Whole Effluent Toxicity Testing Expert Committee Meeting Summary

July 15, 2015 1 pm Eastern

1. Welcome, Roll Call, Approval of Minutes and Announcements

Rami Naddy welcomed everyone to the meeting, and asked that the new Associate Member introduce themselves. Minutes of the June 17, 2015, meeting were approved. Attendance is recorded in Attachment 1, below.

2. Review and Comment on Draft Response to EPA DMRQA Program Manager, B. Krausz

From the June committee meeting, Rami agreed to draft a recommendation about standardizing test protocols and reporting, to include language explaining (for the state coordinators) how the PT data are utilized and why this data comparability is vitally important. This initial draft is shown in Attachment 2, below.

The group discussed a number of edits and additions to the draft document as well as including a Table of Toxicity Test Conditions for WET PTs (WET DMR-QAs), that was developed previously. All agreed to include language stating that if a lab passes the PT under standardized conditions, that would be adequate evidence that the lab can perform testing under conditions as required by various clients. Another good suggestion was to include a statement about the value of having comparable PT data, whereas the current situation of labs running PTs with multiple variations produces PT result acceptance limits that are so broad as to be virtually meaningless.

Teresa moved and Ginger seconded that an email vote be taken, after email revisions to the draft were completed. Approval of this motion was unanimous. As of Monday, July 19, revisions are nearly complete. The approved final document will be included with the August minutes.

3. Next Meeting

The WET Expert Committee will meet again on Wednesday, August 19, 2015, at 1 pm Eastern. Teleconference information and an agenda will be circulated in advance of the meeting. Committee goals and priorities will be on the agenda.

Attachment 1

Committee Membership

Member	Affiliation	Email	Phone	Category	Term Expiration	Present
Rami Naddy (Chair)	TRE Env. Strat. LLC	naddyrb.tre@gmail.com	970-416-0916	Lab	Feb. 2018	Yes
Ginger Briggs	Bio-Analytical Laboratories	bioanalytical@wildblue.net	318-745-2772	Lab	Feb. 2018	Yes
Pete De Lisle	Coastal Bioanalysts Inc	pfd@coastalbio.com	804-694-8285	Lab	Feb. 2018	Yes
Steven Rewa	Environmental Resources Management	steven.rewa@erm.com	616-738-7324	Lab	Feb. 2018	Yes
Chris Burbage	Hampton Roads Sanitation District	cburbage@hrsd.com	757-355-5013	Lab	Feb. 2018	Yes
Chris Pasch	Alan Plummer Associates, Inc.	cpasch@apaienv.com	512-687-2162	Other	Feb. 2018	Yes
Teresa Norberg-King	USEPA	norberg-king.teresa@epa.gov	218-529-5163	Other	Feb. 2018	Yes
Elizabeth West	LA DEQ LELAP	elizabeth.west@la.gov	318-676-7457	AB	Feb. 2018	Yes
Amy Hackman	Penn. Dept. Environ. Protection	ahackman@pa.gov	717-346-8209	AB	Feb. 2018	No
Michele Potter	New Jersey Dept of Environ Protect.	Michele.Potter@dep.nj.gov	609 984-3870	AB	Feb. 2018	Yes
Michael Pfeil	Texas Comm. Environ. Quality	Michael.pfeil@tceq.texas.gov	512-239-4592	AB	Feb. 2018	No
Affiliate Member						
Kari Fleming	WI DNR	kari.fleming@wisconsin.gov	608-267-7663	AB	Dec. 2015	Yes
Associate Members						
Joe Pardue	Pro2Serve	Parduegjjr@oro.doe.gov	423-404-4117	Other	---	No
Brian Krausz	USEPA	krausz.brian@epa.gov	202-564-3069	Other (EPA)	--	No

Peter M Paulos	Atkins Environmental Toxicology Lab	Peter.Paulos@atkinsglobal.com	713-292-9023	Lab (Assoc.)	---	No
Robert Kelley	ETT Environmental Inc	bobkelley@ettenvironmental.com	864-877-6942	Lab (Assoc.)	---	No
Jamie Mitchell	Hampton Roads Sanitation District	jmitchell@hrsd.com	757-460-4220	Lab (Assoc.)	---	No
Mark O'Neil	Environmental Enterprises USA, Inc.	moneil@eeusa.com	800-966-2788	Lab (Assoc.)	---	Yes
Kevin Dischler	Element Materials Technology	Kevin.dischler@element.com	337-443-4010	Lab (Assoc.)	---	Yes
Jennifer Loudon	Raritan Township Municipal Utilities Authority	JLoudon@rtmua.com	908-787-7453 x 19	Lab (Assoc.)	---	No
Vel Rey Lozano	USEPA Region 8	Lozano.VelRey@epa.gov	303-312-6128	Other (EPA)	--	No
Barbara Escobar	Pima County RWRD, CRAO Laboratory	Barbara.escobar@pima.gov		Lab (Assoc.)	---	No
Melinda Hooper	Englewood Water District, Florida	hoopermelinda@gmail.com		Lab (Assoc.)		No
Robert Martino	QC Laboratories	rmartino@qclaboratories.com	267-699-0103	Lab (Assoc.)	---	Yes
Katie Payne	Nautilus Environmental	katie@ nautilusenvironmental.com	858-587-7333 ext. 212	Lab (Assoc.)		Yes
Marilyn O'Neill	Nautilus Environmental	Marilyn@ nautilusenvironmental.com)	858-587-7333	Lab (Assoc.)		Yes
Beth Thompson	Shealy Consulting	bthompson@ shealyconsulting.net	803-808-3113	Lab (Assoc.)		Yes
Program Administrator						
Lynn Bradley	TNI	Lynn.Bradley@nelac-institute.org	540-885-5736			Yes

Attachment 2

First Draft of Response, as circulated before committee meeting

The primary purpose of whole effluent toxicity (WET) testing Proficiency Testing (PT) or Discharge Monitoring Report – Quality Assurance Testing (DMR-QA)

According to TNI:

The purpose of the TNI PT program is to provide a means for a primary accreditation body (Primary AB) to evaluate a laboratory's performance, under specified conditions relative to a given set of criteria in a specific area of testing (emphasis added), through analysis of proficiency testing (PT) samples provided by an external source (TNI EL-V1M1).

That said, there appear to be two different interpretations of the goals for PT / DMR-QA results:

1. Assess a laboratory's ability to perform the WET method by performing the specific test per the client's permit requirements.
2. Assess a laboratory's ability to perform a WET method by performing the test a standard way to compare the results to the results from other WET laboratories.

While these end results may sound similar, they can be in fact very different and that has lead to confusion regarding the overall purpose of PT / DMR-QA testing and how the results are used or should be treated. The primary difference is that for option 1, there can be different ways to perform a given WET test. In fact, permits give either very general or very specific direction on how the WET test(s) should be performed. Some permits say simply to follow current USEPA WET guidance directions (USEPA 2002 acute or 2002 chronic guidance) while other permits provide more specific detail by stating the type of dilution water to use, the test concentrations, the number of replicates, additional test acceptability criteria (coefficient of variation requirements for treatments in chronic WET studies for Region 6) , etc. However, even to say that the current USEPA WET guidance should be followed is not specific enough as the WET guidance allows for flexibility in the test methods. For instance, the acute WET guidance allows for different test durations for acute WET studies, anywhere from 24 to 96 hours, as well as flexibility in other parameters (e.g., number of replicates). So, simply to say that the WET test should follow USEPA guidance is not as specific as one would think. Overall, what this means is that differences in the way the WET test is performed can affect the test endpoint (e.g., LC50 values). Therefore, it is important to know what the overall purpose of the PT / DMR-QA data is so the results can be assessed properly.

If the overall purpose of the WET PT / DMR-QA data is to address #1 above, then the question becomes how does one assess the result of the laboratory's WET data? Since the purpose of this approach is to conduct the test the way in which the permit has described it, it seems that the only ways to evaluate the results would be to: a) review the test method to determine if the laboratory performed the test using the method as specified in the permit (and thus more than the end result would be needed to make this evaluation) and/or b) compare the test endpoint to other laboratory results that performed the test following the same method / permit. (Note: any comparison of WET data from tests performed by laboratories using different permits would have the negative effect of increasing test endpoint variability). While this approach may be useful, it seems as though it would be useful for States that have their own PT testing program and not suitable for a national program such as the DMR-QA program. Furthermore, it could lead to increasing the number of PT / DMR-QA tests (and thus the associated costs that are typically not recouped) that are performed as many WET laboratories have clients in different states and regions across the US.

If the overall purpose of the WET PT / DMR-QA data is to address #2 above, then the question becomes shouldn't all the laboratories perform each WET method in a standard way to reduce any potential variability with each test endpoint? This approach is one that the WET Expert Committee supports and

feels is the intended purpose of the DMR-QA WET testing program. This is based on the following rationale that comes from the instructions listed in the DMR-QA WET instructions from EPA:

- Ensure that your test methods/procedures follow 40 CFR 136 guidelines and the manuals referenced below.
- If the permit requires WET testing with Fathead minnows, *Ceriodaphnia dubia*, *Daphnia magna*, *Daphnia pulex*, *Mysidopsis bahia*, Inland silverside (*Menidia beryllina*) or Sheepshead minnow (*Cyprinodon variegatus*), test those organisms listed in each permit using the test condition, including temperature, defined in the Test Codes.
- If the permit's WET testing conditions for *Ceriodaphnia dubia* specify 48-h acute, non-renewal testing, conduct this test using the static, renewal acute conditions defined by Test Codes 19 and 20. The testing conditions defined for these Test Codes have been proven to provide an appropriate measure of your ability to perform WET testing with *Ceriodaphnia dubia*.
- If the permit's WET testing conditions for *Daphnia magna* and *Daphnia pulex* specify 48-h acute renewal testing, you must conduct this test using the non-renewal conditions specified in Test Codes 32 and 38.
- If the permit's WET testing conditions require 24, 48, or 96-h acute testing using any of the organisms included in Study 35, use the 48-h acute test conditions specified in the Test Codes.
- If the permit requires WET testing with *Mysidopsis bahia*, Inland silverside (*Menidia beryllina*) or Sheepshead minnow (*Cyprinodon variegatus*) and your laboratory uses an alternate synthetic seawater (e.g., Hawaiian Brands, GP2) other than the 40 Fathoms specified in the Test Codes, you must still perform testing.
- If the permit requires 20°C acute testing for any organisms included in Study 35, use 25°C acute test conditions specified in the Test Codes.

Below are additional reasons that the WETT Expert Committee feels support the true purpose of PT / DMR-QA testing being to compare the results of all laboratories to each other (and not for tests to be performed per each specific permit).

Accuracy does not apply to toxicity and similar measures; a unit of toxicity cannot be gravimetrically delivered to PT sample vials as would a solution of metals or pesticides.

a) Study “true” or assigned values and acceptance limits are derived from participating laboratory data.
b) Toxicity endpoints (LC50, IC25) can be greatly affected by such variables as temperature, water hardness, test duration, etc.
    i) If laboratories use different procedures to conduct the toxicity tests, then the variance in the reported endpoints will be greater than if all followed the same procedures. Consequently the acceptance limits (based on probability limits around the mean) will be larger and the ability of the study to identify laboratories with deficient techniques will be lessened.

In summary, the TNI WET Expert Committee feels that the primary purpose of EPA’s DMR-QA testing program (and potentially other PT testing programs) is to compare the WET toxicity testing results among laboratories. Using this approach the results from one laboratory are assessed in comparison to the results of all the other participating WET laboratories. Therefore, given that all the data from participating laboratories will be combined and compared to each other, it is imperative that the WET tests methods (and endpoints) are standardized among those laboratories to have the best and most useful data possible. As listed above there are some specific test method requirements associated with DMR-QA testing and we feel there should be some additional detail added for some methods (e.g., *C. dubia* short-term chronic) or some detail s (e.g., number of replicates) not specified.