Radiochemistry Expert Committee (REC)
Meeting Summary

August 25, 2021

1. Roll Call and Minutes:

Terry Romanko, Chair, called the meeting to order at 1pm Eastern on August 25, 2021 by teleconference. Attendance is recorded in Attachment A – there were 9 members present. Associate members in attendance: Carl Kircher, Mark McNeal, Patrick Garrity, Bob Shannon and Richard Denton.

The July meeting minutes will be reviewed and approved by email.

2. Question from PT Expert Committee

On August 12, 2021, Kirstin Daigle (Chair, TNI PT Expert Committee) sent the following email to Terry:

We are going through our list of items to address in the next version and there is a note to check in with the RadChem committee.

V1M1 which covers PT requires labs to report uncertainty but there is no mechanism to report uncertainty to the PT Providers.

The questions our committee has for the Rad Chem committee are:

Does this information need to be collected by the PTP (or simply retained by the laboratory)?

If the answer to the above is yes, what is the PTP supposed to do with it?

Thanks, Kirstin

Terry asked Bob Shannon if he could summarize where things stood and how the questions should be answered.

4 or 5 years ago the PT Expert Committee was finalizing Volume 1 and asked for input from the Radiochemistry Committee. Module 6 requires labs to report uncertainty with every result. At the time there were two PT Providers providing Radiochemistry DW PTs – ERA and New York (New York is no longer doing this). Bob recalls that these providers said they would make the necessary changes so that labs can report uncertainty with their PT results. Bob noted that they were also going to collect data and then look at what kind of scoring would be needed to report the results (advisory or part of acceptance criteria).

The Committee needs to decide whether it is going to back-off on requiring the reporting of uncertainty or figure out how things should be scored.

The work done by Bob Shannon and Kieth McCroan with Carl Kircher's Chemistry FoPT Subcommittee was intended to link the PT acceptance criteria to MQOs. See Attachment D for the written procedure that is supposed to be added to the PTP Executive Committee's SOP 4-101 (Recommendation, Evaluation, and Calculation of Acceptance Criteria and Applicable Concentration Ranges for Proficiency Tests).

When you look at the table in the procedure in Attachment D, there is a column for standard deviation. The data is there to use the standard deviation to evaluate PT results. They could also use a z-score to calculate if there is statistical agreement, but this would be more difficult to implement. This is especially a problem in Drinking Water.

Big picture: Four years ago TNI decided to require labs to report uncertainty with results as per Module 6. Volume 1 was going to be consistent with it.

There was agreement that since uncertainty is reported with results, it should be reported with PTs. There should be a maximum relative uncertainty.

Bob noted that there is a PowerPoint available that shows the difference between how limits are established today verses the new procedure in Attachment D. Terry sent this presentation out with the meeting Agenda for people to view.

Terry asked if using the new table and limits would make it easier for PT Providers to deal with the reporting of uncertainty. It is fairly straightforward.

Brian (PT Provider) asked if the interest is in having a separate evaluation on the uncertainity? Or is the acceptance based on the results with some consideration of the uncertainty?

Bob noted that the standard deviation would indicate if the uncertainty is high. Bob suggested at the very least it be put in as an advisory parameter. Bob asked the Committee if it should be made a requirement? Should labs meet uncertainty requirements?

Bob and Keith presented the information to PT Expert when they were working on Volume 1 and it was decided uncertaintiy needs to be reported with the data.

Bob asked where PTPEC is on finalizing the new Radiochemistry limits. Ilona responded that the PTPEC held off on finalizing the limits until their new SOP 4-101 was finalized with the inclusion of the procedure in Attachment D. The SOP is just about done and the PTPEC is supposed to start looking at finalizing the limits in Fall.

Brian asked if it makes sense to get the new limits finalized and then implement the reporting of uncertainty at the same time based on the table in Attachment D. He thought this would make implementation simpler. Bob agreed with this thought.

Brian also commented that they will also need to hear from the PTPEC on how the uncertainty evaluation should be done.

In conclusion, there is agreement that uncertainty needs to be reported and we should help out the PT Provider(s) to implement this.

Terry asked for ideas to respond to Kirstin's questions. He also suggested that the Committee should recommend that the FoPT limits be approved and implemented.

Bob commented that labs need to provide results and then the PT Providers need to confirm results are consistent with the limits. He also noted that we could start with making the uncertainty limit advisory so everyone can get used to the new procedures and then have a target date where it becomes required.

Amanda asked if this is only for the DW PTs. It is only for DW, but Bob knows that some people require the DW limits for other matrices.

Bob suggested down the road that maybe labs could determine their own criteria, but that is far into the future.

After further discussion, the Committee prepared the following language:
As required by Module 6, the laboratory must report uncertainty with all PT results. The PT provider will evaluate the uncertainty on an advisory basis using the proposed SOP. For SDWA, the parameters are listed in Table 1. Results which exceed the advisory limits would be issued a warning.

A motion was made by Greg to approve the above response to be sent to Kirstin (Chair, PT Expert Committee). The motion was seconded by Velinda and unanimously approved.

Terry will send out the response to Kirstin and copy Ilona.

(Addition: Terry sent the drafted response to Kirstin Daigle and she responded on 8/25/21:
Thanks Terry – 2 questions to make sure I understand

1) *The committee agrees that it's important for the lab to report the PT with the PT result, so the PTP will need a way to capture this information*
2) *Evaluate to the proposed SOP – is there a proposed SOP?*

Terry responded on 8/25/21:
Sorry – that would be the SOP/document the PT Committee working on, which should be incorporating the Table (of limits/parameters) which was submitted by the REC sub-committee some time back.

Comment from Ilona: The SOP in question is from the PTP Executive Committee – SOP 4-101: Recommendation, Evaluation, and Calculation of Acceptance Criteria and Applicable Concentration Ranges for Proficiency Tests.)

3. New Business

None.

4. Action Items

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

5. Next Meeting and Close

The next meeting will be September 22, 2021 at 1pm Eastern. *(Addition: The September meeting was canceled and the next meeting was October 27th 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 1:55 pm Eastern.

Attachment A
Participants
Radiochemistry Expert Committee

Members	**Affiliation**		**Contact InAffirmativemation**
Terry Romanko Chair (2024) **Present**	TestAmerica Laboratories, Inc.	Lab	Terry.romanko@testamericainc.com
Sherry Faye (2022*) **Present**	Wadsworth Center, NY State DOH Albany, NY	Lab	sherry.faye@health.ny.gov
Velinda Herbert (2024) **Present**	National Analytical Environmental Laboratory	Lab	Herbert.velinda@epa.gov
Brian Miller (2024) **Present**	ERA	Other	bmiller@eraqc.com
Stan Stevens (2023*) **Absent**	Perma-Fix Environmental Services	Other	stanws@aol.com
Amanda Fehr (2023*) **Present**	GEL	Lab	amanda.fehr@gel.com
Jim Chambers (2023*) **Absent**	Fluor-BWXT Portsmouth LLC	Other	jim.chambers@ports.pppo.gov
Greg Raspanti (2022*) **Present**	New Jersey Department of Environmental Protection	AB	Greg.Raspanti@dep.nj.gov
Robert Aullman (2022*) **Present**	Utah Department of Health	AB	aullman77@gmail.com
Chrystal Sheaff (2024*) **Present**	Energy Laboratories, Inc.	Lab	csheaff@energylab.com
Mary Beth Gustafson (2024*) **Present**	Virginia	AB	mary.gustafson@dgs.virginia.gov
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	
105	Review Charter	All	TBD (Feb or Mar)	
106	Prepare 2021 goals.	All	TBD (by mid January)	
107	Send new membership to Chair of CSDP EC Affirmative approval.	Terry Ilona	2/24/21	
108	Review Final Draft of Standard Affirmative any needed changes.	Robert and Chrystal	3/23/21	
110	Review Stakeholder group and confirm it is what it should be.	All	3/23/21	
112	Confirm with Lynn Bradley that Committee response to SIR 403 stands.	Terry	5/31/21	Complete
113	Send response to Kirstin Daigles questions about reporting uncertainty with PT results.	Terry	9/1/21	

Attachment C – Back Burner / Reminders

	Item	Meeting Reference	Comments
5	Affirmativem 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.

1.0 For a radioactive analyte, calculate the acceptance limits as $T \pm 2 \times SD$, where T denotes the assigned value (accepted true value) and SD denotes the acceptable standard deviation. The acceptable standard deviation SD is a linear function of T:

$$SD = c \cdot T + d \quad (1)$$

where c and d are parameters calculated for particular analytes and matrices as described below.

2.0 In general, simultaneous determination of c and d is based on uncertainty requirements at two widely spaced analyte concentrations, denoted here by L and H, for "low" and "high", respectively. Let σ_L denote the required uncertainty at the low level L, and let φ_H denote the required *relative* uncertainty at the high level H. The high level H may be infinite, in which case φ_H (or φ_∞) is the theoretical best-case relative uncertainty at the high concentrations where counting uncertainty is minimized.

3.0 The uncertainty requirements must be such that $\varphi_H \times L < \sigma_L < \varphi_H \times H$. If these inequalities are not satisfied, the requirements are inconsistent and must be revised.

4.0 For radiochemical analytes in drinking water, the low level L equals the required detection limit (DL) published in 40 CFR 141.25 (c), Tables B and C, and the required standard deviation at L is $\sigma_L = DL / 1.96$, where DL is the detection limit defined in 40 CFR 141.25. The high level H is infinite. The required relative standard deviation φ_H is obtained from the acceptance limits for laboratory fortified blanks (LFBs) described in the Section 7.7.3 of Chapter 6 in the EPA *Manual for the Certification of Laboratories Analyzing Drinking Water Criteria and Procedures Quality Assurance, Fifth Edition* [EPA 815-R-05-004, January 2005]. The value of φ_H is equal to one-half the LFB relative tolerance. Table 1 below summarizes these values for several SDWA test parameters.

Table 1: Parameters for Several SDWA Test Parameters

Parameter	L	σ_L	φ_H
Gross Alpha	3.0 pCi/L	1.5 pCi/L	10%
Gross Beta	4.0 pCi/L	2.0 pCi/L	10%
Ra-226	1.0 pCi/L	0.51 pCi/L	5%
Ra-228	1.0 pCi/L	0.51 pCi/L	10%
U (mass or activity)	1.0 µg/L	0.51 µg/L	5%
H-3	1,000 pCi/L	510 pCi/L	5%
Sr-90	2.0 pCi/L	1.0 pCi/L	5%
Sr-89	10 pCi/L	5.1 pCi/L	5%
I-131	1.0 pCi/L	0.51 pCi/L	5%
Cs-134	10 pCi/L	5.1 pCi/L	5%
All others	See Attachment 1		5%

5.0 For other analytes and matrices, L, H, σ_L, and φ_H may be determined by other means. For example, if there is a required minimum detectable concentration (MDC), let L be the MDC and $\sigma_L = L / 3.29$. If there is a required minimum quantifiable concentration (MQC), let H be the MQC and $\varphi_H = 0.1$.

6.0 If H is infinite, set $c = \varphi_H$. If H is finite, calculate instead

$$c = \frac{\varphi_H H - \sigma_L}{H - L} \tag{2}$$

In either case, set $d = \sigma_L - c \cdot L$.

7.0 Confirm that both c and d have positive values before using them in equation 1.