

Whole Effluent Toxicity Testing Expert Committee Meeting Summary
Environmental Measurement Symposium, Jacksonville, FL, August 5, 2019

1. Welcome and Announcements

Rami welcomed everyone to the meeting, and introductions were offered around the room and on the cell phone teleconference. Attendance is recorded in Attachment 1, below.

2. Presentation and Discussion

Rami discussed the committee's accomplishments and activities to date, including the training webinar, Understanding WET Testing (available at <https://nelac-institute.org/content/eds-home.php>) and efforts towards revising the WET module of the TNI standard and improving Proficiency Testing (PT) for WET, as well as committee members' participation in SETAC meetings in recent years and this fall's WET workshop at SETAC in Toronto. The outline form of the PowerPoint presentation is included in Attachment 2, and discussion points are summarized below.

TD Language -- The proposed Technical Director language was presented, and in a concurrent session, the Quality Systems committee was discussing language offered by all of the expert committees for their specialties.

PT Issues – The committee has approached changing the WET PT paradigm with EPA through ELAB and also working with PTPEC. In discussions of the committee's activities related to PT, the ongoing frustration of PTs that are analyzed according to various NPDES permits and thus do not provide comparable data for assessing lab performance was discussed at length. This situation is worsened by the relatively few WET labs being divided up across various PT providers, so that there may be only 6-8 PT results for, say, a sheepshead minnow test. When the tests are conducted at different temperatures and in different types of water, with animals of variable robustness, the statistics calculated from the results are essentially meaningless, yet are still used for pass/fail decisions for the labs.

Another issue about PT tests arose from a complaint, where the 45-day limit specified for most PT tests was exceeded by a WET lab, but the DMR-QA testing (which is acceptable PT for WET labs) permits much longer timeframes than V1M1 requires.

QC for WET Chemistry Data – the committee-approved language for this was briefly discussed (that QC should follow the instrument manufacturer's recommendations), triggering discussion among audience participants unfamiliar with the use of "supporting measurements" as opposed to "reporting data". Once this distinction was clarified, a recommendation emerged that the standard should require a disclaimer, to the effect that "support chemistry measurements are not accredited and may not be reported for compliance purposes".

Another recommendation was that the standard should clarify that a lab must run for its support measurement testing whichever method is promulgated by EPA (even for the Standard Methods tests) unless the permit requires otherwise. All understand that not all methods are even promulgated by EPA, however. One participant stated that the standard should cite the method (and revision number) to be used for all ancillary chemical measurements.

Demonstration of Competency (DOC) – one participant made specific recommendations as follows, and there was general consensus in the room that the lab DOC is what matters.

- There can be no individual DOC because no individual runs an entire test; some other definition of analyst would be needed for an individual DOC.
- The lab demonstrates its capability by mentoring a new analyst effectively, and the lab DOC itself should thus be adequate.
- Analyst training records support the LAB DOC and quality system documentation addresses how the training is accomplished. These records are available to assessors and should be examined.
- NOTE: the laboratory DOC procedures are normally spelled out in the WET method manuals, so that those protocols are essentially standardized.

Rami noted that NELAP ABs seem to want additional guidance for assessors, and explained that, at present, the “expected” analyst DOC is to have performed 4-5 tests of a standard reference toxicant for each test type in which an analyst will participate, acknowledging that this is a huge time commitment.

Further discussion points were:

- Analysts should train to “essential skills” and those essential skills should be unambiguously defined in the module. An alternative proposal was that essential skills will vary by lab and test(s) being conducted.
- While the report to the client does not name the analysts performing the test(s), the lab data sheets do identify the analysts. The only name on the client report is the signature of the technical director.
- Language requiring sign-off of individual DOCs by a supervisor is not in V1M2, and that if it were, it would be in section 5.2 of that module. Section 5.25 of V1M2 states that it is up to the lab management to authorize lab training and identify which analyst can do which task(s) and then make assignments based on analysts’ training. The authorization or competence demonstration must be signed off on by management.
- Use the terminology “team approach” in place of “work cell”.

The final consensus of the discussion was that the lab must identify and define essential skills needed (rather than listing them in the standard) and also define similar technologies as used in that lab, plus that the Laboratory DOC is what matters – having trained people to perform the lab DOCs is the responsibility of management.

3. Next Meeting

The next teleconference meeting will be on Wednesday, September 18, 2019, at 1 pm Eastern. An agenda and any needed documents will be sent in advance.

Attachment 1

WET Expert Committee Membership

Member	Affiliation	Email	Category	Term Expiration	Present
Ginger Briggs	Bio-Analytical Laboratories	bal@bioanalyticallabs.com	Lab	Dec. 2020 (2)	Yes (phone)
Chris Burbage	Hampton Roads Sanitation District	cburbage@hrsd.com	Lab	Dec. 2020 (2)	No
Kari Fleming	WI DNR	kari.fleming@wisconsin.gov	AB	Dec. 2020 (2)	Yes (phone)
Amy Hackman	Penn. Dept. Environ. Protection	ahackman@pa.gov	AB	Dec. 2020 (2)	No
Sarah Hughes	Shell Oil Co.	s.hughes@shell.com	Other	Dec. 2021 (1)	Yes (phone)
Pete De Lisle (Vice Chair)	Coastal Bioanalysts Inc.	pfd@coastalbio.com	Lab	Dec. 2020 (2)	Yes (phone)
VelRey Lozano	USEPA Region 8	Lozano.VelRey@epa.gov	Other (Affiliate)	Dec 2020 (1)	No
Rami Naddy (Chair)	TRE Env. Strat. LLC	naddyrb.tre@gmail.com	Lab	Dec. 2020 (2)	Yes
Teresa Norberg-King	USEPA	norberg-king.teresa@epa.gov	Other (Affiliate)	Dec. 2020 (2)	No
John Overbey	American Interplex Corp.	joverbey@americaninterplex.com	Lab	Dec 2020 (1)	No
Chris Pasch	Alan Plummer Associates, Inc.	cpasch@apaienv.com	Other	Dec. 2020 (2)	No
Michael Pfeil	Texas Comm. Environ. Quality	Michael.pfeil@tceq.texas.gov	AB	Dec. 2020 (2)	No
Michele Potter	New Jersey Dept. of Environ Protect.	Michele.Potter@dep.nj.gov	AB	Dec. 2020 (2)	Yes (phone)
Steven Rewa	Environmental Resources Management	steven.rewa@erm.com	Lab	Dec. 2020 (2)	No
Beth Thompson	Shealy Consulting	bthompson@shealyconsulting.net	Lab	Dec 2020 (1)	No
Elizabeth West	LA DEQ LELAP	elizabeth.west@la.gov	AB	Dec. 2020 (2)	Yes (phone)
Associate Members					
Silvia Bogdan	EPA R6	Bogdan.silvia@epa.gov	Other (Assoc.)		No
Steve Boggs	CA ELAP	steve.boggs@waterboards.ca.gov	Other (Assoc.)		No

Thekkekalathil "Chandra" Chandrasekhar	FL DEP	Thekkekalathil.Chandrasekhar@d ep.state.fl.us	Lab (Assoc.)		Yes
Michael Chanov	EA Eng., Sci. &Tech.	mchanov@eaest.com	Lab (Assoc.)	--	Yes (phone)
Stephen Clark	Pacific EcoRisk	slclark@pacificecorisk.com	Lab (Assoc.)		No
Erin Consuegra	ERA LAB	econsuegra@eralab.com	Lab (Assoc.)		No
Kevin Dischler	Element Materials Technology	Kevin.dischler@element.com	Lab (Assoc.)	---	No
Monica Eues	CK Associates	Monica.eues@c-ka.com	Lab (Assoc.)		No
Nicole Fortin	Honolulu City Lab	nfortin@honolulu.gov	Lab (Assoc.)		No
Christina Henderson	Bio-Aquatic Testing, Inc.	chenderson@bio-aquatic.com	Lab (Assoc.)		No
David Johnston	Valero Refining Co - Benecia	david.johnston@valero.com	Lab (Assoc.)		No
Natalie Love	GEI Consultants	nlove@geiconsultants.com	Lab (Assoc.)		No
Linda Nemeth	Northwestern Aquatic Sciences	lnemeth@tds.net	Lab (Assoc.)		No
Mark O'Neil	Environmental Enterprises USA, Inc.	moneil@eeusa.com	Lab (Assoc.)	---	Yes (phone)
Katie Payne	Nautilus Environmental	katie@ nautilusenvironmental.com	Lab (Assoc.)		Yes
Christina Pottios	Los Angeles Cty Sanitation Districts	cpottios@lacs.org	Lab (Assoc.)		No
Greg Savitske	US EPA OECA	Savitske.gregory@epa.gov	Other (Assoc.)		No
Justin Scott	Cove Sciences	justin@covesciences.com	Lab (Assoc.)		No
Jordan Thorngren	Eurofins (Horsham, PA)	jordanthorngren@eurofinsUS.com	Lab (Assoc.)		No
Craig Watts	Hydrosphere Research	cwatts@hydrosphere.net	Lab (Assoc.)		No
Bruce Weckworth	HRSD	Bruce.weckworth@hrsd.com	Lab (Assoc.)		No
Tom Widera	ERA	twidera@eraqc.com	Other (Assoc.)		Yes
Lynn Bradley	TNI Program Administrator	Lynn.Bradley@nelac-institute.org			Yes

Audience: Sharon Mertens, David Caldwell, Harry McCarty, Marlene Moore, Lemuel Walker, Emily Agole, Sherry Sheffield, Halley Hastings, Kim Nguteu, Mark Johnson

WET Expert Committee

Rami Naddy, Ph.D., Chair
Environmental Measurement Symposium
Jacksonville, FL

August 5, 2019

Whole Effluent Toxicity Expert Committee

Welcome and Introductions

Meeting time

Third Wednesday of each month

1300 hrs ET

~ 1 hr

TNI Members are welcome to participate

Committee Members

Rami Naddy (Chair; Lab) – TRE Environmental Strategies

Pete De Lisle (Vice Chair; Lab) – Coastal Bioanalysts Inc.

Ginger Briggs (Lab) – Bio-Analytical Laboratories

Chris Burbage (Lab) – HRSD

Kari Fleming (AB) - Wisconsin DNR

Amy Hackman (AB) – Pennsylvania DEP

Sarah Hughes (Other) – Shell Health

VelRey Lozano (Other) – EPA Region 8

Teresa Norberg-King (Other/Affiliate) – U.S. EPA - Duluth

John Overbey (Lab) – American Interplex

Chris Pasch (Other) – Alan Plummer Associates Inc.

Michael Pfeil (AB) – Texas CEQ

Michele Potter (AB) – New Jersey DEP

Steve Rewa (Lab) – Environ. Resources Management

Beth Thompson (Lab) – Shealy Consulting

Elizabeth West (Accreditation Body, AB) – Louisiana DEQ

Program Administrator: Lynn Bradley

Associate Members

Sylvia Bogdan

Thekkekalathil Chandrasekhar

Michael Chanov

Steven Clark

Erin Consuegra

Nicole Fortin

Christina Henderson

Natalie Love

Greg Savitske

Craig Watts

Tom Widera

Steve Boggs

Kevin Dischler

Monica Eues

David Johnston

Linda Nemeth

Mark O'Neil

Katie Payne

Christina Pottios

Justin Scott
Jordan Thorngren
Bruce Weckworth

Agenda

Accomplishments

Webinar available on TNI website [Understanding WET Testing](#)

2018 Activities

Activities Underway

Revisions to Module 7

2019 Activities

New Business?

Proposed TD Language

Any technical manager of an accredited environmental laboratory engaged in toxicity testing shall be a person with at least a bachelor's degree in life sciences, environmental sciences, environmental engineering or physical sciences with a minimum of sixteen (16) college semester credit hours in fields of biological and/or environmental sciences from an accredited institution, plus at least two (2) years of experience in the environmental analysis of representative analytes for which the laboratory seeks or maintains accreditation. A master's or doctoral degree in one of the above disciplines may be substituted for one (1) year of experience.

WET 2019 Plans

Revising the Standard Module V1M7

DOC for Analyst (separate from those for the laboratory)

Publish Outline, Receive and Address Comments (?)

Possibly Publish Voting Draft (?)

Including non-WET toxicity tests

Continue Efforts to Improve Utility of PT Results

Work with PTPEC and ELAB/EPA

Continue Interaction with Field Activities Committee

Ensure that WET Testing is Appropriately Addressed in Revised FMSO Standard

SETAC 2019 meeting in Toronto

DMR-QA for Proficiency Testing

What is the purpose?

run it as the NPDES permit (i.e., permit compliance) OR

run PTs for data comparability (i.e., laboratory evaluation)

Rationale for PT / DMR-QA Recommendation

The flexibility allowed in 40 CFR 136 or WET Test Manuals (EPA 2002) is not specific enough for proficiency testing

All labs should perform tests using same method, replicates, water type, temperature, renewals, etc.

Reduces variability

Data more useful & comparable ("apples to apples")

Ability to identify labs with deficient techniques

Endpoint standardization – require one reporting value for both acute and chronic

LC50 using survival for acute tests

IC25 using sublethal endpoints for short-term chronic

No negative impact on the PT study power, but not linked to permits

Test parameter summary should be provided with result of Proficiency Testing

Module 7

Quality Systems for Toxicity Testing

Scope of Module 7

Not only aquatic toxicity (WET)

Sediment (burrowing organisms) and benthic region
Drilling fluids and other potentially toxic materials.
Soil toxicity

Revisions to Module 7

Reasonable QC for chemistry support measurements

Demonstration of Competency concepts

Other Non-WETT Toxicity Tests

Short-term and chronic sediment toxicity tests with invertebrates:

Midge, *Chironomus dilutus*.

Survival and growth (10 days).

Survival, growth, reproduction, hatchability (20-56 days).

Amphipod, *Hyalella azteca*

Survival and growth (10 days).

Survival, growth, reproduction (28-42 days).

Amphipod, *Leptocheirus plumulosus*

Survival and growth (10 days).

Survival, growth and reproduction (28 days).

Others (e.g., plants, earthworm)

WETT CHEMISTRY

What QC procedures should be required of chemistry performed in support of WETT analyses?

WETT Chemistry:

Analytical procedures are required as supporting chemistry for WETT.

These procedures include pH, D.O., temperature, alkalinity, hardness, specific conductance or salinity, TRC, and sometimes ammonia.

Why Revise this Standard:

The Committee agrees that QC is necessary for these supporting procedures; however, not at the level required in Module 4 of the Standard as they are support measures only.

The Committee agrees that some QC guidance is needed to assist auditors in assessing a laboratory's ability to conduct the supporting chemistry.

Summary Language

Instruments used for routine measurements of chemical and physical parameters such as pH, DO, temperature, conductivity, salinity, alkalinity and hardness must be calibrated and verified according to the instrument manufacturer's procedures and/or as indicated in the general section on quality assurance of each referenced test method.

Performing matrix spiking, duplicate analysis, and quality control charting of such results is not required during the performance of these tests unless more stringent standards are mandated by a separate State or Federal program.

Still need to show calibration, traceability, etc.

WETT IDOC / CDOC

What should be required for laboratory vs analyst for WETT analyses?

IDOC – CDOC

Initial Demonstration of Capability/ Competency

Continuing Demonstration of Capability/ Competency

DOCs / IDOCs well defined for Lab

DOCs / IDOCs for analysts less well defined

DOC Language in 2009 TNI

Initial Demonstration of Capability (IDOC).

Each analyst shall meet the quality control requirements as specified in Section 1.7.1.2.

NELAC 2003 Appendix D2 or TNI 2009 V1M7 §1.6 (EL-V1M7-2009).

Positive and Negative Controls.

SRTs and control organism performance.

Continuing DOC (CDOC).

Documented procedure describing ongoing DOC.

Analysts must meet QC requirements of the method, Lab SOP, client specifications, and the standard.

QC sample data must be reviewed to identify patterns for individuals or groups and make correct actions.

Proposed Changes to V1M7

IDOC/DOC:

- Flexibility in the use of various tools to demonstrate capability (SRT, QC Controls, PTs)
 - Concern that flexibility puts too much responsibility on auditor – how to address?
- Tests performed as work cells/teams;
 - Less frequently as individual
- Differentiate between laboratory vs analyst IDOC/DOC.
- Many phases (e.g., sample prep, water quality measurements, solution renewal, etc.) common to different toxicity tests.
 - Analyst demonstrates competency in test phases, i.e., “demonstration of same technology”

IDOC:

Several ideas are presented below on what might form the basis for language in the eventual revision

- In its quality system, the lab shall identify and train to “essential skills” for conducting tests and then demonstrate those skills in one or more standard reference tests.
- Possibly two or three tests could verify skills for up to eight different tests with various organisms, since procedures for some organisms are nearly identical.

Proposed Changes to V1M7

- If the IDOC is to demonstrate the individual skills for an analyst, the lab must be able to demonstrate that the person performing those tasks has that skill, i.e., every action must be initialed by the supervisor/ trainer.
- (this language may be in the Quality Systems module (V1M2); if so, it would not need to be repeated in V1M7)
- The terminology of “work cell” should be abandoned for this module, since the groups performing tests in a WET lab are more loosely structured than the work cells used in a chemistry lab and described in other sections of the standard.
- It will be important not to mislead assessors who may not be experienced with WET lab procedures.
- “Essential skills” (phrasing from above language) should be unambiguously defined in the module, rather than leaving it up to each laboratory.
- Other suggestion: about having details in a guidance document rather than in the standard itself, since guidance is not enforceable as a requirement.