Using the TNI Standard for Essential Quality Assurance and Quality Control for Wastewater Analyses

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Introduction

On May 18, 2012, EPA published a final rule that approved new methods, or changes to existing methods, that affects over 100 EPA methods, Standard Methods, ASTM methods, and other test procedures in Part 136 of Title 40 of the Code of Federal Regulations (CFR). The rule also contains a number of clarifications relating to approved methods, sample preservation and holding times, and method modifications. Among the more significant changes is a new section 136.7 that would require "essential" quality control activities. The rule became effective June 18, 2012. A copy of this rule and related information can be found on EPA's Office of Science and Technology website at: http://water.epa.gov/scitech/methods/cwa/update_index.cfm

The new section 136.7 is shown below.

136.7 Quality Assurance and Quality Control

The permittee/laboratory shall use suitable QA/QC procedures when conducting compliance analyses with any Part 136 chemical method or an alternative method specified by the permitting authority. These QA/QC procedures are generally included in the analytical method or may be part of the methods compendium for approved Part 136 methods from a consensus organization. For example, Standard Methods contains QA/QC procedures in the Part 1000 section of the Standard Methods Compendium. The permittee/laboratory shall follow these QA/QC procedures, as described in the method or methods compendium.

If the method lacks QA/QC procedures, the permittee/laboratory has the following options to comply with the QA/QC requirements:

a. Refer to and follow the QA/QC published in the "equivalent" EPA method for that parameter that has such QA/QC procedures;

b. Refer to the appropriate QA/QC section(s) of an approved Part 136 method from a consensus organization compendium;

c. Incorporate the following twelve quality control elements, where applicable, into the laboratory's documented standard operating procedure (SOP) for performing compliance analyses when using an approved Part 136 method when the method lacks such QA/QC procedures. One or more of the twelve QC elements may not apply to a given method and may be omitted if a written rationale is provided indicating why the element(s) is/are inappropriate for a specific method.

(1) Demonstration of Capability (DOC);
(2) Method Detection Limit (MDL);
(3) Laboratory reagent blank (LRB), also referred to as method blank (MB);
(4) Laboratory fortified blank (LFB), also referred to as a spiked blank, or laboratory control sample (LCS);
(5) Matrix spike (MS) and matrix spike duplicate (MSD), or laboratory fortified matrix (LFM) and LFM duplicate, may be used for suspected matrix interference problems to assess precision;
(6) Internal standards (for GC/MS analyses), surrogate standards (for organic analysis) or tracers (for radiochemistry);
(7) Calibration (initial and continuing), also referred to as initial calibration verification (ICV) and continuing calibration verification (CCV);
(8) Control charts (or other trend analyses of quality control results);
(9) Corrective action (root cause analysis);
(10) QC acceptance criteria;
(11) Definitions of preparation and analytical batches that may drive QC frequencies; and
(12) Minimum frequency for conducting all QC elements.

These twelve quality control elements must be clearly documented in the written standard operating procedure for each analytical method not containing QA/QC procedures, where applicable.

Note: This document has not been reviewed nor endorsed by the US Environmental Protection Agency (EPA) and represents the sole opinion of TNI after careful reading of the final rule and Response to Comments document prepared by EPA, as well as numerous conversations with EPA individuals and others. As discussed in background material provided in Appendix B, some states may not have fully implemented this rule and may also not endorse the recommendations provided by TNI in the document.

Rule Analysis and Recommended Approach for Implementing the Requirements

Based on information obtained from TNI from various sources, TNI believes the following statements to be true:

- The rule only applies to chemical analyses.
- The intent was to add QC to methods where none existed, not to make all 12 steps mandatory for all methods.
- If a QC element is not appropriate for a particular method, e.g., a matrix spike for temperature, then it is not required (see Appendix A).
- The 12 QC elements are one of three options available to the laboratory and are not required for every method.
- If a laboratory is using a method that has "suitable" quality control requirements (option B), then no other actions are required.

Although three options are available, TNI believes option A is not practical and Option B could result in varying levels of QC, based on the document source. TNI instead supports the 12 elements listed in option C. Many QC sections of currently approved methods were developed many years ago and do not reflect current industry practices. For example, Method 625 does not have a requirement for a laboratory control sample to be analyzed with each batch of samples.

The NELAC Institute (TNI) has developed a consensus standard, Management and Technical Requirements for Laboratories Performing Environmental Analysis, which is used in TNI's National Environmental Laboratory Accreditation Program (NELAP). Even for laboratories that are not seeking accreditation, but that wish to incorporate the 12 essential elements specified in the new section 136.7 into their operation, this standard can be used effectively. This document was prepared to provide guidance on how to use the TNI standard for that purpose. The document is arranged in order of the 12 essential elements, contains a brief discussion of each element followed by a summary of TNI standard language.

Essential Element 1: Demonstration of Capability

Section 1.6 of Module 4 of the TNI standard has requirements for both initial and ongoing Demonstration of Capability, indicates the level of documentation required, and provides options for how this demonstration is to be conducted.

Key points in the TNI standard

- Requires DOC before any data can be reported.
- Requires on-going demonstration with QC such as laboratory control samples.
- Exception if method has been in place for one year prior to applying for accreditation.

- Must be repeated in change in instrument type, personnel, or method, or if method not preformed by lab or analyst within 12 months.
- Specifies documentation to be retained.
- Gives one example of how to perform the DOC, but allows other options.
- Requires an annual ongoing DOC, with 4 options described, and other approaches acceptable.

Essential Element 2: Method Detection Limit

Because the TNI standard is used for multiple EPA programs, TNI uses the generic term Limit of Detection (LOLD), instead of the specific EPA Method Detection Limit, and TNI provides more flexibility in how this value is determined. The TNI standard (Module 4, Section 1.5.2.1) has additional specificity on how the procedure is to be performed, and adds a verification step that is missing from the EPA procedure. This verification step was a key recommendation from the EPA Federal Advisory Committee on Detection and Quantitation; see http://water.epa.gov/scitech/methods/cwa/det/index.cfm .

Key points in the TNI standard

- Not required if results below Limit of Quantitation (LOQ) are not reported.
- Study must include sample preparation.
- Values must be verified by analysis of a spike at not more than 4 times the claimed LOD.
- Not required for tests where spiking solutions or QC samples are not available.
- Must be reestablished if a change in the method or instrumentation.
- Must be verified annually.

Essential Element 3: Method Blank

The TNI standard (Module 4, Section 1.7.3.1) sets forth a requirement for a method blank to be analyzed with each preparation batch of 20 or fewer samples, and provides exceptions for when this QC check is not applicable. A separate section (1.7.4.1) describes how the results from this QC check are evaluated.

Key points in the TNI standard

- Analyze at a frequency of one method blank per preparation batch.
- Exceptions for certain analytes such as pH and temperature.
- Samples must be reprocessed or data qualified if blank does not meet acceptance limits.
- Acceptance limits defined as concentration of analyte in the blank is above reporting limit and greater than 1/10 concentration of analyte in sample, or otherwise affects sample results.
- Requires laboratory investigate cause of blank contamination and perform corrective action.

Essential Element 4: Laboratory Control Sample

The TNI standard (Module 4, Section 1.7.3.2) sets forth a requirement for a Laboratory Control Sample to be analyzed with each preparation batch of 20 or fewer samples, provides exceptions for when this QC check is not applicable, and discusses specific issues related to multi-analyte tests. A separate section (1.7.4.2) describes how the results from this QC check are evaluated.

Key points in the TNI standard

- Analyze at a frequency of one LCS per preparation batch.
- Exceptions for certain analytes such as pH and temperature.
- Samples must be reprocessed or data qualified if blank does not meet acceptance limits.

- For methods with long analyte lists, allows for a representative list of analytes to be included in the spike.
- Acceptance limits based on published method limits, or internally derived limits.
- Allows for marginal exceedances.
- Allows for reporting unqualified data if certain conditions exist (e.g., high recovery in LCS and no detects in samples)

Essential Element 5: Matrix Spikes

The TNI standard (Module 4, Section 1.7.3.3.1) requires matrix spikes to be performed as specified by the method or laboratory customer and contains details as to selection of analytes to be spiked. A separate section (1.7.4.3) describes how the results from this QC check are evaluated.

Key points in the TNI standard

- Analyze at a frequency of as specified by method or laboratory customer.
- Exceptions for certain analytes such as pH and temperature.
- For methods with long analyte lists, allows for a representative list of analytes to be included in the spike.
- Results used to assess precision and accuracy of analytical results and not as a laboratory control.

Essential Element 6: Internal Standards, Surrogate Standards and Tracers

The TNI standard requires surrogate spikes to be performed as specified by the method or laboratory customer and contains details as to selection of analytes to be spiked. A separate section describes how the results from this QC check are evaluated. Internal standards are required when required by the method, and tracers for radiochemistry analyses are described in Module 6, Radiochemical Analyses.

Key points in the TNI standard

- Required for all samples where appropriate.
- Results used to assess precision and accuracy of analytical results and not as a laboratory control.

Essential Element 7: Calibration

The TNI standard (Module 4, Sections 1.7.1 and 1.7.2) describes the requirements for both an initial and continuing calibration. The standard does not specify detailed procedural steps for calibration, but establishes the essential elements for selection of the appropriate technique(s). This approach allows flexibility and permits the employment of a wide variety of analytical procedures and statistical approaches currently applicable for calibration.

Key points in the TNI standard for initial calibration

- Details of the procedures including calculations, integrations, acceptance criteria and associated statistics shall be included or referenced in the method SOP.
- Sufficient raw data records shall be retained to permit reconstruction of the calibration.;
- Sample results shall be quantitated from the initial calibration and may not be quantitated from any continuing calibration verification unless otherwise required by regulation, method, or program;
- All initial calibrations shall be verified with a standard obtained from a second manufacturer or from a different lot.
- Criteria for the acceptance of an initial calibration shall be established (e.g., correlation coefficient or relative percent difference).

- The lowest calibration standard shall be at or below the LOQ. Any data reported below the LOQ shall be considered to have an increased quantitative uncertainty and shall be reported using defined qualifiers or explained in the narrative;

- The highest calibration standard shall be at or above the highest concentration for which quantitative data are to be reported.
- Specific criteria are required for instrument such as ICP or ICP/MS that employ standardization with a zero point and a single point calibration standard.
- if the initial calibration results are outside established acceptance criteria, corrective actions must be performed and all associated samples re-analyzed. If re-analysis of the samples is not possible, data associated with an unacceptable initial instrument calibration must be reported with appropriate data qualifiers.
- if a reference or mandated method does not specify the number of calibration standards, the minimum number of points for establishing the initial calibration must be three.

Key points in the TNI standard for continuing calibration:

- A continuing calibration verification is required if an initial calibration is not performed on the day of analysis.
- The details of the calibration procedure, calculations and associated statistics must be included or referenced in the method SOP.
- Calibration shall be verified for each compound, element, or other discrete chemical species, except for multi-component analytes such as aroclors, chlordane, total petroleum hydrocarbons, or toxaphene, where a representative chemical, related substance or mixture can be used.
- Calibration verification must be performed at the beginning and end of each analytical batch, unless an internal standard is used.
- Sufficient raw data records must be retained to permit reconstruction of the continuing instrument calibration verification
- Criteria for the acceptance of a continuing instrument calibration verification must be established.

Essential Element 8: Control Charts or Trend Analyses

Module 2 of the TNI standard contains general requirements for all types of testing. Section 5.9, Quality Assurance for Environmental Testing, requires quality control data to be recorded "in such a way that trends are detectable." The TNI standard provides flexibility in the approach to be used, with control charts being one way.

Essential Element 9: Corrective Action and Root Cause Analysis

This quality assurance component is contained in Section 4.11, Corrective Action, of Module 2. The standard requires corrective action to be done when any "nonconforming work or departures from the policies and procedures" are observed. An investigation is required to determine the root cause of the problem. The standard requires the corrective action selected to be monitored to ensure its implementation.

Essential Element 10: QC Acceptance Criteria

Section 5.9.3 of Module 2 describes the general QC procedures required for all types of laboratories and requires laboratories to have a procedure for establishing acceptance criteria. The standard allows flexibility in the approach.

Key points in the TNI standard

- All laboratories must have detailed written protocols in place to monitor the following quality controls:
    - positive and negative controls such as blanks, matrix spikes, reference toxicants;
    - tests to define the variability and/or repeatability of the laboratory results such as replicates;
    - measures to assure the accuracy of the method including calibration and/or continuing calibrations, use of certified reference materials, proficiency test samples, or other measures;
    - measures to evaluate method capability, such as limit of detection and limit of quantitation or range of applicability such as linearity;
    - selection of appropriate formulae to reduce raw data to final results such as regression analysis, comparison to internal/external standard calculations, and statistical analyses;
    - selection and use of reagents and standards of appropriate quality;
    - measures to assure the selectivity of the test for its intended purpose; and
    - measures to assure constant and consistent test conditions where required by the method such as temperature, humidity, light or specific instrument conditions.
- All quality control measures must be assessed and evaluated on an on-going basis and quality control acceptance criteria shall be used.
- The laboratory must have procedures for the development of acceptance/rejection criteria where no method or regulatory criteria exist.

Essential Element 11: Batch Definitions

These definitions are found in Section 3.1 of Module 2.

> **Batch:** Environmental samples that are prepared and/or analyzed together with the same process and personnel, using the same lot(s) of reagents. A **preparation batch** is composed of one (1) to twenty (20) environmental samples of the same quality systems matrix, meeting the above mentioned criteria and with a maximum time between the start of processing of the first and last sample in the batch to be twenty-four (24) hours. An **analytical batch** is composed of prepared environmental samples (extracts, digestates or concentrates) which are analyzed together as a group. An analytical batch can include prepared samples originating from various quality system matrices and can exceed twenty (20) samples.

Essential Element 12: Minimum Frequency

The minimum frequency for performing various QC checks are described in the sections above, and summarized in the table below.

QC Check	Frequency
Demonstration of Capability	At method startup; verified annually or when there is a significant change
Method Detection Limit	At method startup; verified annually or when there is a significant change
Laboratory Control Sample	Every preparation batch
Matrix Spike	As required by method or client
Internal standards and surrogate spikes	As required by method; surrogates required for all organic tests
Calibration	Every day the instrument is used for analysis

Beyond the Essential 12

The 2012 Method Update Rule was a reasonable attempt to bring some effective quality control practices into analyses conducted under Part 136. The TNI standard provides additional practices for improving the quality of environmental data and also extends these practices into areas beyond chemistry, such as microbiology and radiochemistry. However, the TNI standard contains additional QC practices for chemical testing such as replicate analyses, limit of quantitation and selectivity checks. Furthermore, although EPA stated these requirements only apply to chemical testing, TNI believes suitable and effective QC should be included in all environmental analyses. These specific QC requirements are contained in the following modules of the TNI laboratory standard:

Module 3: Asbestos
Module 5: Microbiology
Module 6: Radiochemistry
Module 7: Toxicity

The 2012 Method Update Rule was also a reasonable attempt to bring some effective quality assurance practices into analyses conducted under Part 136. Activities such as corrective action and root cause analysis are critical components of an effective laboratory quality system. Some of the additional quality system topics found in the TNI standard include:

- Document Control,
- Subcontracting,
- Preventive Action,
- Data Integrity,
- Internal Audits,
- Method Validation,
- Handling Samples, and
- Reporting the Results.

Appendix A
Appropriate Quality Control

The rule indicated that a particular QC element could be eliminated if it was inappropriate. TNI believes elements 1, 8, 9, 10, 11 and 12 are appropriate for all methods. Element 6 is generally appropriate for organic and radiochemistry methods, but generally not for the inorganic methods listed in Table 1B of Part 136. The remaining 5 QC elements may or may not be appropriate for inorganic methods, based on limitations of the technology. TNI has prepared the table below to provide guidance to laboratories on this issue.

APPLICABLE QUALITY CONTROL CHECKS FOR INORGANIC TEST PROCEDURES

		Appropriate QC Check for this Technique					
Parameter	**Methodology**	**MDL**	**MB**	**LFB/LCS**	**MS**	**ICV**	**CCV**
1. Acidity	Electrometric endpoint or phenolphthalein endpoint		x	**x**			
2. Alkalinity	Titration		x	x	x		
	Automated	x	x	x	x	x	x
3. Metals	AA, ICP/AES, ICP-MS	x	x	x	x	x	x
	Direct Current Plasma	x	x	x	x	x	x
	Colorimetric	x	x	x	x	x	x
	Voltametry	x	x	x	x	x	x
4. Ammonia	Nesslerization		x	x	x	x	x
	Titration		x	x	x		
	Electrode	x	x	x	x	x	x
	Berthelot reaction , Manual or Automated	x	x	x	x	x	x
	Ion chromatography	x	x	x	x	x	x
9. Biochemical oxygen demand (BOD5)	Dissolved Oxygen Depletion		x	x			
11. Bromide	Electrode	x	x	x	x	x	x
	Ion chromatography	x	x	x	x	x	x
	CIE/UV	x	x	x	x	x	x
13. Calcium	Titrimetric (EDTA)		x	x	x		
	Ion chromatography	x	x	x	x	x	x
	AA, ICP/AES, ICP-MS	x	x	x	x	x	x
15. COD	Titrimetric		x	x	x		
	Spectrophotometric	x	x	x	x	x	x
16. Chloride	Titrimetric		x	x	x		
	Colorimetric	x	x	x	x	x	x
	Automated, (Ferricyanide)	x	x	x	x	x	x
	Potentiometric Titration		x	x	x		
	Ion Selective Electrode	x	x	x	x	x	x
	Ion chromatography	x	x	x	x	x	x
	CIE/UV	x	x	x	x	x	x
17. Chlorine--Total residual	Amperometric direct		x	x	x	x	x
	Iodometric direct		x	x	x	x	x
	Back titration either endpoint[15] or		x	x	x		
	DPD-FAS		x	x	x		
	Spectrophotometric, DPD		x	x	x	x	x
	Electrode		x	x	x		

17A. Chlorine, Free available	Amperometric direct		x	x	x	x	x
	DPD-FAS		x	x	x		
	Spectrophotometric, DPD		x	x	x	x	x
18. Chromium VI dissolved	AA chelation-extraction	x	x	x	x	x	x
	Ion chromatography	x	x	x	x	x	x
	Colorimetric	x	x	x	x	x	x
21. Color	Colorimetric		x	x	x	x	x
	Spectrophotometric		x	x	x	x	x
	Platinum Cobalt, Visual Comparison			x			
23. Cyanide--Total	Automated UV digestion/distillation , colorimetric	x	x	x	x	x	x
	Flow Injection/in-line UVdigestion, gas diffusion amperometry	x	x	x	x	x	x
	Manual Distillation, titrimetric,		x	x	x		
	Manual Ditillation, spectrophotometric	x	x	x	x	x	x
	Manual Distillation, semi-automated	x	x	x	x	x	x
	Manual Distillation, ion chromatography	x	x	x	x	x	x
	Manual Distillation, Ion Selective Electrode	x	x	x	x	x	x
24. Cyanide, **Available**	Manual Disillation, titrimetric		x	x	x		
	Manual Disillation, spectrophotometric	x	x	x	x	x	x
	Flow Injection, gas diffusion amperometry	x	x	x	x	x	x
	Automated Distillation, colorimetry	x	x	x	x	x	x
24A. Cyanide, **Free**	Flow Injection gas diffusion amperometry	x	x	x	x	x	x
	Manual micro-diffusion, colorimetry	x	x	x	x	x	x
25. Fluoride	Electrode	x	x	x	x	x	x
	Colorimetric (SPADNS)	x	x	x	x	x	x
	Automated complexone		x	x	x		
	Ion chromatography	x	x	x	x	x	x
	CIE/UV	x	x	x	x	x	x
27. Hardness	Colorimetric,		x	x	x	x	x
	Titrimetric (EDTA)		x	x	x		
	Ca + Mg- ICP, AA	x	x	x	x	x	x
28. Hydrogen ion (pH)	Electrometric		x			x	x
	Automated electrode		x			x	x
31. Kjeldahl Nitrogen-	Titration		x	x	x		
	Nesslerization		x	x	x		
	Electrode	x	x	x	x	x	x
	Flow- injection	x	x	x	x	x	x
	Semi-automated or automated phenate	x	x	x	x	x	x
	Potentiometric		x	x	x		
35. Mercury	Cold vapor, manual or automated	x	x	x	x	x	x
	Cold vapor atomic fluorescence spectrometry (CVAFS)	x	x	x	x	x	x
38. Nitrate	Ion chromatography	x	x	x	x	x	x
	CIE/UV	x	x	x	x	x	x
	Ion Selective Electrode	x	x	x	x	x	x
	Colorimetric (Brucine sulfate)	x	x	x	x	x	x
39. Nitrate-nitrite	Cadmium reduction, automated or manual	x	x	x	x	x	x
	Automated hydrazine		x	x	x		
	Ion chromatography	x	x	x	x	x	x

	CIE/UV	x	x	x	x	x	x
40. Nitrite	Spectrophotometric		x	x	x	x	
	Automated (Diazotization)	x	x	x	x	x	x
	Automated or Manual bypass Cd Reduction	x	x	x	x	x	x
	Ion chromatography	x	x	x	x	x	x
	CIE/UV	x	x	x	x	x	x
41. Oil and grease	Gravimetry., HEM and SGT-HEM	x	x	x	x		
42. Organic carbon--Total (TOC)	Combustion	x	x	x	x	x	x
	Heated persulfate or UV persulfate oxidation.	x	x	x	x	x	x
44. Orthophosphate	Ascorbic acid method, manual or automated,	x	x	x	x	x	x
	Ion chromatography	x	x	x	x	x	x
	CIE/UV	x	x	x	x	x	x
46. Oxygen, dissolved	Winkler (Azide modification)						
	Electrode						
	Luminescence Based Sensor						
48. Phenols, mg/L	Colorimetric (4AAP) , manual or automated	x	x	x	x	x	x
49. Phosphorus	Gas-liquid chromatography	x	x	x	x	x	x
50. Phosphorus	Ascorbic acid reduction, (manual or automated(		x	x	x		
	ICP/AES	x	x	x	x	x	x
	Semi-automated block digestor (TKP)	x	x	x	x	x	x
52. Potassium	Flame photometric	x	x	x	x	x	x
	ICP-AES, ICP-MS, AA	x	x	x	x	x	x
	Electrode	x	x	x	x	x	x
	Ion chromatography	x	x	x	x	x	x
53. Residue--Total	Gravimetric		x	x			
54. Residue--filterable	Gravimetric		x	x			
55. Residue--nonfilterable (TSS)	Gravimetric		x	x			
56. Residue--settleable	Volumetric, (Imhoff cone), or gravimetric		x				
57. Residue--Volatile	Gravimetric		x	x			
60. Selenium	AA gaseous hydride	x	x	x	x	x	x
	ICP-AES, ICP-MS	x	x	x	x	x	x
61. Silica	Colorimetric, Manual- Molybdosilicate	x	x	x	x	x	x
	Automated for Molybdate-Reactive	x	x	x	x	x	x
	ICP-AES, ICP-MS	x	x	x	x	x	x
63. Sodium	Flame photometric	x	x	x	x	x	x
	AA, ICP-AES, ICP-MS	x	x	x	x	x	x
	Ion chromatography	x	x	x	x	x	x
64. Specific conductance	Wheatstone bridge			x			
65. Sulfate	Automated colorimetric	x	x	x	x	x	x
	Gravimetric		x	x	x		
	Turbidimetric		x	x	x	x	x
	Ion chromatography	x	x	x	x	x	x
	CIE/UV	x	x	x	x	x	x
66. Sulfide	Titrimetric (iodine)		x	x	x		
	Colorimetric (methylene blue)	x	x	x	x	x	x
	Ion Selective Electrode	x	x	x	x	x	x
67. Sulfite	Titrimetric (iodine-iodate)		x	x	x		
68. Surfactants	Colorimetric (methylene blue)	x	x	x	x	x	x

69. Temperature	Thermometric						
73. Turbidity	Nephelometric		x			x	x

Appendix B

Supplemental Information on Essential QC in the 2012 EPA Method Update Rule

On June 14, 2012, EPA provided a clarification statement about the new Section 136.7.

> With regard to the recent addition of Part 136.7 - Quality Assurance and Quality Control, the intent of the addition of this part was to codify that a permittee or laboratory is required to use suitable QA/QC procedures when conducting CWA compliance analyses. In cases where methods listed in the tables at 136.3 do not contain QA/QC procedures as a part of the method or the compendium from which the method was taken (e.g., older EPA Methods that were originally published in Methods for the Chemical Analysis of Water and Wastes) , options were given to comply with the QA/QC requirements.
>
> These options included:
> 1) Referring and following QA/QC published in the "equivalent" EPA Method for that parameter that did contain QA/QC procedures,
> 2) Referring to the appropriate QA/QC section(s) of an approved Part 136 method from a consensus organization compendium (such as part 1000, 2000, 3000, etc. of Standard Methods), or
> 3) Incorporating the applicable QA/QC into the laboratory's SOP.
>
> Our intent was not to allow people to "shop around" to determine which QC (and/or acceptance criteria) they wanted to use. The intent was that if a permittee or laboratory is using a method from "Standard Methods for the Examination of Water and Wastes", they would refer to the appropriate section of Standard Methods for QA/QC requirements. All laboratories should have SOPs that document the procedures that they use to analyze samples for various parameters by various methods. If a laboratory's SOP for a analysis of samples for a particular parameter references a method from Standard Methods then the SOP should include the QA/QC requirements and acceptance limits from Standard Methods.
>
> It was not our intent for approved methods with existing QA/QC to be updated to include additional QA/QC procedures. Rather 136.7 address methods that did not contain QA/QC or where the QA was found in a different part of the methods compendium. If an approved method with QA/QC does not contain all 12 elements listed at part 136.7; it is not recommended or required (unless required by the permitting authority) that a laboratory add the missing elements. In many cases this would require a laboratory to establish acceptance criteria for QC elements which are not appropriate for a specific method (e.g., adding MS and MSD tests to a method that measures dissolved oxygen).