Quality Control Specifications for Standard Test Methods for Water Analysis

Lisa Houston

PAC, LP

Agenda

- Voluntary Consensus Standardization
- ASTM International
- Standardization Process
- ASTM D19
- D5847 Standard Practice

Voluntary Consensus Standardization

Domestic or international organizations which plan, develop, establish, or coordinate voluntary standards using agreed-upon procedures

Nonprofit organizations, industry associations, standards developers, professional and technical societies, institutes, committees, task forces, or working groups

Observes principles such as openness, balance of interest, and due process

Operate by consensus, characterized by the absence of sustained opposition to substantial issues by any important part of the concerned interests

Requires that all views and objections be considered and that an effort be made toward their resolution

Voluntary Consensus Standard Body (VCSB)

Why are Voluntary Consensus Standards Important?

"Organizations that use voluntary consensus standards recognize that the standards help them identify and eliminate risks that cause worker injuries, illnesses and fatalities. This leads to fewer workplace incidents, which leads to lower claims costs, fosters a more engaged workforce and enhances organizational reputation." *American Society of Safety Professionals*

"Agencies shall use existing voluntary consensus standards, both domestic and international, in their regulatory and procurement activities as a means of carrying out policy objectives or activities determined by the agencies, unless use of such standards would be inconsistent with applicable law or otherwise impractical." *US White House Office of Management & Budget*

ASTM

- One of the largest voluntary standards development organizations in the world
- Established in 1898 to bring together suppliers and customers
- Members represent producers, users, ultimate consumers, and representatives of government and academia
- Provides a forum for the development and publication of voluntary consensus standards for materials, products, systems, and services
- Members collaborate in-person and online to create and update high-quality, market-relevant standards
- Develop documents that serve as a basis for manufacturing, procurement, and regulatory activities

ASTM Standardization

- Test method - a concise description of an orderly procedure for determining a property or constituent of a material, an assembly of materials, or a product
- Specification - an explicit set of requirements to be satisfied by a material, product, system, or service
- Practice - documents accepted procedures for the performance of one or more operations or functions
- Guide - proposes a series of options or instructions that offer direction without recommending a definite course of action

Standard Development

Topic is approved / may begin with a tech report

Committee is selected

Document is written

Committee votes / input is provided / document is edited

Committee approves – secretariat seeks ANSI approval

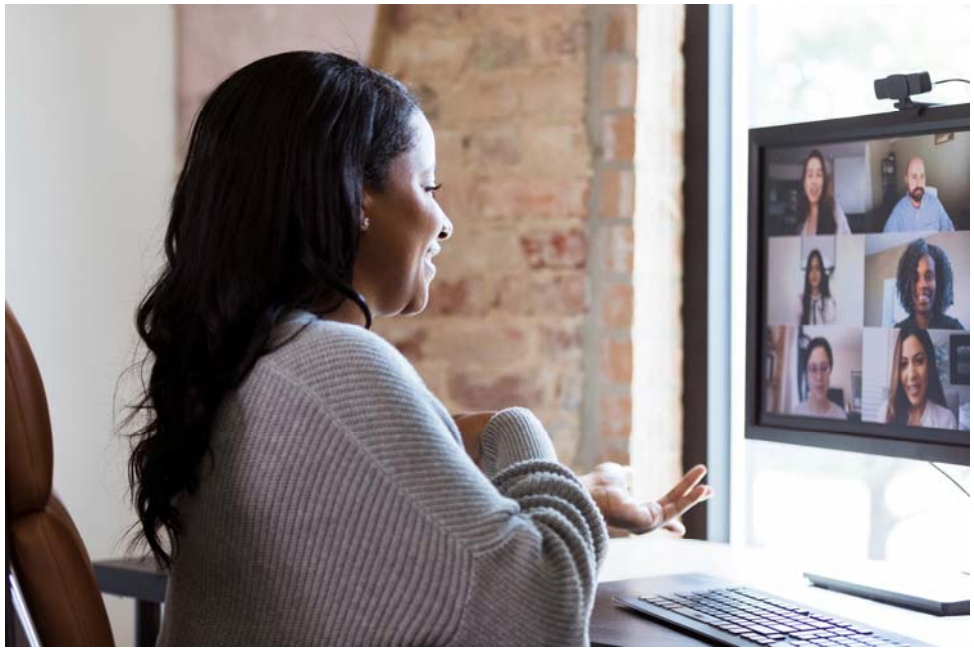
Every 5 years – reviewed

May be revised or reaffirmed

Important – KNOW the YEAR of the standard you are referencing – it should be current

Collaborative Update

- Task Group
  - Ad-hoc group operating in an unofficial capacity for the subcommittee
  - Requires experts from different areas and a leader to push progress
- Collaboration space
  - Dedicated page on website
  - Grant access to specific individuals
  - Post drafts
  - Post comments
  - Ballot preparation and review



ASTM D19 Committee on Water

- Formed in 1932 to address the need for standard methods of sampling, testing and reporting
- "Water" includes, but is not limited to, surface water, ground and spring water, brine, wastewater, potable water, process water, steam, rainwater, glacial melt water, water resulting from atmospheric precipitation and condensation, water discharge
- 10 Subcommittees

D19 Scope

Study of water, the promotion of knowledge of, and the standardization of terminology methods for:

- Sampling and analysis of water, waterborne materials, and wastes, water-formed deposits and fluvial sediments
- Surface-water hydraulics and hydrologic measurements
- Determination of the performance of materials or products used to modify water characteristics
- Determination of corrosivity or deposit-forming properties of water

D5847 Standard Practice

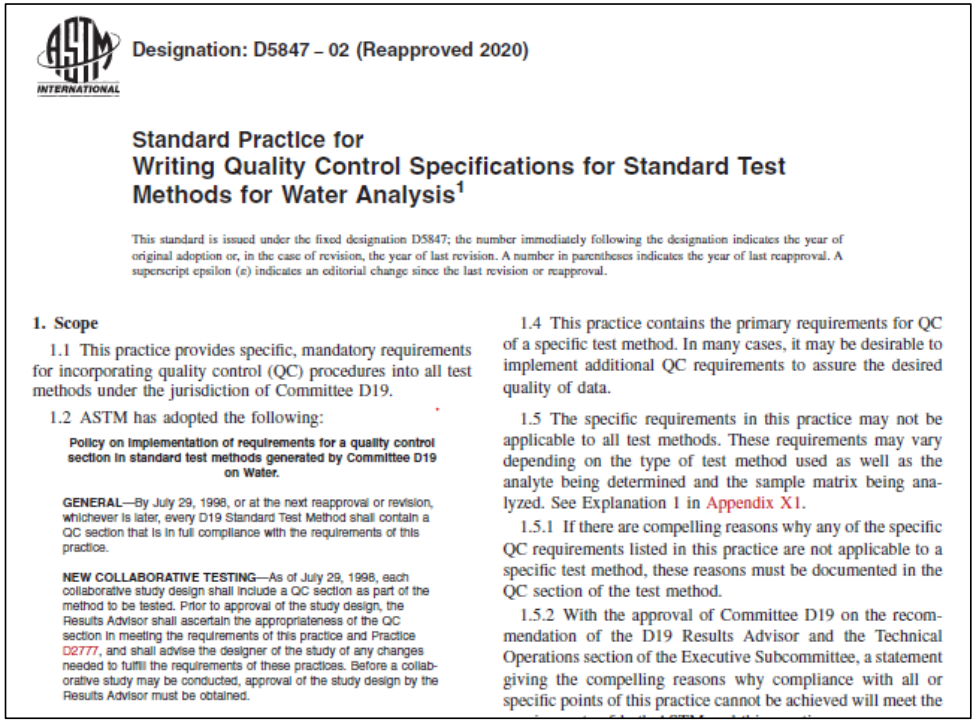
Developed in 1999 to provide specific, mandatory requirements for incorporating quality control (QC) procedures into all D19 test methods

Demonstration of a minimum competency by comparison with collaborative study data

Requires performance of a minimum level of QC as part of proper implementation to ensure ongoing competency

Created in 1999 but not updated in nearly a decade

D5847 Requirements



Designation: D5847 – 02 (Reapproved 2020)

Standard Practice for Writing Quality Control Specifications for Standard Test Methods for Water Analysis[1]

This standard is issued under the fixed designation D5847; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice provides specific, mandatory requirements for incorporating quality control (QC) procedures into all test methods under the jurisdiction of Committee D19.

1.2 ASTM has adopted the following:

Policy on Implementation of requirements for a quality control section in standard test methods generated by Committee D19 on Water.

GENERAL—By July 29, 1998, or at the next reapproval or revision, whichever is later, every D19 Standard Test Method shall contain a QC section that is in full compliance with the requirements of this practice.

NEW COLLABORATIVE TESTING—As of July 29, 1998, each collaborative study design shall include a QC section as part of the method to be tested. Prior to approval of the study design, the Results Advisor shall ascertain the appropriateness of the QC section in meeting the requirements of this practice and Practice D2777, and shall advise the designer of the study of any changes needed to fulfill the requirements of these practices. Before a collaborative study may be conducted, approval of the study design by the Results Advisor must be obtained.

1.4 This practice contains the primary requirements for QC of a specific test method. In many cases, it may be desirable to implement additional QC requirements to assure the desired quality of data.

1.5 The specific requirements in this practice may not be applicable to all test methods. These requirements may vary depending on the type of test method used as well as the analyte being determined and the sample matrix being analyzed. See Explanation 1 in Appendix X1.

1.5.1 If there are compelling reasons why any of the specific QC requirements listed in this practice are not applicable to a specific test method, these reasons must be documented in the QC section of the test method.

1.5.2 With the approval of Committee D19 on the recommendation of the D19 Results Advisor and the Technical Operations section of the Executive Subcommittee, a statement giving the compelling reasons why compliance with all or specific points of this practice cannot be achieved will meet the

- Periodic calibration or verification of calibration of the measurement system
- Initial demonstration of laboratory capability
- Analysis of at least one blank per batch
- Analysis of at least one Laboratory Control Sample (LCS) per batch
- Analysis of at least one Matrix Spike per batch
- Periodic analysis of an Independent Reference Material (IRM)

Collaborative Update

- Identify and agree upon required changes
  - Reflect current D19 guidelines
  - Results Advisor
  - Terminology
    - IRM vs. CRM
  - Updated and/or withdrawn standard test methods
    - D4375 – withdrawn without replacement
    - D5789 – withdrawn without replacement
  - Requirements for initial laboratory (analyst) capability
  - Requirements for Laboratory Control Sample (LCS)
  - Quality Control procedure(s)

Status

Work in progress to come to agreement on changes

Create and submit ballot(s)

Determine impact of changes on other D19 guidelines and methods

Summary

- ASTM and other voluntary consensus bodies create standards based on standard operating procedures
- Standardization process driven by volunteers that represent suppliers and customers
- Improve product quality, safety, custody transfer
- Collaboration is key!

Thank You