



# ASTM International and the Building of Consensus Standards in Support of Environmental Laboratories

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Chair ASTM D22.03, D22.11, D03.12  
and D34 Acting Chair

# ASTM International Overview



## ■ Global forum for the development of voluntary consensus standards

- Every member/interest has an equal say in activity
  - Producers
  - Users
  - General Interest
  - Consumer
  - Unclassified

## ■ Strives for high technical quality and stakeholder relevancy

- Review Every 5 years and approve within 8 years.

# ASTM Membership

- Over 30,000 of the world's leading technical experts
- More than 140 countries represented
- More than 140 technical standards writing committees
- More than 12,500 standards
- Dedicated to developing and publishing technically sound and relevant standards
- Open to all interested parties



## Standard Uses

- Developed voluntarily and used voluntarily except where required by law
- Government agency reference them in codes, certification, regulations, and laws (US: P.L. 104-115)
- Cited in a contract
- Used by tens of thousands of individuals, companies, and agencies globally
- Over 5,000 ASTM International standards are used as the basis for national standards by reference in regulation in over 50 countries

# NTTA and OMB Circular A-119

## ■ National Technology Transfer and Advancement Act (1995) (Pub. L. 104-115)

- Established policy for US Federal Government to participate in development and adoption of consensus standards
- Government must consider consensus standards in lieu of Government specific requirements

## ■ Office of Management and Budget's Circular A-119

- Authorized National Institute of Standards Technology (NIST) for conformity assessment
- Federal agencies report to NIST and Congress on consensus standard use

# ASTM Consensus Process



- Facilitates standards without borders
- Process for private and public sector cooperation
- Enables implementation of Public Law 104-113 encouraging governmental usage of consensus standards
- Eliminates duplicative standards development, saving taxpayers and other stakeholders millions of dollars

## The Consensus Process

- Ensure Due Process
- Everyone has the opportunity and is encouraged to provide input
- All responses must be considered and resolved by technical committee
- Technical and Procedural
- Appeals (Committee on Standards; COS)

# The Standard Review Process

## ■ The review cycle

- Five years after last approval
  - Notice that standard is due for review
- December 31 of eighth year after last approval
  - Standard is removed from active status

## ■ Review indicates revision unnecessary

- Renewal ballot to entire committee

## ■ Review indicates standard is obsolete

- Allow to expire December 31 of eighth year after last approval
- Submit to a withdrawal ballot
  - Identifies whether there are users
  - Find a new technical lead



# The Standard Review Process

## ■ Standard is relevant but requires revision

- Reviewer reports need to relevant subcommittee/Chair
- Subcommittee/Chair approves revision
  - Work Item created
  - Collaboration group formation may be created
- Revisions made and standard submitted to a revision ballot with a revision justification statement



**INTERNATIONAL Designation: D7614 – 12**

**Date:** January 26, 2018  
**To:** Subcommittee D22.03  
**Tech Contact:** Raul Dominguez, Jr., [rdominguez@aqmd.gov](mailto:rdominguez@aqmd.gov) (909) 396-2225  
**Work Item #:** WK62073  
**Ballot Action:** Revision of D7614/ Determination of Total Suspended Particulate (TSP) Hexavalent Chromium in Ambient Air Analyzed by Ion Chromatography (IC) and Spectrophotometric Measurements  
**Rationale:** Editorial revision for improved clarity, substantive revision of precision and bias and addition of “wrist action shaker” option for filter extraction.

# The Standard Revision Process

- Revision submitted to subcommittee ballot
  - Affirmative – Moves to a Main Ballot
  - Affirmative with comment – Comments addressed
  - Negative – Evaluated as persuasive or non-persuasive
  - Abstain – Important since ballot must exceed 60% of the official voting members
  
- Main Ballot
  - Affirmative
  - Affirmative with comment – Comments addressed
  - Negative – Evaluated as persuasive or non-persuasive
  - Abstain – Important since ballot must exceed 60% of the official voting members
  
- Approval



# The Standard Creation Process

## ■ Proposal

- Need and scope – presented to subcommittee/committee
- Outline or draft
- Decision to pursue
- Creation of collaboration group (optional)

## ■ Example

- Practice for Microplastic Characterization from Air Using Thermal Desorption

# The Standard Creation Process

## ■ Proposal

- Presentation given to subcommittee D22.03 October 2020
  - Proposal: Microplastics by TD-GC-MS
  - Described why this standard is needed – A recent UN reports explain that microplastic pollution remains an overlooked problem. WHO has made recommendations for action such as monitoring and managing microplastics in the environment. However, there is a lack of methodology to carry out those recommendations .
  - Proposed Scope –This practice describes the sampling and analysis of Microplastics from Ambient (Indoor/Workplace) Air. Direct desorption of filtrates containing microplastics provides a simple and streamlined sample preparation step while GCMS analysis produces information rich volatile organic compound (VOC) profiles. The VOC profiles contain marker compounds to identify and quantify the plastic, along with other chemical signatures that could prove useful in source apportionment, toxicity assessment and regional profiling.
- Subcommittee and Chair Approved standard development activity (WK74436)
- Collaboration group created
- Outline or draft - Pending

# The Standard Creation Process

## ■ Ballot Process Identical to that for Standard Revision

- Draft submitted to subcommittee ballot
  - Affirmative
  - Affirmative with comment – Comments addressed
  - Negative – Evaluated as persuasive or non-persuasive
  - Abstain – Important since ballot must exceed 60% of the official voting members
- Main Ballot (Concurrent ballot)
  - Affirmative
  - Affirmative with comment – Comments addressed
  - Negative – Evaluated as persuasive or non-persuasive
  - Abstain – Important since ballot must exceed 60% of the official voting members

## ■ Approval



- **D22.03 Ambient Atmospheres and Source Emissions**

- Develops and maintains standard methods or practices for sampling and analysis of gases or particulates, including radionuclides from source and ambient atmospheres. Fifty four standards are currently under subcommittee jurisdiction.

- Example standards

- D5953M Standard Test Method for Determination of Non-methane Organic Compounds (NMOC) in Ambient Air Using Cryogenic Preconcentration and Direct Flame Ionization Detection
- D7036 Standard Practice for Competence of Air Emission Testing Bodies



## D22.03 Ambient Atmospheres and Source Emissions

### New standards under development

- WK74436 Microplastic Characterization from Air Using Thermal Desorption Technical Contact: Caroline Widdowson; [cwiddowson@markes.com](mailto:cwiddowson@markes.com))
- WK72475 Real-time Dust Monitoring at Construction, Demolition, and Other Fugitive Dust Emission Sites. (Technical Contact: Geoff Henshaw; [geoff.henshaw@aeroqual.com](mailto:geoff.henshaw@aeroqual.com))
- Determination of Ethylene Oxide in Ambient Atmospheres (Technical Contact: Barry Prince; [Barry.Prince@syft.com](mailto:Barry.Prince@syft.com))
- WK63166 Selection of Real-Time and Near Real-Time Mass Spectrometer-Based Technologies for Online Measurements of Volatile Organic Compounds in Ambient Air (Technical Contact: Rui Li; [li.rui.419@gmail.com](mailto:li.rui.419@gmail.com))

## D22.03 Ambient Atmospheres and Source Emissions Standard Development Needs

- Determination of Per- and Polyfluoroalkyl Substances (PFAS) in Ambient Atmospheres
- Wet deposition sampling practice
- Low volume PM sampler standard practice needed – hexavalent chromium including BGI PQ100, BGI Omni FT, and XONTECH 924
- Method for Ambient Air Quality Field Surveys and Monitoring Using Mobile Platform Mounted Advanced Spectroscopic Instruments (PTR-TOF-MS)
- Open Path FT-IR Standard
- Open Path Ultraviolet Differential Optical Absorption Spectroscopy (UV DOAS)



# ASTM Committee D34 – Waste Management

## Analytic Standards Under Development

- WK49654 New Test Method for Determining Anaerobic Biodegradation of Materials in Landfill Environments by Bio-Chemical Methane Potential (Technical Contact: [Alex Thomas](mailto:Alex.Thomas@composterapproved.com); Alex.Thomas@composterapproved.com)
- WK66561 Determining Aerobic Mineralization of Carbon-Based Materials under Industrial Thermophilic Composting Conditions (Seeking Technical Contact)
- WK66630 Determining Aerobic Mineralization of Carbon-Based Materials in Soil (Seeking Technical Contact)
- WK67093 Determining Anaerobic Mineralization of Carbon-Based Materials Under High-Solids Anaerobic-Digestion Conditions (Seeking Technical Contact)
- WK67094 Determining Anaerobic Mineralization of Carbon-Based Materials Under High-Solids Anaerobic-Digestion Conditions (Seeking Technical Contact)



# ASTM Committee D03 – Gaseous Fuels Analytic Standards Under Development

- WK66157 Analysis of Arsine in Gaseous Hydrocarbons by Dry Colorimetry (Technical Contact: Lorena Torres)
- WK70588 Speciated Siloxane GC-IMS Analyzer Based On-Line for Siloxane and Trimethylsilanol Content of Gaseous Fuels (Technical Contact: Jonathan Cross)



## Why Participate in ASTM

- Opportunities for the environmental lab
- Participate in development and revision of standardized laboratory methods
- Contribute to the assessment of method capabilities (P&B and the ILS program)
- Learn about analytic alternatives including those on the cutting edge of science

## Why Participate in ASTM Workshops and Symposia

- D22 Second Symposium on Detection Limits and Related Topics - October 20-21, 2022
- D34 Workshop on Composting Sampling and Analytic Needs and Development - TBA
- D03 Workshop on Renewable Fuels Production & Distribution - December 9, 2021.

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