

# Radiochemistry Expert Committee (REC) Meeting Summary

July 25, 2018

## 1. Roll Call and Minutes:

Bob Shannon, Chair, called the meeting to order at 1pm Eastern on July 25, 2018 by teleconference. Attendance is recorded in Attachment A – there were 8 members present. Associates: Jim Chambers, Dave Fauth, Sherry Faye, Carl Kircher, Keith McCroan, and Stan Stevens.

The Committee did not meet in May or June.

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

Bob reminded people that there is committee training available to committee members:  
<http://nelac-institute.org/eds/download/ChairTraining.php>

## 2. Checklist

Robert and Greg are still working on the review of the checklist. Bob will be able to look at their work after the training is complete.

## 3. PT Acceptance Criteria

Bob noted there is a lot of data and it will be looked at again as soon as the training in New Orleans is complete. He will then forward it all to Keith. There have been issues getting through the data and figuring out what is useable. There were issues figuring out the method that was used. Bob is going through the data and removing data points where the method is a problem. He is also separating some data by method.

## 4. Training in New Orleans

Bob received comments from Vas and Terry on the training slides he distributed by email.

Vas:

Slide No.	Issue	Comments
8	Course outline	Blank page. I understand you will make one
12	H-3 decay chart	Change was suggested to reflect H-3 decay
13	wording	Unsupported sounds a bit odd here. Unsupported is used in a specific context. I don't know just semantics or real issue.
31	Header inaccurate	Gross alpha-beta for most part is a destructive method. Seldom, it is non-destructive.
35	Strength	High efficiency, near 100% for most beta emitters, except for H-3 for which the eff. is ~ 65%.
35	Weakness	Some conflict first line and last line. Change suggested to the last line as below.  -Interference from other beta emitters (higher background)
51	Quench	H# as a quench measure is exclusive to Beckman instruments.  If you are using one of the Beckman instruments, you do not determine tSIE.
52	Quench	tSIE is Packard approach to measure quench
105	NAD	Should NAD be < 3 or < 2?

Terry:

On page 12, I see “Δ 6.15h” on the graph. I assume this should be 12.3y (years). (6.15h might have been from previous use for Ac-228?)

On page 19, could a Beta particle have a “+” charge (positron instead of electron)? (I know, not the case for H-3 decay.)

Maybe picky (and not important), but page 34 – Most common physical form as liquid is maybe  $^1\text{H}^3\text{HO}$  (aka HTO)?

Page 100, section ii – certificates misspelled in the section header (“a” at the end)

Page 182 – just a comment on this. I’m sure you are aware that the “Technical Notes for EPA Method 900.0” state (at the top of page 9):

“Step 8.4 of the method indicates that the beta counts can be made immediately but that 72 hours of in-growth is required for the alpha count after evaporation onto the planchet. The 72-hour waiting period does not have a very good technical basis.”

Emphasis mine. However, the wait is still “required” (i.e. EPA did not “waive” the requirement).

Bob reviewed Vas and Terry’s comments and showed how he updated the presentation on Webex. There was agreement with the changes.

There was some discussion on slide 107 about what the correct limits are, but the slide was left unchanged. It’s an example. It’s up to the laboratory to define their approach. QSM has specific requirements that may be applicable. TNI requires that labs follow their methods and client requirements.

Bob opened the floor for more comments and made changes as needed to the presentation.

Bob asked that people send any final comments by email today. The final slides and handouts are being prepared in the next day.

## 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).

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.

Bob would like to start addressing the concerns raised in Attachment D in the Fall. Vas questioned how soon the work on the next Standard update should begin. Shouldn’t we gain some experience with the 2016 Standard first? Bob noted that the work can begin and then that experience can be added as they move along. We already know that there are some changes needed.

## 6. New Business

Bob noted there is a new version of Method 900 coming out in the next month or so.

New Orleans – Yoon will be there and can help with the training on Friday. Carl will be there. Carolyn will be doing part of the training on Friday. Bob, Yoon and Carolyn will meet on Thursday to coordinate the training.

#### 7. Action Items

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

#### 8. Next Meeting and Close

Next meeting will be August 22, 2018 by teleconference.

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

The meeting was adjourned at 2:05 pm Eastern.

**Attachment A  
Participants  
Radiochemistry Expert Committee**

<b>Members</b>	<b>Affiliation</b>		<b>Contact Information</b>
Bob Shannon (Chair) (2019) <b>Present</b>	QRS, LLC Grand Marais, MN	Other	<a href="mailto:BobShannon@boreal.org">BobShannon@boreal.org</a>
Tom Semkow (Vice Chair) (2019) <b>Present</b>	Wadsworth Center, NY State DOH Albany, NY	AB	<a href="mailto:thomas.semkow@health.ny.gov">thomas.semkow@health.ny.gov</a>
Sreenivas (Vas) Komanduri (2019) <b>Present</b>	State of NJ Department of Environmental Protection Trenton, NJ	AB	<a href="mailto:Sreenivas.Komanduri@dep.state.nj.us">Sreenivas.Komanduri@dep.state.nj.us</a>
Marty Johnson (2019) <b>Absent</b>	US Army Aviation and Missile Command Nuclear Counting Redstone Arsenal, AL	Lab	<a href="mailto:Mjohnson@tSC-tn.com">Mjohnson@tSC-tn.com</a>
Velinda Herbert (2021*) <b>Present</b>	National Analytical Environmental Laboratory	Lab	<a href="mailto:Herbert.velinda@epa.gov">Herbert.velinda@epa.gov</a>
Brian Miller (2021*) <b>Present</b>	ERA	Other	<a href="mailto:bmiller@eraqc.com">bmiller@eraqc.com</a>
Terry Romanko (2021*) <b>Present</b>	TestAmerica Laboratories, Inc.	Lab	<a href="mailto:Terry.romanko@testamericainc.com">Terry.romanko@testamericainc.com</a>
Ron Houck (2018*) <b>Present</b>	PA DEP/Bureau of Laboratories	AB	<a href="mailto:rhouck@pa.gov">rhouck@pa.gov</a>
Yoon Cha (2020) <b>Present</b>	Eurofins Eaton Analytical	Lab	<a href="mailto:YoonCha@eurofinsUS.com">YoonCha@eurofinsUS.com</a>
Candy Friday (2020) <b>Absent</b>	CdFriday Environmental, Inc.	Lab	<a href="mailto:candy@fridayllc.com">candy@fridayllc.com</a>
Ilona Taunton (Program Administrator) <b>Present</b>	The NELAC Institute	n/a	<a href="mailto:Ilona.taunton@nelac-institute.org">Ilona.taunton@nelac-institute.org</a>

## Attachment B

### Action Items – REC

	<b>Action Item</b>	<b>Who</b>	<b>Target Completion</b>	<b>Completed</b>
89	Carolyn and Bob will develop draft for LSC training – obtain and incorporate changes based on feedback from Terry.	Carolyn – Bob - Terry	June 15	Complete On Agenda today.
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**

	<b>Item</b>	<b>Meeting Reference</b>	<b>Comments</b>
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

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. Explicitly clarify that QC data can be used as performance data for validation
- 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.
- c. Consider removing DOC requirements that are already addressed in Module 2. Include only the differences specific to radchem.

- 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.?
- 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.
- 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.

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