



*Florida Department of
Environmental Protection*

TNI Environmental Measurement Methods Expert Committee

**The Development of Consensus Standards and
Tools for Detection, Quantitation and Calibration**

Timothy W. Fitzpatrick

FDEP Bureau of Laboratories



Cooperative Agreement with EPA (Sept. 2010)

- Enhance the quality and use of environmental test methods by establishing the Environmental Measurement Methods Expert Committee (EMMEC) to develop consensus standards.
- Standards to establish requirements for fundamental measurement practices to reduce quality system vulnerabilities, with a focus on:
 - Limit of Detection;
 - Limit of Quantitation;
 - Instrument Calibration;



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Why a Measurement Methods Committee?

- EPA's FAC for D/Q finished work in Dec. 2007. Subsequently, EPA's 'Forum on Environmental Measurements' (FEM) was asked find one D/Q procedure applicable for use in all EPA programs;
- FEM also recognized that there were differences in calibration procedures across programs and methods;
- FEM funded TNI to develop tools that may help address those and related issues;



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Background - the Saga of the MDL/PQL

- 1999 – Several industries file suit against EPA for detection/quantitation requirements in Method 1631;
- 2000 – EPA enters into a settlement agreement;
- 2003 – EPA publishes 2 FR notices outlining its reassessment of detection/quantitation procedures; many of the 126 comments are critical;
- 2005 - EPA convenes a Federal Advisory Committee (FAC) on ‘Detection and Quantitation Approaches in Clean Water Act Programs’ (Federal Register, May2005);



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FAC Outcomes

- Evaluated all published D/Q procedures against a matrix of desirable characteristics (termed 'What we want a procedure to do');
- Pilot Tested the most promising procedures (3 detection and 3 quantitation) on 5 different methods across several labs;
- Modified the most promising procedure into a quasi-consensus procedure, which EPA pilot tested; Results due this summer;



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Current Situation

- Three EPA programs approach D/Q differently:
 - CWA requires 40 CFR Part 136 Appx. B for detection; 'minimum level' (ML) for quantitation;
 - OGWDW has considered Hubaux Vos for detection but uses 40 CFR 136 Appx. B; LCMRL for quantitation;
 - OSW recommends only an ML for quantitation;



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What Issues Need to be Addressed?

Detection and Quantitation Procedures

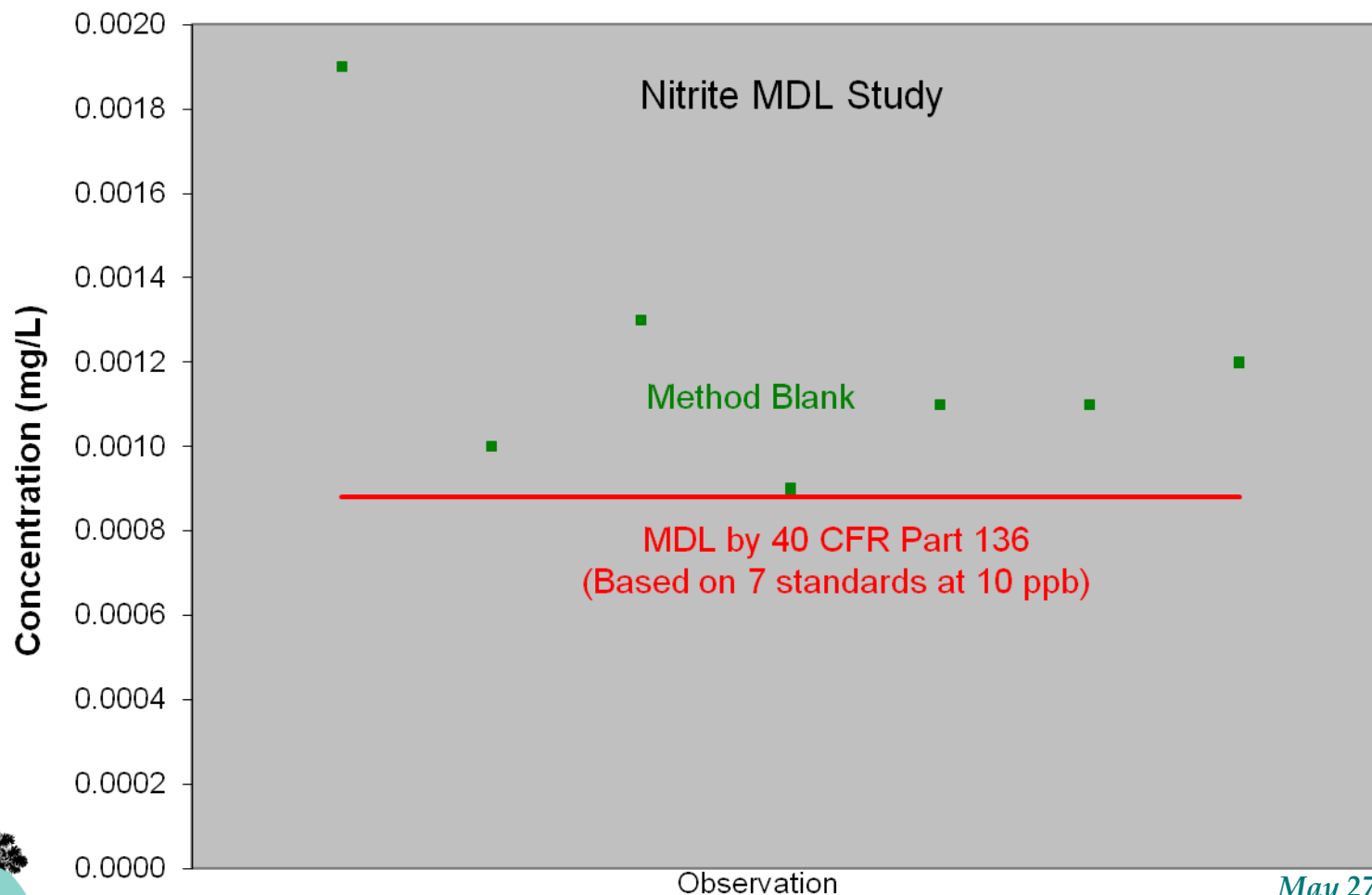
- The FAC identified 15 desirable characteristics;
- Several critical characteristics are missing from the 40 CFR Part 136 procedure, notably:
 - Frequency of updating D/Q limits not specified;
 - Does not account for bias;
 - Does not account for intermittent contamination;
 - Limits may not represent routine performance;
 - A quantitation procedure is not explicitly defined nor are measurement quality objectives;



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40 CFR Part 136 Procedure - Bias not considered



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What issues need to be addressed?

Calibration

- Calibration requirements are not well defined in methods;
- No standard protocols exist for assessing calibration models or rejecting calibration points;
- Many methods 'suggest' un-weighted, linear calibration but is that really the best approach?
 - The relationship must be truly linear;
 - Uncertainty must be invariant with concentration (homoscedasticity must be observed);
 - Standards used in calibration must be 'error free'
 - 'Residuals' should be normally distributed;

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Initial Strategy for Standard Development

- Tackle calibration issues first:
 - Less controversial ('lower hanging fruit');
 - Await EPA's pilot test results on the FAC D/Q procedure;
- Document existing procedures/protocols;
- Identify issues, strengths and weaknesses;
- Develop recommendations;
- Propose standards (or tools) to TNI;



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Timing

- 5-year funding commitment from EPA
- First committee meeting (teleconference) in January 2011.
- Membership tenure is staggered (initially 1 – 3 years) to draw in new members and viewpoints;
- The ultimate goal is to propose tools that EPA can easily incorporate in method and rule updates;
- Plan to have calibration standards ready for the upcoming TNI Meeting (Aug. 2011);



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Current EMMEC Committee Members

- Richard Burrows Test America
- Brooke Connor USGS
- Dan Dickinson NYSDOH
- Tim Fitzpatrick FL DEP
- Nancy Grams Advanced Earth Tech.
- Anand Mudambi USEPA
- John Phillips Ford Motor Co.
- Lee Wolfe Columbia Analytical



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Become Involved

Conference Calls the 1st Friday of each month

Richard Burrows - EMMEC Committee Chair

richard.burrows@testamericainc.com

Ken Jackson – Committee Program Administrator

ken.jackson@nelac-institute.org





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- Consensus Standards Development Executive Committee
- Laboratory Accreditation System Executive Committee
- National Environmental Field Activities Program (NEFAP) Executive Committee

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news

Institute Review: 1st Quarter 2011
27 April 2011

Proposed Tentative Interim Amendment to the TNI Stationary Source Audit Sample Program Standard
24 April 2011

TNI Comments on EPA Proposed Rule to Improve EPA Regulations
7 April 2011

Guidance on Implementing the New TNI Standard
7 April 2011

Proposed Tentative Interim Amendment to the TNI Stationary Source Audit Sample Program Standard
5 April 2011



Contact

Timothy W. Fitzpatrick

Program Administrator

timothy.fitzpatrick@dep.state.fl.us

850-245-8083



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