Radiochemistry Expert Committee (REC)
Meeting Summary

August 8, 2019

1. Roll Call and Minutes:

Terry Romanko, Chair, called the meeting to order at 1:10pm Eastern on August 8, 2019 in Jacksonville, NC. Attendance is recorded in Attachment A – there was 1 committee member present and 20 people in attendance.

Meeting minutes are distributed by email for comment/revision for a week and then posted on the TNI website.

2. Technical Manager

Terry pulled up the last version of the Technical Manager language worked on by the Committee.

a) Any technical manager of an accredited environmental laboratory engaged in radiological analysis shall be a person:
   i. with a bachelor's degree; and
   ii. with thirty-two (32) college semester credit hours of chemistry and physics; and
   iii. with sixteen (16) college semester credit hours of radiochemistry; and
   iv. with two (2) or more years of experience in the radiological analysis of environmental samples.
   v. A master's or doctoral degree in one of the above disciplines may be substituted for one (1) year experience.
   vi. 1 year experience working in an environmental radioanalytical laboratory may be substituted for 4 credit hours. Multiple years of substitution may be utilized, but each year substituted must be related to the learning of and proficiency in a different analytical method/technique or instrumentation type. This will help ensure an increasing level of knowledge in radiochemistry analyses (preparation and/or instrumentation) during that time period.
   vii. In lieu of any of the above, the laboratory may petition <u>each</u> body for which accreditation is sought, presenting the candidate's qualifications in a consistent format to each.

Jessica Jensen (Chair, QS) and Paul Junio (Chair, CSDP Executive Committee) were in attendance and could share information about the Technical Manager discussion that happened during the QS meeting. It is likely that ABs will reject the "in lieu of" portion due to liability. The rest may be OK.

3. Potential Revisions to the Standard

   Terry went over highlights of the "potential revisions to the standard" document (Attachment D). Terry emphasized that nothing is finalized. The committee just looked at the merits of the suggestions. The next step is to set up a public forum (such as a webinar) to get input from the stakeholder community.

4. Training Materials

   Terry shared a few slides from the training planned for tomorrow.

5. New Business

   None.

6. Action Items

   A summary of action items can be found in Attachment B.

7. Next Meeting and Close

   The next meeting will be by teleconference and Webex on September 25, 2019.

   A summary of action items and backburner/reminder items can be found in Attachment B and C.

   The meeting was adjourned at 3 pm Eastern.

Attachment A
Participants
Radiochemistry Expert Committee

Members	**Affiliation**		**Contact Information**
Terry Romanko Chair (2021*) **Present**	TestAmerica Laboratories, Inc.	Lab	Terry.romanko@testamericainc.com
Sherry Faye (2022*) **Absent**	Wadsworth Center, NY State DOH Albany, NY	AB	sherry.faye@health.ny.gov
Velinda Herbert (2021*) **Absent**	National Analytical Environmental Laboratory	Lab	Herbert.velinda@epa.gov
Brian Miller (2021*) **Absent**	ERA	Other	bmiller@eraqc.com
Ron Houck (2021) **Absent**	PA DEP/Bureau of Laboratories	AB	rhouck@pa.gov
Yoon Cha (2020) **Absent**	Eurofins Eaton Analytical	Lab	YoonCha@eurofinsUS.com
Candy Friday (2020) **Absent**	CdFriday Environmental, Inc.	Lab	candy@fridayllc.com
Greg Raspanti (2022*) **Absent**	New Jersey Department of Environmental Protection	AB	Greg.Raspanti@dep.nj.gov
Pepa Sassin (2022*) **Absent**	EPA - Region 3	Other	Sassin.Pepa@epa.gov
Robert Aullman (2022*) **Absent**	Utah Department of Health	AB	aullman77@gmail.com
Ilona Taunton (Program Administrator)	The NELAC Institute	n/a	Ilona.taunton@nelac-institute.org

Attachment B

Action Items – REC

	Action Item	Who	Target Completion	Completed
90	Send note about method codes and concerns to the PT Expert Committee. Is there a way to limit the codes a lab can use to report PT data?	Bob	TBD	
93	Discuss new PT criteria at next FoPT Chemistry subcommittee meeting	Bob and Keith	3/21/19	
94	Harmonize Excel Checklist with Word Checklist	Terry and Candy	3/27/2019	In progress.
95	Provide information for training data package to Terry.	Yoon	TBD	
96	Let Ilona know if training material needs to be pre-recorded for Jacksonville.	Terry	7/15/19	

Attachment C – Back Burner / Reminders

	Item	Meeting Reference	Comments
5	Form subcommittee of experts in MS and other atom counting techniques to see that these techniques are adequately addressed in the radiochemistry module.	9/24/14	
6	From Action Item # 75: Prepare copy of Standard annotated with summary document language.		This is a project Carolyn was working on, but the committee decided it may duplicate the Small Lab Handbook. This project has been put on Hold.

Attachment D: Suggestions for Changes, Clarifications, and Improvements to 2016 V1M6 - Radiochemistry

Suggestions for Changes, Clarifications, and Improvements to 2016 V1M6 - Radiochemistry

1. Tom
    a. Section 1.7.1.5.c.ii)e)
        i. Physical impossibility of measurement of Lucas Cell background per day of use after it has been filled with radon. No one on the call spoke up and felt this was a serious concern. This would, however, result in long counts (e.g. 24 hours) for which a background could not be counted the same day as the sample and therefore might not technically meet the requirement. Do we need to address that we don't require some sort of a purging process. Language "Before each use" instead of "Day of Use"
    b. Sections 1.6.2.2.b) and 1.7.2.3.e.iii)
        i. Three gamma energy ranges for DOC and two ranges for LCS are specified. Since LCSs are often used for DOC, it is inconsistent. Propose 2 nuclides (one above knee one below knee) be used for DOC.
    c. Section 1.7.1.4.a.iii)
        i. No guidance is provided what to do if the instrument performance check source is compromised. ANSI N42.23 seems to state that if the instrument performance check is compromised, the detector "shall" be recalibrated.
    d. Sections 1.7.3.5.b) and 1.7.3.5.f)
        i. Contradiction and a lack of logic in saying that "shall be reported directly as obtained" and then that specific requirements can take precedence over "shall". Then it should not be "shall". This is not truly inconsistent – TNI requirements can always be abrogated for client specific requirements.
    e. Question: why does Module 6 have only one Section 1.0? No issue here.
    f. Page 3, Uncertainty, Counting
        Change "…often estimated from the square root…" to "…often estimated as Standard Uncertainty by means of the square root…"
    g. Page 3, Section 1.3.2, 1-st paragraph
        Change "(e.g., calibrations,…)" to "(see Section 1.2)" Don't think that provide clarification or addition
    h. Page 4, Section 1.5.1.g NOTE
        Change "The use…" to "For TNI accreditation, the use…" Probably redundant
    i. Page 5, Section 1.5.2.1
        Change "Minimal" to "Minimum" – suggest change to "Minimum"
    j. Page 6, Section 1.5.4.c
        The Section is out of alignment. – formatting can be fixed.
    k. Page 6, Section 1.5.4.c.i
        Change "If the experimentally-observed standard deviation at each testing level statistically exceeds the Standard Uncertainty, then the uncertainty estimate should be re-evaluated." to "If the experimentally-observed standard deviation from the precision evaluation statistically exceeds the Standard Uncertainty

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evaluation at each testing level, then the uncertainty estimate should be re-evaluated."

Or even better to "Otherwise, the uncertainty estimate should be re-evaluated." - does not improve or change the meaning.

l. Page 7, Section 1.5.4.c.ii

Note, however, that the new EPA procedure in EPA 815-B-17-003 requires a chi-square test at DL, which is a kind of precision evaluation. Add something like "except as required by program/project specific requirements or regulations". Use language similar as in other places this type of language is used.

m. Page 7, Section 1.5.5.b

The font for "b)" is too large. - formatting

n. Page 9, Section 1.6.3.2.c

Change "…each with activity consistent method…" to "…each containing activity consistent with method…" – would clarify to include this

o. Page 10, Section 1.7.1.2.a.i

Change "following" to "after" – no distinct benefit

p. Page 16, Section 1.7.1.6.e

Perhaps for gas proportional detectors also? – leave as is.

q. Page 17, Section 1.7.1.7

Change "1.7.2.3" to "1.7.2.2" – yes, should be 1.7.2.2

r. Page 19, Section 1.7.2.3.d

Change "Decision Level (Critical Value)" to "MDA"

There are problems, in my opinion with the whole sentence "When practical…". It leaves the reader wondering what should be the spiking level when sample activities are less than 10 times the Decision Level. In addition, the action levels by some agencies are [unreasonably] high, which would imply high LCS, which is not practical. – do not change the "when practical" maybe change from 10x DLC to 5x MDC.

s. Page 19, Section 1.7.2.3.e

Change "The final…" to "The final prepared LCS needs to have the activity and its uncertainty known, however, it need not be strictly traceable to a national standard organization." Requirements for standards/documentation are outlined elsewhere. However, this might provide clarity and avoid confusion.

t. Page 20, Section 1.7.2.3.g; Page 24, Section 1.7.3.1.b; Page 24, Section 1.7.3.2.b; Page 24, Section 1.7.3.3.a.ii; Page 25, Section 1.7.3.3.b.iii

Delete "above" Not a substantive difference to the text, probably not necessary.

u. Page 20, Section 1.7.2.4.a.iii

Change "1.7.2.3.e and 1.7.2.3.7.f" to "…d and …e" This is a correction that is necessary – was originally an error.

v. Page 21, Section 1.7.2.4.a.viii

Change "The final…" to "The final prepared MS needs to have the activity and its uncertainty known, however, it need not be strictly traceable to a national standard organization." Requirements for standards/documentation are outlined elsewhere. However, this might provide clarity and avoid confusion.

w. Page 22, Section 1.7.2.6.c.i

Insert a comma after "e.g." Not necessary

x. Page 25, Section 1.7.3.5.b

More on reporting as is, even if negative. In addition to my questioning this as a requirement, there are practical problems. It is easy to calculate for paired counting. Gamma spectrometry has a complicated series of criteria which determine if the radionuclide is identified. For Canberra software these include peak sensitivity: it cannot be lowered below the minimum value; critical level test: the user can disable it; peak tolerance in keV; and nuclide identification threshold. The NID threshold involves self-absorption in the sample, presence of corroborating peak (e.g., in Co-60), decay correction, and other factors. Even if set low, the nuclide may not be detected. Both software systems can provide negative results with appropriate settings, so this should not be an issue.

y. If a lab processes a single PT sample, the program involves reporting only a single result, which is what the lab does. Are there any auditable requirements for items such as:
   i. the sample has to be analyzed as a whole
   ii. only a single measurement is required
   iii. no repeated measurements are allowed
   iv. aliquoting is allowed or not allowed
   v. sample can/cannot be split into sub-samples analyzed separately Should be addressed in other TNI Module – verify.

z. Section 1.6.3.2 Ongoing DOC, subsections a, d, e.
   i. It is not clear how many samples are required, whereas for subsections b and c it is clear. According to subsection a, only one spiked and one blank would be sufficient and I suspect many labs would take this shortcut. Does not appear the standard would need this revision – for example a) is speaking essentially of a blind PT sample provided to the analyst.

aa. I have one more item for a consideration. Module 6 says that for uninterrupted GP or LCS measurement sequence, the detector performance can be done at the beginning and the end, not per day of use. This is good for non-decaying source. There is one problem with this for Sr/Y analysis, where decay is followed every other day. One needs to measure a batch say on Friday, and Sunday, with other samples or spacers in between. It is not possible to verify performance on Sunday. However, that measurement is interrupted. Another possible but wasteful way would be to keep repeating measurements in a loop to be uninterrupted, and reject those that are not needed. – This is actually 2 separate count sequences, and should be handled as such. A change to the standard to allow this would likely be ill-advised.

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2. Vas
   a. Consider whether existing issues would benefit from being addressed as SIRs -???
3. Keith
   a. 1.7.2.3(d)
      i. It makes a lot more sense to talk about activities x times the MDC than x times the critical level. The critical level isn't really a well-defined measurable quantity. As we ordinarily define and use it, it's just a statistic that can vary with each measurement. The MDC is the a priori concept, whose value we can estimate.

When we calculate the a priori MDC, we actually do calculate an a priori critical value, too, but that value is never recorded or used for anything else. This would tie us to a more recognized performance measure (MDA) than the DLC. Suggest replace with 10 times the MDA.

4. Bob
    a. Explicitly clarify that QC data can by used as performance data for validation – for existing methods QC data may be used to comply
    b. The original intent to the introductory language in each section was to frame the requirements that follow - not to establish requirements. The original intent was to number all requirements to facilitate writing findings. Review all sections. Add any clarifying language needed to intro and move requirements to numbered sections. – a review of all sections to move/place requirements in itemized points would be helpful to auditors
    c. Consider removing DOC requirements that are already addressed in Module 2. Include only the differences specific to radchem. – not critical, but might avoid conflict if Mod 2 changes.
    d. 1.7.1.2 a) ii., iii., and iv. all describe the same situation – instrument response has changed. Would it not be good enough to put these together or even just to leave it be with iv.? Could combine into one
    e. Consider updating requirements for RMBs – it may be appropriate to explicitly state that blanks should be set up along with samples - samples are handled and could become contaminated. – how do we define how this might be done? Would need to be general enough to handle the variety of potential sample types. However, a separate statement about blanks may be important.
    f. Consider updating requirements for standards. ISO requirements for standards are vague and make no distinction in requirements for reference materials used for calibration and QC/PT standards. One might consider uncertainty as a criterion although how does one evaluate the uncertainty of the material.
    Right now, ISO providers are not required to intercompare . One might say that study performance will show problems (i.e., compare grand mean to true values) but that is putting the cart is before the horse. Round robin/consensus studies with labs of untested capability provide little in the way of confidence. Many people feel that the approach in ANSI N42.22, which requires providers to participate in a Measurements Assurance Program (MAP) where the RM provider intercompares with an NMI, is the minimum that should be requires for calibration. The concept of needing more rigorous traceability of standards for calibrations (as opposed to checks) is understood. The wording would need to be clear.
5. Define independent source – what if there is only one source - can procure two sources and handle differently. Define that if other sources are not available, that the “same” source prepped under/by two different people may suffice to show veracity.

6. Section 1.5.4 sets out requirements for reporting uncertainty. Is this just for the validation or for all results? Better tie section 1.7.2.5 b) and c) and 1.7.3.5 to 1.5.4, in terms of sample results vs validation.
7. Add more sample specific QC criteria – FWHM, Quench or mass within range, etc. Appropriate spot likely section 1.7.3.4
8. In training session, someone brought up the issue of deleting points from calibration curves. Should we add something to the extent of saying that any measured data needs to be used unless there is a known and clearly documented reason why it is invalid, or why its deletion is not targeted at "cooking" the data? Is this addressed in Module 2, or should it be? Module 4 appears to address this to some point – maybe use it as a starting point?
9.