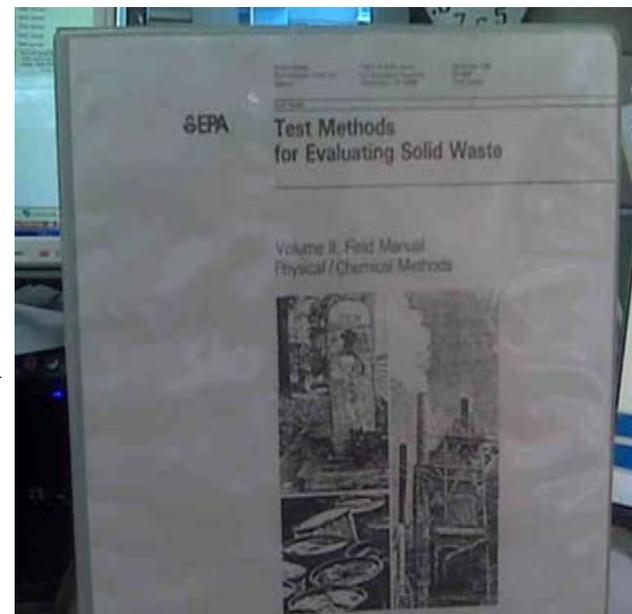
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Topics to be Covered

1. Published Update V
2. Preparing Update VI
3. Transformed SW-846 Methods Website
4. Streamlined SW-846 Methods Publication
5. Additional Methods Considerations
6. Future Projects and Collaboration
7. Contact Information



Published Update V

ORCR...

Published Update V (40 CFR 48522, August 13, 2015)

<https://www.gpo.gov/fdsys/pkg/FR-2015-08-13/pdf/2015-20030.pdf>

- 23 new and revised methods
- Revised Chapters 1 through 5 of the SW-846 Methods Compendium
- An ORCR policy statement – Memorandum of Clarification Regarding Use of SW-846 Methods

<https://www.epa.gov/hw-sw846/memorandum-clarification-regarding-use-sw-846-methods>



Update V

Published – 40 CFR 48522, August 13, 2015

* New Methods

1030	Ignitability of Solids
3200*	Mercury Species Fractionation and Quantification by Microwave-assisted Extraction, Selective Solvent Extraction and/or Solid Phase Extraction
3511*	Organic Compounds in Water by Microextraction
3572*	Extraction of Wipe Samples for Chemical Agents
3620C	Florisil Cleanup
4025*	Screening for Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans (PCDD/Fs) by Immunoassay
4430*	Screening For Polychlorinated Dibenzo-p-Dioxins And Furans (PCDD/Fs) By Aryl Hydrocarbon-Receptor PCR Assay
4435*	Method For Toxic Equivalents (TEQS) Determinations For Dioxin-Like Chemical Activity with the CALUX® Bioassay
5021A	Volatile Organic Compounds in Various Sample Matrices Using Equilibrium Headspace Analysis
6010D	Inductively Coupled Plasma-Atomic Emission Spectrometry
6020B	Inductively Coupled Plasma-Mass Spectrometry
6800	Elemental and Speciated Isotope Dilution Mass Spectrometry
8000D	Determinative Chromatographic Separations
8021	Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors
8111	Haloethers by Gas Chromatography
8270D	Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry
8276*	Toxaphene and Toxaphene Congeners by Gas Chromatography/Negative Ion Chemical Ionization Mass Spectrometry (GC-NICI/MS)
8410	Gas Chromatography/Fourier Transform Infrared Spectrometry for Semivolatile Organics: Capillary Column
8430	Analysis of Bis(2-Chloroethyl) Ester and Hydrolysis Products by Direct Aqueous Injection
9013A	Cyanide Extraction Procedure for Solids and Oils
9014	Titrimetric and Manual Spectrophotometer Determinative Methods for Cyanide
9015*	Metal Cyanide Complexes by Anion Exchange Chromatography and UV Detection
9320	Radium 228
Chapters	Revised Chapters 1 -5
Policy Statement	SW-846 Policy Statement, definitions and terms



Preparing Update VI

ORCR...

Preparing Update VI (Three Phases, 9 new and revised methods, and a User Guide)

- Phase I – Organic Methods (8260D and 8270E)
- Phase II – Inorganic Methods (1340, 3050C, and 6200A)
- Phase III – 4 Inorganic LEAF Methods* (1313, 1314, 1315, 1316) and the User Guide

* The LeachXSLite software is freely available on Vanderbilt's website.
(<http://www.vanderbilt.edu/leaching/leach-xs-lite/>)



Update VI Phase I - Organic Methods

Methods 8260D and 8270E - Volatile and Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

- Revised to include 1) analytes frequently found in Superfund sites; 2) performance data for method users to better select sample preparation procedures for the matrix of interest; 3) optional use of hydrogen as carrier gas to address helium supply shortage issue; 3) advanced measurement technologies (SIM, CI, GC-MS/MS); 4) clarified language for LLOQ and method blanks, based on comments received from the public for published Update V; and 5) updated tuning requirements.
- 1st Workgroup Drafts were released last March at the Pittcon for comments. A total of 114 comments were received and evaluated for further refinement of the methods.
- Efforts made to ensure consistency and possible harmonization among EPA methods.
- Revised draft methods were forwarded for final Workgroup review to be discussed/finalized at the May 5, 2016 Workgroup Meeting.



Update VI Phase II – Inorganic Methods

- **Method 1340** – In-Vitro Bioaccessibility Assay (IVBA) for Lead in Soil
 - This new method is typically applicable for the characterization of lead bioaccessibility in lead-contaminated soil under field conditions.
 - *It is not recommended to analyze IVBA for soils exceeding a total lead concentration of 50,000 mg/kg to avoid saturation of the extraction fluid and because risk management decisions are not likely to be improved by analyzing IVBA for soil with concentrations of lead above this level.*
- **Method 3050C** - Acid Digestion of Sediments, Sludges, and Soils
 - This revised method is a very strong acid digestion that will dissolve and liberate to solution for analysis almost all elements that could become “environmentally available.” By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.
 - *Challenges: These poor recovery elements also include certain noble or refractory elements such as palladium, silicon, tungsten, and zirconium. If total digestion is the objective, Method 3052 is recommended.*
 - *New Appendix B – COLLECTING AND PROCESSING OF REPRESENTATIVE SAMPLES FOR METALLIC RESIDUES IN SOLID MATRICES was added to address Incremental Sampling*



Update VI Phase II – Inorganic Methods (Cont'd)

Method 6200A - Field Portable X-Ray Fluorescence Spectrometry for the Determination of Elemental Concentrations in Soil and Sediment

- Revising the Method for several technical and editorial changes.
 - ❑ Removed confirmation requirement, will let method stand on its own QC like other SW-846 methods
 - ❑ Method has two modes of operation
 - *In-situ: screening*
 - *Ex-situ: quantitative*
 - ❑ Replaced performance data with more modern data, which are available.



Update VI Phase III - LEAF Inorganic Leaching Tests*

Equilibrium-based leaching tests

- Batch tests carried out on size reduced material
- Aim to measure contaminant release related to specific chemical conditions (pH, liquid/solid (LS) ratio)
- **Method 1313** – pH dependence & titration curve
- **Method 1316** – LS dependence



Mass transport rate-based leaching tests

- Carried out either on monolithic material or compacted granular material
- Aim to determine contaminant release rates by accounting for both chemical and physical properties of the material
- **Method 1315** – monolith & compacted granular options



Percolation (column) leaching tests

- May be equilibrium
- **Method 1314** – upflow column, local equilibrium (LS ratio)



**Posted to SW-846 as "Validated Methods" completed August 2013*



Transformed SW-846 Methods Website

The [SW-846 Website](https://www.epa.gov/hw-sw846) is now live at <https://www.epa.gov/hw-sw846>

- Transition to the OneEPA Web Standards
- Revamped user-friendly navigation across the entire website
- Redesigned to make it easier for chemists and other key stakeholders to locate information

Site's Exciting Updated Features:

- A searchable table of all methods in the SW-846 Compendium with direct links to copies of the methods <https://www.epa.gov/hw-sw846/basic-information-about-how-use-sw-846#UseWhich>
- A consolidated collection of related Federal Register Notices: <https://www.epa.gov/hw-sw846/federal-register-notice-related-sw-846>
- A place to sign up for our mailing list or submit questions or comments <https://www.epa.gov/hw-sw846/forms/contact-us-about-hazardous-waste-test-methods>
- The [SW-846 Database](#)
 - currently houses over 200 technical questions/answers
 - is a great first-stop resource for your question about a method or the SW-846 compendium
 - search for the information using a keyword search or browse the questions



Streamlined SW-846 Methods Publication

Processing Non-Regulatory SW-846 Methods

Then and Now

2005 - 2015	2016 and beyond (being considered)
Methods Innovation Rule Methods Announced by Notice of Availability (NOA) 2 – 3 year process	No Requirement to Publish Notice 14 – 18 month process
General Action Development Process (ADP)	Notification via the web, mailing list, national conferences
Pubic Comment Period and Response to Comment	Pubic Comment Period and Response to Comment
OGC Consultation	OGC Consultation
EPA Program Offices' Review	EPA Program Offices' Review
Briefings, Communication Docs and Signature	Briefings, Communication Docs and Signature
Notice and Docket	On web (and Docket, if necessary)



Streamlined SW-846 Methods Publication (Cont'd)

- Advantages of Having the New Streamlined Process
 - Current procedure is an 2-3 year process, the new procedure is estimated 14-18 month process
 - Allows methods to be released for public use faster
 - Less workload (more time for other projects or addressing backlog of validated methods)
 - Method users are notified via mailing list for updates, so they don't have to check the FR every day (improved communication)
 - Saves printing costs for FR publication
- May Implement New Process for the Update VI Phase I Organic Methods (8260D and 8270E) – this summer
- Will Still Notify the Public via FR for Publication of Methods That Are Required by Regulations (i.e., MDPs) See <https://www.epa.gov/hw-sw846/final-rule-methods-innovation-rule-mir> for the Methods Innovation Rule and a List of Methods Defined Parameters (MDPs)



Additional Methods Considerations

- Regulatory Updates of 40 CFR 261.21 and 260.11
 - 261.21 references ASTM Methods D 93-79, D 93-80 (Pensky-Martens) and D 3278-78 (Seta Flash) for determining Ignitability characteristic
 - *Update driven by the need to incorporate modern technology as 1978-1980 technology becomes commercially unavailable.*
 - *Additional changes to 261.21 may be considered in the proposed rule.*
 - 260.11 incorporates methods through reference and will be updated accordingly.
- Remove Explicit Requirement to Use Hg Thermometers for RCRA Testing - in accordance with the Agency's policy to reduce the use of Hg and use of cleaner alternatives (non Hg thermometers).



Future Projects and Collaboration

- Method 3060 – Alkaline Digestion for Hexavalent Chromium (collaboration with USGS)
- Method 3110 – Extraction of Seafood for Arsenic Species (Region 10)
- Method 6870 – Arsenic Speciation Analysis in Seafood Using IC/ICP-MS (Region 10)
- Method 8330 – Nitroaromatics and Nitramines by HPLC (collaboration with Region 10)
- New Method(s) for Perfluorinated Compounds (collaboration with OSRTI, Region 5, and DoD)
- Methods for Organic Leaching (Collaboration with OSRTI, ORD and academia)
- 16 methods on the “Validated Methods” web page, which have had progress halted



Resources and Contact Information

- Methods Team Home Page: <https://www.epa.gov/hw-sw846>
- Forum on Environmental Measurement (FEM) Test Methods Collection: <http://www.epa.gov/fem/methcollectns.htm>
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