Radiochemistry Expert Committee (REC)
Meeting Summary

February 27, 2019

1. Roll Call and Minutes:

Terry Romanko, Chair, called the meeting to order at 1pm Eastern on February 27, 2019 by teleconference. Attendance is recorded in Attachment A – there were 7 members present. Associates: Bob Shannon, Stan Stevens, Mark Johnson, Carl Kircher, and Keith McCroan.

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

2. PT Acceptance Criteria

Bob and Keith will be discussing the proposed limits with the Chemistry FoPT Subcommittee on 3-12-19 at noon Eastern.

3. Technical Manager

Terry summarized the discussion in Milwaukee on this topic. He then brought up the ISO/IEC 17025:2017 Standard on Webex to share the wording related to Technical Manager.

Bob prefers the performance-based approach where the laboratory is responsible to make sure they have someone competent. Candy agreed with Bob's comments. The lab needs to ensure the person is competent and they are the right person.

It was noted in Milwaukee that there are labs that have someone on paper with the qualifications, but it is really someone else that is more competent, that is really filling the role. They are missing some of the educational requirements. Bob Shannon is an example of a technically competent person that would not qualify as a Technical Manager under the current requirements.

Labs are struggling to back-fill people that were originally grandfathered in.

Greg is not sold that the labs should put a person in place with no TNI requirements. Outcome based is valuable, but there still needs to be some foundation or minimum requirement in the Standard. Ilona also emphasized that other ABs are making the same comments during the Quality System and Microbiology discussion on the same topic.

The Quality Systems committee has decided to start with ISO/IEC 17025:2017 and restart.

Ilona thinks the work that the Committee did in Milwaukee is worth sharing with Quality Systems rather than waiting for that committee to give more guidance.

Terry pulled up the discussion and asked if a bachelor degree is required. There were people who stood up in Milwaukee and said they have qualified people that don't have degrees. Ilona noted that removing the degree might be a problem for a number of ABs. Greg thinks the degree has to stay and likes that it is more open ended. If there needs to be an opt out this should be up to the AB. Allow a lab to petition the AB.

Ron Houck asked what a credit hour in radiochemistry is. Terry said many Universities don't have radiochemistry classes, but some do. This is where the work experience can be used. It could substitute for a 4-hour radiochemistry class. The problem Ron has is that the committee is eliminating more qualified people. The 16 hours of radiochemistry would be hard to meet. Terry commented that someone could have a Chemistry Degree and 4 years of experience and still qualify. If the experience is counted there would need to be some text to make sure the year is a valuable year.

The person has to show an increased level of experience – this was discussed in Milwaukee and hasn't made it into the proposed language yet. Knowledge has to be advanced during their time in the laboratory. This needs to be considered to address Ron's comment about the experience being valuable.

Need to define what experience means. Some people only review data and have never run a sample. Need to make sure it is clear work is in radiochemistry analysis.

Bob - If you add the option to petition, it doesn't matter what the requirements are. He knows the ABs don't want to receive a lot of these requests, so some wording needs to be there that works for most people. This will help prevent an abundance of requests for exceptions.

Terry asked that Ilona present this to the QS. He will email it to Ilona *(Addition: See Attachment E)* and she will forward it. Terry can attend meeting if need be to respond to questions.

4. Summer Meeting

There are two more trainings left to go for the TNI meetings. Three are complete. The training was well received in Milwaukee. Close to 4 hours was recorded ahead for people to study before class. The class in Milwaukee was 8-3pm Eastern. Sherry helped with review of this course and Terry helped teach it.

There is another training being planned for the summer meeting – Jacksonville, FL. Gamma Spec? Terry will get something to Ilona in the next week for the TNI brochure. He'll have it to Ilona by March 7th. Terry will be involved. Bob has some slides to start with that he will send to Terry to start reviewing. Bob sent the information to Dropbox. They will need help reviewing the slides to make sure they are in context. Yoon will help.

5. Update to Standard

The committee will begin reviewing suggested revisions to the Standard. Terry sent out the most recent version prior to the call (Attachment D in the 1/23/19 minutes).

Ilona noted that the goal of the committee is to determine what they think needs to change in the Standard. This will help the Committee prepare an outline that can be used to seek public input into the update of the Standard.

Terry thinks the first thing to do is begin reviewing the list.

Ilona also noted that the Committee should keep in mind if the changes are "worth" making. Does it make sense to make the change – labs and states have to invest resources to implement a new Standard.

Terry took the list and started working through it. He started with the first item and then pulled open the 2016 Standard so the committee could decide if the suggested change makes sense.

Terry took notes as the Committee reviewed the suggested changes. These notes can be found in Attachment D.

6. New Business

None.

7. Action Items

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

8. Next Meeting and Close

The next meeting is scheduled for March 27, 2019 at 1pm Eastern.

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

The meeting was adjourned at 2:27pm 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*) **Present**	National Analytical Environmental Laboratory	Lab	Herbert.velinda@epa.gov
Brian Miller (2021*) **Absent**	ERA	Other	bmiller@eraqc.com
Ron Houck (2021) **Present**	PA DEP/Bureau of Laboratories	AB	rhouck@pa.gov
Yoon Cha (2020) **Present**	Eurofins Eaton Analytical	Lab	YoonCha@eurofinsUS.com
Candy Friday (2020) **Present**	CdFriday Environmental, Inc.	Lab	candy@fridayllc.com
Greg Raspanti (2022*) **Present**	New Jersey Department of Environmental Protection	AB	Greg.Raspanti@dep.nj.gov
Pepa Sassin (2022*) **Present**	EPA - Region 3	Other	Sassin.Pepa@epa.gov
Robert Aullman (2022*) **Absent**	Utah Department of Health	AB	aullman77@gmail.com
Ilona Taunton (Program Administrator) **Present**	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	TBD	
94	Harmonize Excel Checklist with Word Checklist	Terry and Candy	3/27/2019	
95				
96				

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. Summary of Recommended Changes to the 2016 Standard

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

Tom

Section 1.7.1.5.c.ii)e)

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"

Sections 1.6.2.2.b) and 1.7.2.3.e.iii)

Three gamma energy ranges for DOC and two ranges for LCS are specified. Since LCSs are often used for DOC, it is inconsistent.

Section 1.7.1.4.a.iii)

No guidance is provided what to do if the instrument performance check source is compromised.

Sections 1.7.3.5.b) and 1.7.3.5.f)

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".

Question: why does Module 6 have only one Section 1.0?

Page 3, Uncertainty, Counting

Change "…often estimated as the square root…" to "…often estimated as Standard Uncertainty by means of the square root…"

Page 3, Section 1.3.2, 1-st paragraph

Change "(e.g., calibrations,…)" to "(see Section 1.2)"

Page 4, Section 1.5.1.g NOTE

Change "The use…" to "For TNI accreditation, the use…"

Page 5, Section 1.5.2.1

Change "Minimal" to "Minimum"

Page 6, Section 1.5.4.c

The Section is out of alignment.

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

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."

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.

Page 7, Section 1.5.5.b

The font for "b)" is too large.

Page 9, Section 1.6.3.2.c

Change "…each with activity consistent method…" to "…each containing activity consistent with method…"

Page 10, Section 1.7.1.2.a.i

Change "following" to "after"

Page 16, Section 1.7.1.6.e

Perhaps for gas proportional detectors also?

Page 17, Section 1.7.1.7

Change "1.7.2.3" to "1.7.2.2"

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.

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."

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"

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"

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."

Page 22, Section 1.7.2.6.c.i

Insert a comma after "e.g."

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.

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:

the sample has to be analyzed as a whole
only a single measurement is required
no repeated measurements are allowed
aliquoting is allowed or not allowed
sample can/cannot be split into sub-samples analyzed separately

Section 1.6.3.2 Ongoing DOC, subsections a, d, e.

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.

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.

Vas

Consider whether existing issues would benefit from being addressed as SIRs

Keith

1.7.2.3(d)

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.

Bob

Explicitly clarify that QC data can by used as performance data for validation

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. Consider removing DOC requirements that are already addressed in Module 2. Include only the differences specific to radchem.

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.?

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.

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.

Define independent source – what if there is only one source - can procure two sources and handle differently.

Section 1.5.4 sets out requirements for reporting uncertainty. Is this just for the validation or for all results?

Add more sample specific QC criteria – FWHM, Quench or mass within range, etc.

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?

(Addition: Attachment E: Technical Manager

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 should show increasing level of knowledge in radiochemistry analyses (preparation and/or instrumentation).*
   vii. *In lieu of any of the above, the laboratory can petition the primary accrediting body, presenting the candidate's qualifications.)*