ENVIRONMENTAL EXPRESS®
a Cole-Parmer company

Total Solids: Environmental Express StableWeigh™ Analytical Testing Vessels Method Equivalency Checklist

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Introduction

The method flexibility allowed in the EPA rules 40 CFR part 136.6 [1] lay out the requirements a modified analytical method must meet to be considered equivalent to a promulgated analytical method. These requirements are explained in detail in a memo authored by Richard Redding [2]:

40 CFR part 136.6 (b)1

(*b) Method modifications. (1) If the underlying chemistry and determinative technique in a modified method are essentially the same as an approved Part 136 method, then the modified method is an equivalent and acceptable alternative to the approved method provided the requirements of this section are met.*

Richard Redding Memo

The March 12th Methods Update Rule promulgated 136.6 which allows the regulated community more flexibility that includes:

1. Changes in equipment operating parameters such as minor changes.
2. Changes are only allowed, if the modified method produces equivalent performance for the analyte(s) of interest, and the equivalent performance is documented.
3. The modified method must be sufficiently sensitive and meet or exceed performance of the approved method(s) for the analyte(s) of interest, as documented by meeting the initial and ongoing quality control requirements in the method.
4. The modified method must be documented in a method write-up or an addendum that describes the modification(s) to the approved method prior to the use of the method for compliance purposes.

The method changes in the Environmental Express TS Method for StableWeigh Vessels meets the requirements above and does not change the underlying chemistry or determinative techniques from the promulgated methods in 40 CFR part 136 [1]

This checklist will directly compare the Environmental Express StableWeigh™ Analytical Testing Vessels with the SM 2540 B-1997 [3] so as to allow a laboratory to establish method equivalency for their analyses and reporting to both users of the results and regulators.

Method Summary

The report Total Solids Environmental Express StableWeigh™ Analytical Testing Vessels Method Equivalency Report [4] provides single laboratory comparison data The significant areas covered in the report summarize the areas for laboratory quality control. Refer to that report for a checklist from Richard Reding's 2007 memo [2] or in Table 1 below..

The Total Solids Environmental Express StableWeigh™ Analytical Testing Vessels Method Equivalency Report [4] has provided the literature review information; EPA 40 CFR part 136.6

requirements and experimental data to support the use of Environmental Express Stable Weigh vessels for the analyses of TS under CWA regulatory requirements outlined the promulgated 40 CFR part 136.

Table 1: EPA Method Equivalency Check-Off Table from Richard Redding Memo, Flexibility to Modify CWA Methods, 2007

Equivalency Requirement	Section in Report
Concentrations of calibration standards. Document the range of the concentrations of material used to establish the relationship between response of the measurement system and analyte concentration.	Yes, Table 2, Figures 5-13
% RSD or correlation coefficient of calibration regression.	Yes, Table 2
Performance range tested with units.	Yes, Yes, Table 2, Figures 5-13
Sample(s) used in initial demonstration have the recommended preservative, where applicable.	Yes, see Environmental Express StableWeigh TS Method
Sample(s) used in initial demonstration met recommended holding times, where applicable.	Yes
Interferences.	None for StableWeigh, See Appendix 1 Tables. Crusting seen for traditional evaporation dish. See Appendix 1 Tables.
Document the qualitative identification criteria used.	LFB percent recovery. Table 2. LRB Table 3. % RSD from QC samples. Table 2. IDC Figures 5-13
Performance evaluation studies performed for analytes of interest, where available.	LFB percent recovery. Table 2. LRB Table 3. % RSD from QC samples. Table 2. IDC Figures 5-13
Latest study sponsor or title	NA
Latest study number.	NA
Analysis of external reference material	NA.
Results of analyses on reference material from a source different from that used to prepare the calibration standards, if applicable.	See Appendix 1 Tables
Sources of external reference material, if applicable.	NA
Surrogates used, if applicable.	Not Required
Concentrations of surrogates, if applicable.	Not Required
Recoveries of surrogates appropriate to the	Not Required

Table 1: EPA Method Equivalency Check-Off Table from Richard Redding Memo, Flexibility to Modify CWA Methods, 2007	
Equivalency Requirement	**Section in Report**
proposed use, if applicable.	
Sample preparation.	As per Standard Methods 2540 (B)
Clean-up procedures.	As per Standard Methods 2540 (B)
Method blank result.	Table 3
Matrix (reagent water, drinking water, effluent)	Wastewater Anaerobic Digester
Matrix spikes.	NA
Spiking system, appropriate to the method and application.	NA
Spike concentrations (with units corresponding to the final sample concentration) and recoveries.	NA
Source of spiking material.	Muscatine Water Pollution Control Plant
Number of replicate spikes	NA
Initial demonstration of capability.	See Figures 5-13
Precision (analyte by analyte) Duplicates.	See Table 2, Figures 5-13, Appendix 1 Tables
Bias (analyte by analyte).	See Table 2, Figures 5-13, Appendix 1 Tables
Detection limit (with units; analyte by analyte).	NA
Confirmation of detection limit, if applicable.	NA
Quantitation limit (with units; analyte by analyte) Minimum level (ML), practical quantitation level (PQL) or limit of quantitation (LOQ).	NA.
Qualitative confirmation.	Not Required

Conclusion

In conclusion, these changes in the Environmental Express TS Method for StableWeigh Vessels produce an equivalent set of results compared to the current EPA promulgated Total Solids listed in the 40 CFR part 136.

Copies of the "Total Solids: Environmental Express StableWeigh™ Analytical Testing Vessels Method Equivalency Checklist" report or the "Environmental Express TS Method for StableWeigh Vessels" can be obtained from the Environmental Express webpage.

References

1. EPA, *Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act; Analysis and Sampling Procedures*, 2012. p. 29758-29846.
2. Reding, R., *Flexibility to Modify CWA Methods*, E. Engineering & Analytical Support Branch, OST, Editor 2007, EPA.
3. Eaton, E., Baird, R., Rice, E., , ed. *Standard Methods for the Examination of Water and Wastewater, 22nd Edition*. 22 ed. 2012, APHA, AWWA, WEF.
4. Askew, E.F., *Total Solids Environmental Express StableWeigh™ Analytical Testing Vessels Method Equivalency Report.* 2017.