Overview of ASTM D19 and the use of Consensus Methods

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ASTM - world's leading developer of market-relevant standards

- 12,800 standards world-wide
- 30,000 + members
- 140 + participating countries
- 75 countries cite ASTM Standards 7,700 times in regulations
    - **190** Analytical Methods in US regulations (TNI database)
- ~2,900 standards translated

ASTM Committee on Water is D19

- Formed in 1932
- About 400 members
- 290 Standards
- 2 books Volume 11.01 and 11.02

- Develop test methods, standard practices, guides, definitions, and specifications
- 15 subcommittees

ASTM D19 is composed of 15 subcommittees

- 9 Technical Subcommittees – make the methods
  - D19.02 – Quality Systems
  - D19.03 - “on-line” analyzers
  - D19.04 – Radiochemical
  - D19.05 – Inorganics
  - D19.06 – Organics
  - D19.07 – Sediments, open channel flow
  - D19.08 – Membranes and Ion Exchange
  - D19.08.02 – Micro, Ultra, nano – filtration and RO
  - D19.24 - Microbiology

ASTM D19 is composed of 15 subcommittees

- 6 Executive subcommittees -
  - D19.90 – Executive
  - D19.90.01 – Technical Operations
  - D19.90.02 – Long Range Planning
  - D19.90.03 – Standards
  - D19.90.04 – ASTM/EPA Coordination
  - D19.95 – US TAG to ISO TC147 on Water Quality

Process to start developing a new standard at ASTM

Determine if new standard is needed

Identify and gather key stakeholders

Appoint a Task Group Chair

Register a Work Item

Subcommittee decides on title and scope

By registering a work item:

- Tracking number for all subsequent actions
- Alerts other members
- Initiates a time table and process

My D19 Work Items

You are a task group member on the Work Item(s), or WK(s) listed below. Where you serve as the Technical Contact, the WK(s) are shown in red.

D19.02 on Quality Systems, Specification, and Statistics

- Proposed: WK63806 Technical Contact: William Lipps
- D2777-13 Standard Practice for Determination of Precision and Bias of Applicable Test Methods of Committee D19 on Water
  - WK68068 Technical Contact: Donivan Porterfield
- D5847-02(2012) Standard Practice for Writing Quality Control Specifications for Standard Test Methods for Water Analysis
  - WK65203 Technical Contact: JERRY PARR

D19.05 on Inorganic Constituents in Water

- Proposed: WK42422 Technical Contact: William Lipps
- Proposed: WK65181 Technical Contact: William Lipps
- D1976-12 Standard Test Method for Elements in Water by Inductively-Coupled Argon Plasma Atomic Emission Spectroscopy
  - WK48623 Technical Contact: Charles Bucknam
- D1976-18 Standard Test Method for Elements in Water by Inductively-Coupled Plasma Atomic Emission Spectroscopy
  - WK65169 Technical Contact: Charles Bucknam
- D5673-16 Standard Test Method for Elements in Water by Inductively Coupled Plasma—Mass Spectrometry
  - WK59699 Technical Contact: William Lipps

Create a collaboration with other members:

WK54549 - Determination of Pesticides, PCBs, and Polychlorinated Biphenyl Congeners in Aqueous Solution by Tandem GCMSMS

Collaboration Area | Drafts | Polls | Discussions | Files

Drafts

UPLOAD DRAFT +

Showing 15 of 15 Drafts

Draft Number	Title Name/File	Upload Date	Upload By	
Draft #16	Draft 15	December 20, 2018 6:12:43 PM	William Lipps	Comments (0)
Draft #14	Draft #14	November 16, 2018 5:19:04 PM	William Lipps	Comments (0)
Draft #13	WK54549-13.doc	June 21, 2018 2:25:49 PM	William Lipps	Comments (0)
Draft #12	WK54549-12.rtf	January 03, 2018 3:18:18 PM	William Lipps	Comments (0)
Draft #11	WK54549-11.docx	September 05, 2017 2:11:49 PM	William Lipps	Comments (1)
Draft #10	WK54549-10.docx	August 28, 2017 3:50:54 PM	William Lipps	Comments (1)
Draft #9	WK54549-9.docx	August 25, 2017 6:09:35 PM	William Lipps	Comments (2)
Draft #8	WK54549-8.docx	August 23, 2017 9:36:55 AM	William Lipps	Comments (1)
Draft #7	WK54549-7.docx	June 21, 2017 11:02:17 AM	William Lipps	Comments (0)
Draft #6	WK54549-6.docx	June 01, 2017 4:30:49 PM	William Lipps	Comments (0)

WK67565 - Spectroscopic Identification and Quantification of Microplastic Particles in Municipal Wastewater Using Raman and FTIR Spectroscopy

Collaboration Area | Drafts | Polls | Discussions | Files

» Overview | Members | Email Collaboration Area Members | History | Schedule Online Meeting

New Standard Spectroscopic Identification and Quantification of Microplastic Particles in Municipal Wastewater Using Raman and FTIR Spectroscopy

Group Creation Date: March 22, 2019 9:58:38 PM

Work Item Creation Date: March 7, 2019

Status: Draft Under Development

Ballot Target Date: July 01, 2019

Who can make a new “EPA” method?

1. **EPA ATP process**
2. **Voluntary Consensus Standard Organizations**

the NTTAA requires EPA to adopt methods approved by VCSBs, unless doing so would be inconsistent with applicable laws or is otherwise impractical. When ***VCSBs or other government agencies submit adopted methods for consideration****, they must include the method in its final form, documentation that it has been approved/published by that VCSB or agency, the validation study plan, and the validation study report, including data and analysis that supported the method’s development and adoption. The VCSB or agency must comply with its own internal method testing criteria (e.g., ASTM D2777).*

ASTM has a long history with EPA

Early 1970's - EPA used ASTM (and SM) methods as basis for their own new methods

EPA used ASTM D2777-77 as the validation protocol.

- **Method 200.7**
- **Method 624**
- **Method 608**
- **Method 625**

What is the process to make a new ASTM method?

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ASTM - Voluntary Consensus Standard Development Organization (SDO)

- AKA – VCSB
- Standard Method = A method of known and demonstrated precision issued by a SDO, such as ASTM
- Standard Reference Method = A Standard Method with demonstrated accuracy

Reference = John K. Taylor, Quality Assurance of Chemical Measurements, Lewis Publishers, 1987

VCSB Standards are listed in 40 CFR Part 136 and "approved" by EPA

TABLE IB—LIST OF APPROVED INORGANIC TEST PROCEDURES

Parameter	Methodology [58]	EPA [52]	Standard methods	ASTM	USGS/AOAC/Other
1. Acidity, as $CaCO_3$, mg/L.	Electrometric endpoint or phenolphthalein endpoint.	.....	2310 B–1997	D1067–06	I–1020–85.[2]
2. Alkalinity, as $CaCO_3$, mg/L.	Electrometric or Colorimetric titration to pH 4.5, Manual.	.....	2320 B–1997	D1067–06	973.43[3], I–1030–85.[2]
	Automatic	310.2 (Rev. 1974)[1] ..	.....	.....	I–2030–85.[2]
3. Aluminum—Total,[4] mg/L.	Digestion,[4] followed by any of the following:				
	AA direct aspiration [36]	.....	3111 D–1999 or 3111 E–1999.	.....	I–3051–85.[2]
	AA furnace	.....	3113 B–2004.		
	STGFAA	200.9, Rev. 2.2 (1994).			
	ICP/AES [36]	200.5, Rev 4.2 (2003)[68]; 200.7, Rev. 4.4 (1994).	3120 B–1999	D1976–07	I–4471–97.[50]
	ICP/MS	200.8, Rev. 5.4 (1994).	3125 B–2009	D5673–05	993.14,[3] I–4471–97.[50]
	Direct Current Plasma (DCP) [36].	.....	.....	D4190–08	See footnote.[34]
	Colorimetric (Eriochrome cyanine R).	.....	3500–Al B–2001.		
4. Ammonia (as N), mg/L.	Manual distillation [6] or gas diffusion (pH > 11), followed by any of the following:	350.1, Rev. 2.0 (1993).	4500–NH_3 B–1997 ..	.....	973.49[3].
	Nesslerization	.....	.....	D1426–08 (A)	973.49[3], I–3520–85.[2]
	Titration	.....	4500–NH_3 C–1997.		
	Electrode	.....	4500–NH_3 D–1997 or E–1997.	D1426–08 (B).	
	Manual phenate, salicylate, or other substituted phenols in Berthelot reaction based methods.	.....	4500–NH_3 F–1997 ...	.....	See footnote.[60]
	Automated phenate, salicylate, or other substituted phenols in Berthelot reaction based methods.	350.1[30], Rev. 2.0 (1993).	4500–NH_3 G–1997 4500–NH_3 H–1997.	.....	I–4523–85.[2]

VCSB Standards are listed in 40 CFR Part 141 and “approved” by EPA

Contaminant	Methodology[13]	EPA	ASTM[3]	SM[4] (18th, 19th ed.)	SM[4] (20th ed.)	SM Online[22]	Other
1. Alkalinity	Titrimetric		D1067-92, 02 B	2320 B	2320 B	2320 B-97	
	Electrometric titration					I-1030-85 [5]	
2. Antimony	Inductively Coupled Plasma (ICP)—Mass Spectrometry	200.8[2]					
	Hydride-Atomic Absorption		D3697-92, 02				
	Atomic Absorption; Platform	200.9[2]					
	Atomic Absorption; Furnace			3113 B		3113 B-99	
3. Arsenic[14]	ICP-Mass Spectrometry	200.8[2]					
	Atomic Absorption; Platform	200.9[2]					
	Atomic Absorption; Furnace		D2972-97, 03 C	3113 B		3113 B-99	
	Hydride Atomic Absorption		D1972-97, 03 B	3114 B		3114 B-97	

VCSB Standards are listed as SDWA Expedited Alternative Tests by EPA

EPA evaluated 100 tests

As effective as approved methods

Summary of Action

The EPA has evaluated 100 testing methods for contaminants listed in the regulations and determined them to be as effective as methods already established in the regulations for those contaminants. The Agency is using its streamlined approval authority to make these 100 optional, alternative methods listed in Tables 1 and 2 available for determining contaminant concentrations in samples collected under SDWA.

Table 1. EPA, ASTM, and Vendor-Developed Methods

Method	Contaminant(s)/Parameter(s)
EPA Method 900.0, Rev. 1.0	Gross alpha and gross beta activity
ASTM D 516-16	Sulfate
ASTM D 859-16	Silica
ASTM D 1067-16 B	Alkalinity
ASTM D 1179-16 B	Fluoride
ASTM D 5673-16	Uranium
Hach Method 10258, Rev. 2.0	Turbidity
Hach Method 8195, Rev. 3.0	Turbidity

Table 2. Standard methods

Chemistry Methods (23rd edition)

2120 B	4110 B	4500-F^- B	4500-SO_4^{2-} C	7500-Cs B
2130 B	4500-Cl D	4500-F^- C	4500-SO_4^{2-} D	7500-^{3}H B
2150 B	4500-Cl E	4500-F^- D	4500-SO_4^{2-} E	7500-I B
2320 B	4500-Cl F	4500-F^- E	4500-SO_4^{2-} F	7500-I C
2510 B	4500-Cl G	4500-H^+ B	5310 B	7500-I D
2540 C	4500-Cl H	4500-NO_3^- D	5310 C	7500-Ra B
2550	4500-Cl I	4500-NO_3^- E	5540 C	7500-Ra C
3111 B	4500-Cl^- B	4500-NO_3^- F	5910 B	7500-Ra D
3111 D	4500-Cl^- D	4500-NO_2^- B	6251 B	7500-Ra E
3113 B	4500-ClO_2 C	4500-O_3 B	6610 B	7500-Sr B
3114 B	4500-ClO_2 E	4500-P E	6640 B	7500-U B
3112 B	4500-CN^- C	4500-P F	6651 B	7500-U C
3120 B	4500-CN^- E	4500-SiO_2 C	7110 B	
3500-Ca B	4500-CN^- F	4500-SiO_2 D	7110 C	
3500-Mg B	4500-CN^- G	4500-SiO_2 E	7120	

Micro Methods (23rd edition)

9221 A	9221 E	9222 C	9222 J	9230 D
9221 B	9221 F	9222 D	9223 B	
9221 C	9222 A	9222 H	9215 B	
9221 D	9222 B	9222 I	9230 C	

Conclusion

VCSBs can be EPA approved

Other than "waiting for EPA" to develop a method you can:

1. **Go through EPA in ATP process**
2. **Make your own at a VCSB, such as ASTM**

Discussion

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