Radiochemistry Expert Committee (REC)
Meeting Summary

April 25, 2018

1. Roll Call and Minutes:

Bob Shannon, Chair, called the meeting to order at 1 pm Eastern on April 25, 2018 by teleconference. Attendance is recorded in Attachment A – there were 7 members present. Associates: Robert Aullman, Sherry Faye, Keith McCroan, Joe Pardue and Carolyn Wong.

Meeting minutes are distributed by email for comment/revision for a week and then posted on the TNI website. There has been a delay on the February minutes due to a recording issue, but these will be distributed within the week.

2. Checklist

- The 2016 TNI Standard Checklist (Excel) is now available on the TNI website. Bob will follow up with Robert and Greg to finalize the work they have done the Word version of the Checklist.

3. PT Acceptance Criteria

The data was received from the PT Providers going back to 2003. Keith worked up much of the data received, but there were numerous method codes and it was confusing to know what method the lab used. When he compared the data to the current limits (FoPT table posted on the TNI website under the PT Program tab), he sometimes got a higher failure rate and with others the failure rate was lower. Radium-226 had a higher failure rate. It was better for tritium. Bob noted that there are three methods (deemanation, precipitation and gamma spec) used for Radium-226 with different levels of quality of data. Keith will be sharing his work with Bob.

Bob noted that the data needs to be sorted by method codes and cleaned up. This way it will be possible to compare apples to apples. Some methods would be expected to have bias. For example the precipitation method should show a positive bias. With Barium-133 there were even examples where the wrong method code was used.

Ilona clarified that Keith took the new data and applied both the current procedure for calculating limits and then calculated them again using the proposed new procedure.

Keith wondered why, when he took the a, b, c and d data from the current tables, column Q of his spreadsheet (Not Acceptable) did not match up with the old failing column R.

Keith did not do any outlier tests on the data as described in the Limit Calculation SOP. This may account for his issue.

Ilona noted the current limits went into effect in 2007.

Keith clarified that he did not determine new limits with the current calculation method, he just applied the current limits from 2007 and that it was notable that the failure rates were different. He is comparing what he is doing now to the old limits. The current tables give the failure rate in column R, but in the data set received we also got acceptable and not acceptable evaluations for every data point and they didn't line up.

Ilona noted that some of the issues the Chemistry FoPT Subcommittee experienced were swings in the limits because the labs had changed some of the methods since the tables were last updated many years before. In most cases the limits had improved and the subcommittee had to evaluate whether to tighten the limits.

Bob asked if Brian could elaborate on the topic. He stated that labs are supposed to use and cite the method code for which they are seeking accreditation when they report PTs. There aren't any checks on the methods cited by the labs. With Brian's company there is a drop down box with a few methods, but the lab can also type anything they want to type in. This is part of why Bob and Keith are seeing so many method codes, some of which are not capable of producing data for the analytes reported.

Bob noted that the committee needs to contact the PT Expert Committee about the method code issue and see if there is some way to limit the method codes that can be used when submitting PT Data.

Where do we go with the data? Keith and Bob will meet and see if they can cleanup the data to make sure they are making good comparisons.

Ilona suggested comparing the work Keith is doing to the work already done on the Radiochemistry data by Andy Valkenberg and Stephen Arpie. Bob will forward this to Keith. Keith was looking at the 2007 limits.

4. Training in New Orleans

Carolyn is looking at Bob's previous liquid scintillation and tritium training and her NAMP webinar on Gross Alpha/Beta by liquid scintillation. She plans to combine information from these slides.

Terry offered to look for data package for tritium. For Aluquerque, two Level 4 data packages were abbreviated. Terry ran a set of tritium analyses when they did a detection limit study last year. This might work. He will also look to see if he can find a Level 4 data package with a client asking only for tritium. Bob may have some ideas for the other data package too. Carolyn will contact the labs that participated in the ASTM Gross

Alpha Beta inter-laboratory comparison study. Maybe a data validation package would work since many of these labs would not have done a Level 4 package.

The training will take place on August 10, 2018 at 8am Central. Registration is already open for the meeting and the class.

5. Standard Revision

Bob reminded everyone to keep sending items for consideration for the revision of the Standard. The committee has not started this effort yet, but Bob has been keeping track of suggestions being made for the next update (Attachment D). Tom just added a number of comments.

Ilona noted there will be a meeting in New Orleans to review impact of ISO 17025:2017 on the Standard. Hopefully TNI will be able to give some guidance to the expert committees after that on timing for the Standard update.

6. New Business

None.

7. Action Items

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

8. Next Meeting and Close

There will be no meeting in May and the next meeting is scheduled for June 27, 2018 at 1pm Eastern. Bob, Carolyn and Terry will continue to work on the training.

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

The meeting was adjourned at 1:52pm Eastern.

Attachment A
Participants
Radiochemistry Expert Committee

Members	Affiliation		Contact Information
Bob Shannon (Chair) (2019) **Present**	QRS, LLC Grand Marais, MN	Other	BobShannon@boreal.org
Tom Semkow (Vice Chair) (2019) **Absent**	Wadsworth Center, NY State DOH Albany, NY	AB	thomas.semkow@health.ny.gov
Sreenivas (Vas) Komanduri (2019) **Present**	State of NJ Department of Environmental Protection Trenton, NJ	AB	Sreenivas.Komanduri@dep.state.nj.us
Marty Johnson (2019) **Present**	US Army Aviation and Missile Command Nuclear Counting Redstone Arsenal, AL	Lab	Mjohnson@tSC-tn.com
Velinda Herbert (2021*) **Present**	National Analytical Environmental Laboratory	Lab	Herbert.velinda@epa.gov
Brian Miller (2021*) **Absent**	ERA	Other	bmiller@eraqc.com
Terry Romanko (2021*) **Present**	TestAmerica Laboratories, Inc.	Lab	Terry.romanko@testamericainc.com
Ron Houck (2018*) **Absent**	PA DEP/Bureau of Laboratories	AB	rhouck@pa.gov
Yoon Cha (2020) **Present**	Eurofins Eaton Analytical	Lab	YoonCha@eurofinsUS.com
Candy Friday (2020) **Absent**	CdFriday Environmental, Inc.	Lab	candy@fridayllc.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
89	Carolyn and Bob will develop draft for LSC training – obtain and incorporate changes based on feedback from Terry.	Carolyn – Bob - Terry	June 15	
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	

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

1. **Tom**
   a. Section 1.7.1.5.c.ii)
      i. Physical impossibility of measurement of Lucas Cell background per day of use after it has been filled with radon.
   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.
   c. Section 1.7.1.4.a.iii)
      i. No guidance is provided what to do if the instrument performance check source is compromised.
   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".
   e. Question: why does Module 6 have only one Section 1.0?
   f. Page 3, Uncertainty, Counting
      Change "…often estimated as 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)"
   h. Page 4, Section 1.5.1.g NOTE
      Change "The use…" to "For TNI accreditation, the use…"
   i. Page 5, Section 1.5.2.1
      Change "Minimal" to "Minimum"
   j. Page 6, Section 1.5.4.c
      The Section is out of alignment.
   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 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."
   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.
   m. Page 7, Section 1.5.5.b
      The font for "b)" is too large.
   n. Page 9, Section 1.6.3.2.c
      Change "…each with activity consistent method…" to "…each containing activity consistent with method…"
   o. Page 10, Section 1.7.1.2.a.i
      Change "following" to "after"
   p. Page 16, Section 1.7.1.6.e
      Perhaps for gas proportional detectors also?

q. Page 17, Section 1.7.1.7
   Change "1.7.2.3" to "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.
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."
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"
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"
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."
w. Page 22, Section 1.7.2.6.c.i
   Insert a comma after "e.g."
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.

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.

4. Bob

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

d. 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.