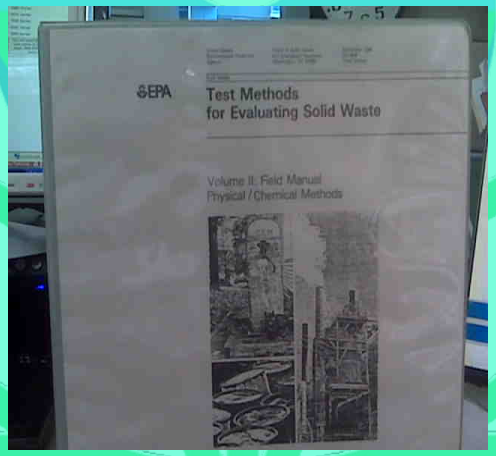
Update to SW-846



Kim Kirkland: Team Leader

Office of Resource Conservation and Recovery (ORCR)

Greetings

EPA appreciates the extended invitation to come to this meeting

Mark, Charles, Greg, Shen-Yi, Kim, Jim

Purpose of Presentation

To:

- Provide brief history about SW-846 and the issuance of methods
- Provide an update regarding EPA and ELAB activities
  - Present:
    - An update to the ***draft*** **"policy" statement**
    - **Clarified terms** used in SW-846
- Give you the ***411*** on Update V
  - List of Update V methods
  - Provide a schedule and activities for Update V
  - Summarize methods of interest
- Provide other resources to assist You.

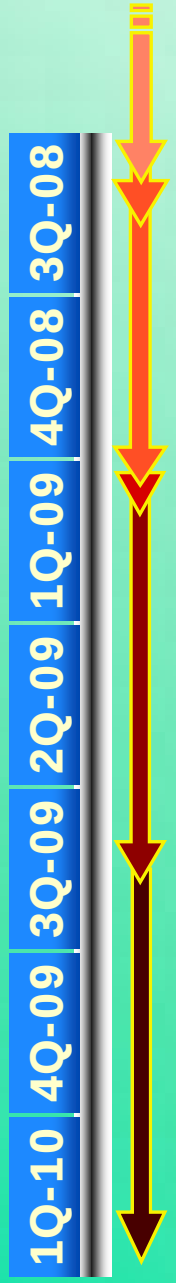
SW-846 Methods Compendium

- A analytical methods manual containing 200+ methods and chapter designed for testing and monitoring under the Resource Conservation and Recovery Act (RCRA) Program
- Methods are generally appropriate and reliable for the complexity of RCRA waste matrices
- New methods incorporated through a lengthy validation process:
  - Comprehensive technical evaluation
  - Agency review
- Existing methods are also edited, as needed
  - Following a formal evaluation process by analytical experts (e.g., SW-846 work, focus groups, internal EPA offices review) and an announcement of method availability and request for public comment in the Federal Register as a Notice of Data Availability (NODA)

Background

- **Methods Innovation Rule (MIR)** [June 14, 2005 (70 FR 34537)]
  - Note: Prior to June 2005 SW-846 was required in the RCRA regulations.
  - Removed the required use of SW-846 and provides **flexibility** in choice of methods for wastes regulated under RCRA
    - Exception only for ***method-defined parameters*** (MDPs) (see 40 CFR 260.11)
  - **Formal rulemaking no longer required** for publication of updates to SW-846 method
    - Updates are made available through Notice of Data Availability (NODA)
      - Revisions and sections for comment will be highlighted
  - **PBMS/Performance Approach**
  - Method users have the flexibility to employ an SW-846 method or "any appropriate method" from a reliable source
  - When using an alternative method, the focus should be on measurement objectives, rather than on measurement technologies
  - Demonstration of performance is important
  - **Strongly promoted by ORCR**

EPA / ELAB Discussions Timeline on Related Terms



- **July 11, 2008: ELAB Letter to George Gray**
  - Requested "Unique Identifiers" for SW-846 Methods
  - Requested clarification of: deleted, obsolete, previous versions, or revised methods
  - Requested position statement regarding previous versions of methods and a requested Implementation Plan for it's release
- **August 2008 – January 2009**
  - Response letters, conference calls and face-to-face meetings between EPA and ELAB
- **January 2009 - 2010: EPA engaged in a series of meetings w/ELAB. Miami, Chicago, San Antonio, TX.**
- **March – May 2010 EPA engaged in series of conference calls with ELAB.**
- **August 2010 EPA will meet with ELAB to propose a final draft to ELAB**

Use of SW-846 Methods Compendium

USEPA ORCR Policy Statement

- Divided into 3 Parts:
  1. Background
  2. General guidance on procedures for adopting methods into SW-846
  3. Summary of definitions and terms

Summary of Definition and Terms

- **Terms regarding the use of methods that have been adopted in SW-846:**
  - Final
  - Draft
  - Revised
  - Superseded
  - Withdrawn
  - Preliminary Version
  - Significant change

SW-846 Terms

- **Final -**
  - The latest official, *preferred* version of a method included in the SW-846 Compendium and posted on the EPA web site
  - After being published as a Draft method, the method version was announced as a NODA in the FR as part of an update to SW-846
    - For review and comment
- **Draft –**
  - Method that has ***not*** been adopted into the SW-846 method compendium, but has undergone technical review by EPA, i.e.:
    - Technical work group approval and/or
    - Inter-laboratory validation
  - Included on the Agency web site for immediate use by the public
  - *User must demonstrate method capability*

SW-846 Terms cont'd

- **Revised –**
  - A final method version or other guidance included in SW-846
  - Updated to reflect changes
    - Either editorial in nature *or*
    - Not significant to the technical aspects of the method
    - Do not impact data or performance capability
    - The method number does not change, however the footer suffix and date represent the last change to the method (e.g., 8270, 8270A and 8270B)
    - Revised versions of superseded methods should be viewed as the *preferred* method
- **Superseded –**
  - The previous version of a "Revised" method
    - A method that is no longer included in SW-846 Compendium
    - Has been revised and displaced by a newer version
    - May be available in future on web site *(to be decided)*
    - Not precluded from use when adequate justification for usage exists
    - **"Superseded"** is shown in the method title
      - As listed on the EPA web site for prior versions of final methods followed by the date of supersession

SW-846 Terms cont'd

- **Withdrawn –**
  - Method or other guidance that EPA *strongly recommends* should ***not*** be used; **Example:**
    - The cyanide and sulfide reactivity procedures removed from SW-846, Chapter Seven as part of the MIR
    - EPA determined that such procedures or methods are technically inadequate and/or no longer meet the use or objectives of the data collection project
    - Withdrawn methods are not technically precluded from being used if:
      - Proper justification and demonstration is provided, and
      - The method is determined to be appropriate for use
    - However, EPA would not expect an adequate justification for using such methods could be developed

ORCR Policy Revised

- "Significant Change" 

  - A <u>new number</u> will be assigned when a new analytical "technology" is introduced or when an existing method is changed "significantly".
    - <u>Significant changes</u> are: those that result in improved analytical results (e.g., changes that result in reducing analytical bias or increasing data precision). Examples of significant changes may include: a change in operating parameter which reduces operational flexibility; a change in instrumentation specification requirements which results in a previously acceptable instrument or component being rendered unacceptable; a change in calibration requirements which result in more restrictive requirements; a change in tighter QC requirements; or a change in the reagents that are required by the method.

Non Significant Changes

- Examples of changes that may not be considered significant include:

  language added to a method to provide increased clarity or guidance; expansion of lists of acceptable instrumentation or changes to instrument specifications which do not result in an existing acceptable instrument being rendered unacceptable; or formatting and editorial changes that are designed to improve readability or correct spelling or grammatical errors.

  The method number remains the same but the letter suffix changes.

Status Table Updated

METHOD NUMBER (Date in parenthesis is found at bottom right-hand corner of method)							METHOD TITLE
THIRD ED (9/86)	FIN. UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98) IIIB (11/04)	FIN. UP. IV (2/07)	OTHER METHODS (VARIOUS DATES)	Draft Up. V (9/10)	
3500	3500A	--	3500B (Up. III)	3500C	--	**3500D**	Organic Extraction and Sample Preparation
3510	3510A	3510B (Up. II)	3510C (Up. III)	--	--	--	Separatory Funnel Liquid-Liquid Extraction
--	--	--	--		3511 (11/02)	**3511A**	Organic Compounds in Water by Microextraction
--	--	--	3542 (Up. III)	--	**3542A** (5/05)	**3542B**	Extraction of Semivolatile Analytes Collected Using Method 0010 (Modified Method 5 Sampling Train)
--	--	--	--	--	--	**7194**	Determination of Hexavalent Chromium in Drinking Water, Groundwater, Industrial Wastewaters and Soils by Anion Exchange Chromatography and Absorbance Detection After Post Column Reaction (UV/PCR)
--	--	--	7199 (Up.III)	--	--	**7199A**	Determination of Hexavalent Chromium in Drinking Water, Groundwater and Industrial Wastewater Effluents by Ion Chromatography

Update V is on the Fast Track

January 2011 , ORCR plans to adopt 37 additional methods to the SW-846 methods compendium: Top 20 are listed below

8000C Determinative Chromatographic Separations

7199A Determination of Hexavalent Chromium in Drinking Water, Groundwater and Industrial Wastewater Effluents by Ion Chromatography

6010D Inductively Coupled Plasma-Atomic Emission Spectrometry

6020B Inductively Coupled Plasma-Atomic Emission Spectrometry

6850 Perchlorate in Water, Soils and Solid Wastes Using High Performance Liquid Chromatography/Electrospray Ionization/Mass Spectrometry

6860 Perchlorate in Water, Soils and Solid Wastes Using High Performance Ion Chromatography/Electrospray Ionization/Mass Spectrometry

8260C Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

8330B Nitroaromatics, Nitramines and Nitrate Esters by High Performance Liquid Chromatography (HPLC)

9016 Free Cyanide in Water, Soils and Wastes by Microdiffusion

8015D Nonhalogenated Organics Using GC/FID

5020A Volatile Organic Compounds in Various Sample Matrices Using Equilibrium Headspace Analysis

5030C Purge-and-Trap for Aqueous Samples

9013A Cyanide Extraction Procedure for Solids and Oils

9014A Titrimetric and Manual Spectrophotometer Determinative Methods for Cyanide

9015 Metal Cyanide Complexes by Anion Exchange Chromatography and UV Detection

3200 Mercury Species Fractionation and Quantification by Microwave-assisted Extraction, Selective Solvent Extraction and/or Solid Phase Extraction

8323 Determination of Organotins by Micro-Liquid Chromatography-Electrospray Ion Trap Mass Spectrometry

8271 Assay of Chemical Agents in Solid and Aqueous Samples by Gas Chromatography/Mass Spectrometry, Electron Impact (GC/MS/EI)

8272 Parent and Alkyl Polycyclic Aromatics in Sediment Pore Water by Solid-Phase Microextraction and Gas Chromatography/Mass Spectrometry in Selected Ion Monitoring Mode

8276 Toxaphene Congeners by GC/NIMS

Methods of Interest

- **7199A METHOD** - **HEXAVALENT CHROMIUM IN DRINKING WATER, GROUND WATER AND WASTE WATERS USING ANION EXCHANGE ION CHROMATOGRAPHY AND ABSORBANCE SPECTROSCOPY DETECTION**

  This method outlines procedures for the determination of hexavalent chromium in drinking water, ground water and waste waters using anion-exchange ion chromatography (IC) and absorbance spectroscopy detection. This update of the original Method 7199 applies a modified eluent and PCR flow rate, in combination with a larger reaction coil and sample loop size, in order to enhance method sensitivity.

- **PROPOSED DRAFT METHOD 7194** - **HEXAVALENT CHROMIUM IN DRINKING WATER, GROUND WATER, INDUSTRIAL WASTE WATERS AND SOILS BY ANION EXCHANGE CHROMATOGRAPHY AND ABSORBANCE DETECTION AFTER POST COLUMN REACTION (UV/PCR)**

  This method provides procedures for the determination of hexavalent chromium in drinking water, ground water, industrial waste waters, and soils using anion exchange chromatography followed by post column reaction and absorbance detection (UV-Vis/PCR). During the development of Method 7199A, Draft Method 7194 was proposed as an alternative technique to Method 7199A.

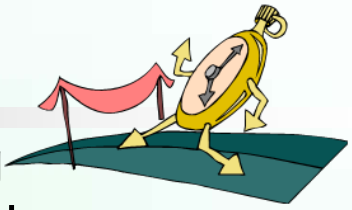
- **METHOD 8276A** - **TOXAPHENE AND TOXAPHENE CONGENERS BY GAS CHROMATOGRAPHY / NEGATIVE ION MASS SPECTROMETRY (GC / NIMS)**

  This method, added March 2010, is used to determine the concentrations of various toxaphene congeners and technical toxaphene (along with the possible addition of other toxaphene congeners and compounds from Method 8081) in extracts from solid and liquid matrices, using fused-silica, open-tubular capillary columns with negative ion mass spectrometry (NIMS).

- **METHOD 9016** - **FREE CYANIDE IN WATER, SOILS AND SOLID WASTES BY MICRODIFFUSION**

  This method, added June 2010, is used to measure free cyanide in wastewaters, ground waters, surface waters, drinking waters, soils and solid wastes. This test method reports the cyanide that dissociates from simple cyanides or weakly-bound metal cyanide complexes at room temperature, from a solution at pH 6-6.5. This test method does not determine strongly-bound metal cyanide complexes that resist dissociation, such as the hexacyanoferrates and gold cyanide, nor does it determine thiocyanate and cyanohydrin.

ORCR Schedule for Publishing Update V



April 2010	Annual LTIG methods meeting
May – July 2010	Update V package sent to Work group
June 2010	Internal Tiering process
Aug. – Sept. 2010	Review and incorporate work group comments
October 2010	EPA Internal management review
Ongoing - October	Prepare supporting docs for RCRA Docket
October 2010	EPA Side Agreement review
November 2010	Policy Mgmt. Review of Update V and Notice
December 2010	Assistance AA signs off on Notice
January 2011	Federal Register publishes Update V
Feb. – April 2011	Notice and Comment
May – June 2011	Address comments and prepare methods
July 2011	Update V web posting, start the process again to finalized Update V

Do YOU Have MICE? Methods Information Communication Exchange

- **MICE** was created by the Methods Team and is operated ORCR's contractor (e.g., Chemists, sampling experts, and environmentalists) who are knowledgeable in SW-846 technical and RCRA-related monitoring procedures.

- **How Does the MICE Service Work?**
  - Persons interested in contacting the MICE Service by telephone may call a voice-mail answering service that is available 24-hours a day, 7-days a week. The caller can listen also to several recorded messages on common SW-846 topics and leave a message containing a question or comment.

  - Where to order copies of SW-846.
  - Where to find information on sample holding times, preservation, and storage.
  - The availability of SW-846 methods under development and other EPA methods.
  - Information on RCRA characteristics testing.
  - Solid waste sampling.
  - Questions and comments also can be submitted to the MICE Service via telefacsimile (fax) or e-mail.

  (insert MICE logo at the top right corner of this page)

Summary: Important Things to Remember!

- *ORCR strongly advises the use of the latest version of SW-846 methods*, **especially** in **new** monitoring situations
  - Choose an appropriate and reliable method
    - The user must be able to demonstrate that the method generates data that is appropriate for its intended use
    - In situations where it may not be appropriate to use the latest method in SW-846, earlier versions may be used. These may include but are not limited to situations where an earlier version of a method is required for:
      - Existing permits Consent decrees waste analysis plans or sampling analysis plans
- **Focus** should be on **"measurement objectives"**, Not on measurement technologies
- EPA strongly promotes the Performance Based approach because it enables the method flexibility necessary for the analysis of complex RCRA wastes.
- EPA recommends that the Regulated community:
  - Seeks approval of their project plan before applying any method on a specific project.
  - Use sources (e.g., EPA and MICE) to assist you with method related questions.

Relevant Contact Information
THANKS!!!

- *Methods Team Home Page:*
  www.epa.gov/SW-846
- *MICE*
  - Phone: (703) 676-4690
  - E-mail: mice@cpmx.saic.com
- *Kim Kirkland*
  - Phone: (703) 308-0490
  - E-mail: kirkland.kim@epa.gov