

Radiochemistry Expert Committee (REC) Meeting Summary

September 25, 2019

1. Roll Call and Minutes:

Terry Romanko, Chair, called the meeting to order at 1pm Eastern on September 25, 2019 by teleconference. Attendance is recorded in Attachment A – there were 6 members present. Associate members in attendance: Carl Kircher (1:23-1:45pm Eastern), Keith McCroan, Stan Stevens, and Bob Shannon.

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

2. PT Limit Update

Bob gave an update. He reviewed the PPT that he presented to the Chemistry FoPT Subcommittee (Attachment D).

They used historical lab data in the past to develop Radiochemistry limits. Bob walked through the slides with the Committee.

It will be voted on by email by the Chemistry FoPT Subcommittee and then sent to the PTPEC for final approval.

Andy Valkenberg (Chemistry FoPT Subcommittee) was originally concerned that the limits were getting tighter, but that is not the case across the board.

3. Training Material for Long Beach Meeting

Terry reviewed the list of past trainings. This next training will be the 5th and final training session. It is supposed to pick-up the smaller methods and any other topics that needed some expansion.

Method 903.1, total uranium options and a little more time on method validation and calibrations.

The following class synopsis was developed and sent for the conference program:

Title:

Understanding Radiochemistry Testing and the TNI 2016 Standard – Radon Emanation, Total Uranium, Method Validation and Instrument Calibrations

Summary/Class Synopsis:

This course will provide participants with a general understanding of the theory behind the radioanalytical technique used to perform Ra-226 by radon emanation. In addition, several methods for total uranium will be examined, method validation for an un-promulgated method will be discussed and an in-depth look at calibrations for all instrument types will be performed. A mixture of theory-lecture and interactive exercises using real laboratory data examples will help participants understand how analytical processes translate into actions, results, and records that one might encounter in a typical radioanalytical laboratory. It will also address typical challenges that may be encountered. This class will be of benefit both to radiochemistry laboratorians and radiochemistry assessors/ABs.

Bob is willing to help put the training together.

4. New Standard

Ilona reviewed the process for developing the new Standard and discussed the option of using DMS.

Bob noted that last time they really made a lot of changes to the Standard, but this time it will be refining it. He thinks one of the most important things is reaching out to Stakeholders. He thinks a talk at NEMC would be good to help notify people about the update.

This is not something that needs to be done tomorrow – not a rush. Ilona noted that this will be discussed at the Strategic Planning meeting with the TNI Board in October and target time frames will become available.

Terry asked if people had any comments on the time frame and there were none.

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 is scheduled for October 23, 2019 at 1pm Eastern by Teleconference and Webex. *(Addition: The October meeting was canceled. The next meeting was November 20, 2019.)*

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

The meeting was adjourned at 1:47 pm Eastern. (Motion: Robert Second: Greg Unanimously approved.)

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*) Present	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*) Present	ERA	Other	bmiller@eraqc.com
Ron Houck (2021) 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
Greg Raspanti (2022*) Present	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*) Present	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

Historical Limits May Institutionalize Bias

- Using historical data to establish acceptance criteria reinforce the status quo for better and for worse
 - Good performance fosters good performance but
 - Biased performance begets biased measurements; and
 - Biased performance removes incentives for labs to address measurement bias.
- Using historical data also raises concerns about the control and representativeness of results used to determine PT acceptance criteria

Current Limits Tend to Be Problematic at Low Levels

- Current limits often unrealistically challenge labs at the low end of the testing range.
 - The primary MQO labs must meet is the **SDWA Required Detection Limit (RDL)** defined as the **activity at which the relative uncertainty ($k=1.96$) is 100%**.
 - The *minimum* uncertainty ($k=1.96$) we can expect at the low end of the test range (i.e., RDL) is 100%
 - Current limits, however, are often more restrictive than this (*see comparative data plots*)

Looking in a New Direction for Radchem PT Acceptance Criteria

Linking acceptance criteria to MQOs helps ensure that we qualify those radchem labs that are capable of meeting SDWA quality requirements

It also encourages all radchem labs to improve performance where necessary to meet EPA's MQOs

- Key Drinking Water MQOs:
 - Required Detection Limit (in 40 CFR)
 - Requirement for relative bias in EPA's Drinking Water Laboratory Certification Manual (Chapter 6 - LFBs)

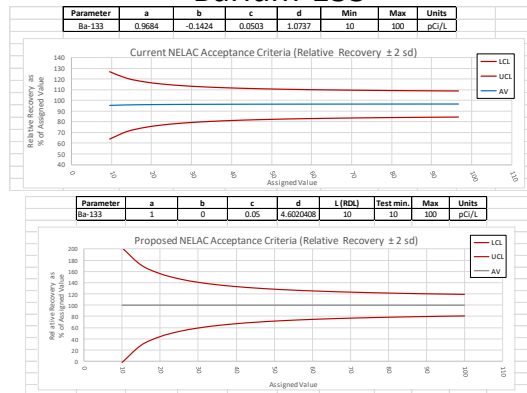
Proposed Parameters Link to MQOs

Table 1: Parameters for Several SDWA Test Parameters

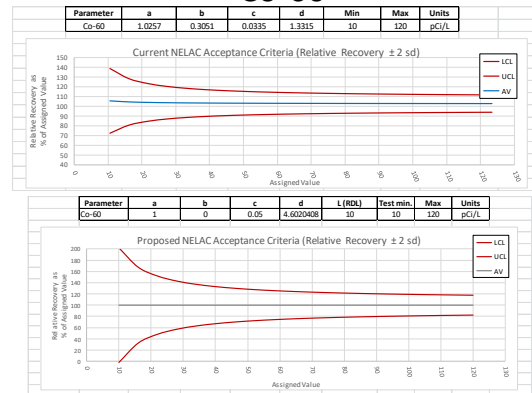
Parameter	L	σ_L	ϕ_H
Gross Alpha	3.0 pCi/L	1.5 pCi/L	10%
Gross Beta	4.0 pCi/L	2.0 pCi/L	10%
Ra-226	1.0 pCi/L	0.51 pCi/L	5%
Ra-228	1.0 pCi/L	0.51 pCi/L	10%
U (mass or activity)	1.0 µg/L	0.51 µg/L	5%
H-3	1,000 pCi/L	510 pCi/L	5%
Sr-90	2.0 pCi/L	1.0 pCi/L	5%
Sr-89	10 pCi/L	5.1 pCi/L	5%
I-131	1.0 pCi/L	0.51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

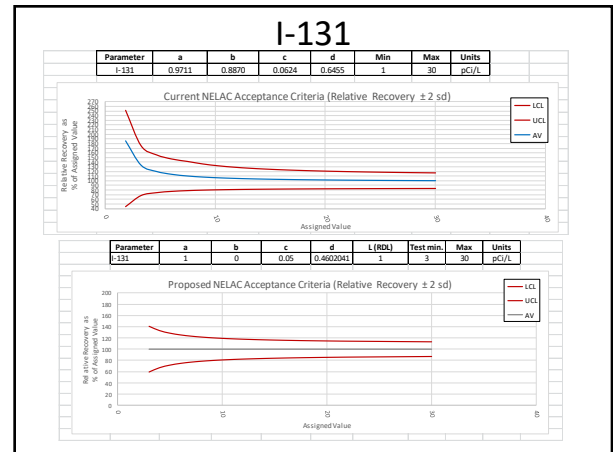
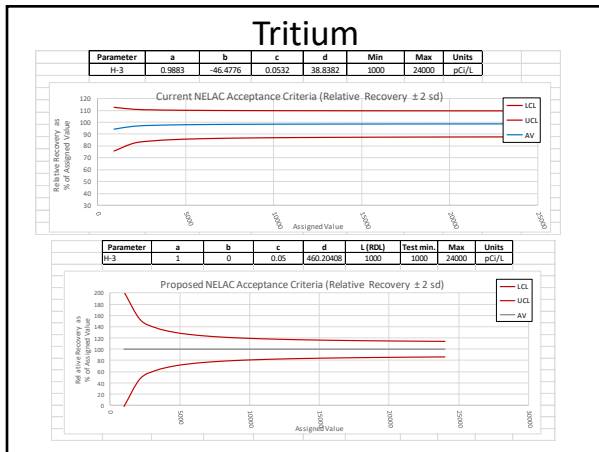
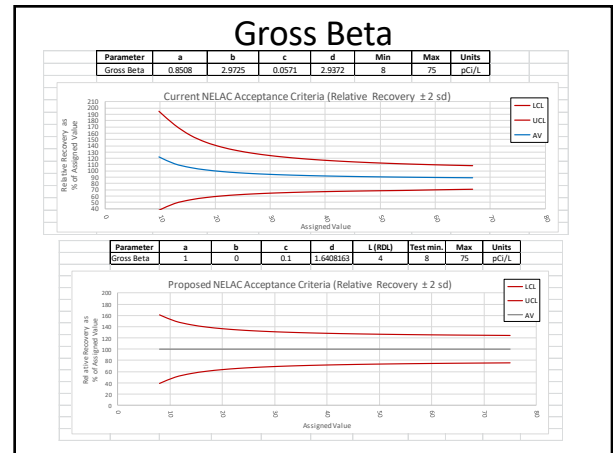
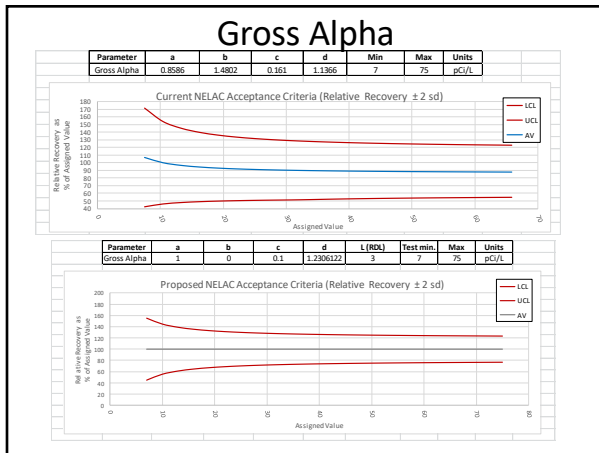
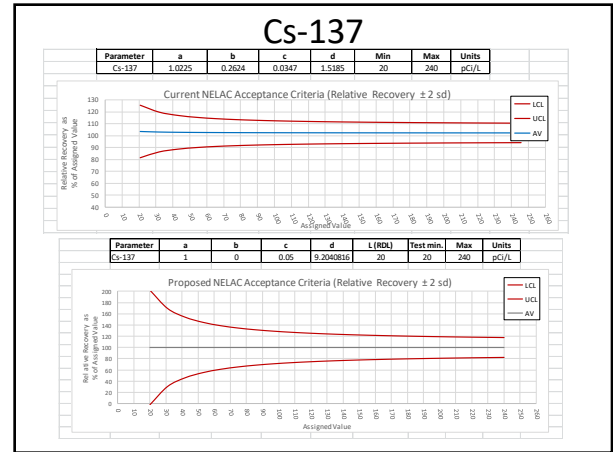
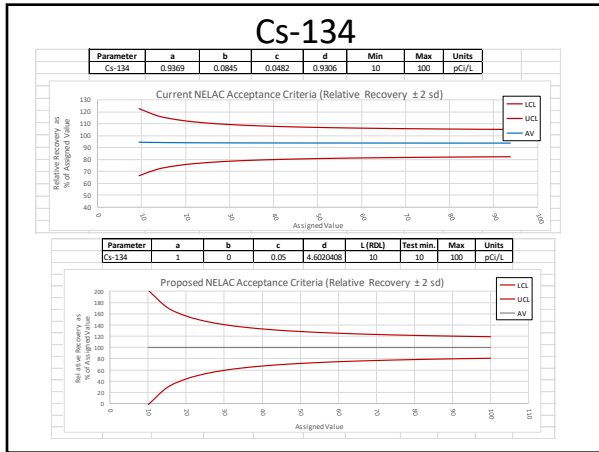
Please see copy of draft SOP text for details

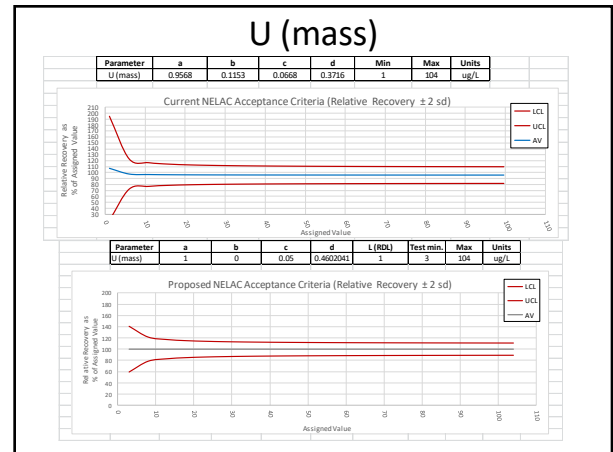
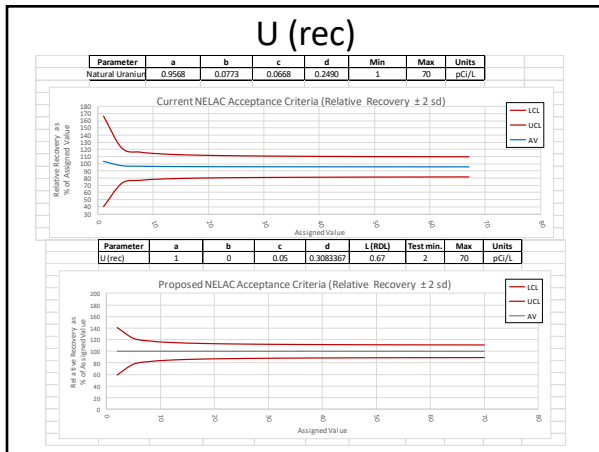
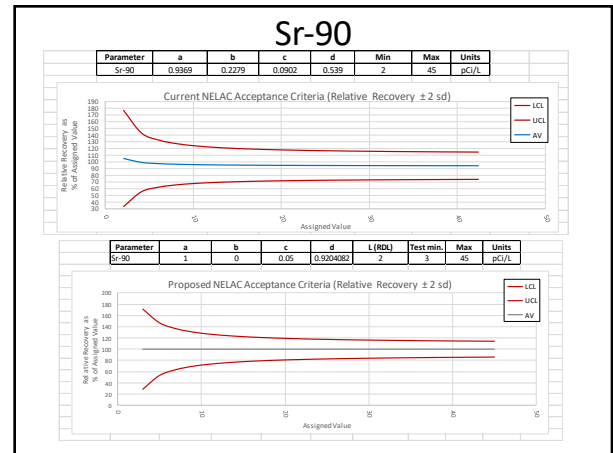
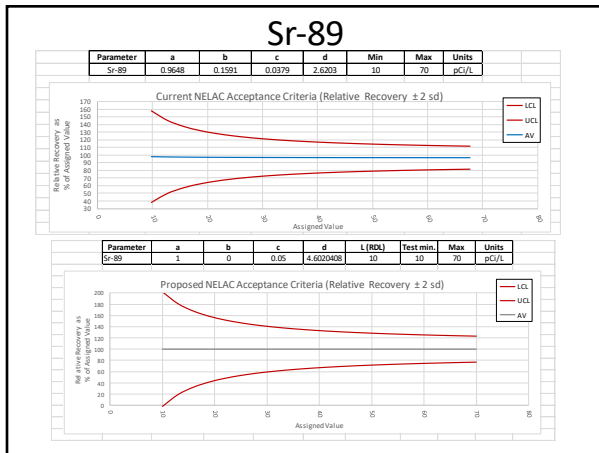
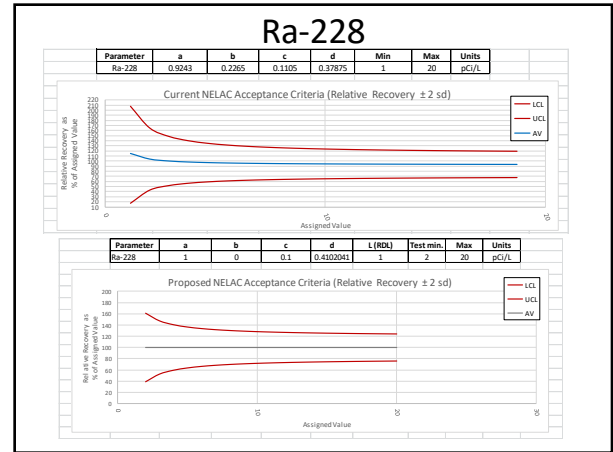
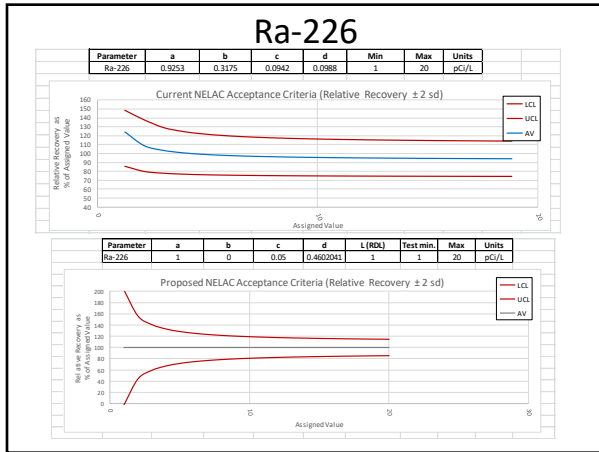
Barium-133

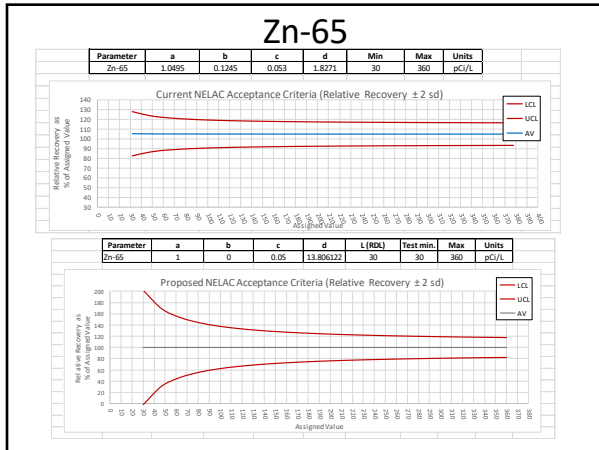


Co-60









Some Conclusions

- Currently, NELAC PT acceptance limits for radiochemistry are based on historical results.
 - There are a number of troubling trends in current limits
 - For better and for worse, historical limits reinforce the *status quo ante*
 - Doesn't ensure SDWA program quality needs will be met
- We propose that limits be linked to MQOs:
 - This will help ensure laboratory data quality is adequate to support EPA's SDWA program quality needs, and
 - Encourage labs to minimize / eliminate measurement bias.

Some Assumptions and Sources

- DLs are defined in:
 - 40 CFR 141.25 (c)(1) Table B (Gross alpha, Ra-226, Ra-228, U)
 - 40 CFR 141.25 (c)(2)
 - Table C (Gross beta, H-3, Sr-89, Sr-90, I-131, Cs-134)
 - All others – 1/10⁶ MCL listed in "Derived Concentrations (pCi/l) of Beta and Photon Emitters in Drinking Water Yielding a Dose of 4 mrem/y to the Total Body or to any Critical Organ" of NBS Handbook 69, as amended August 1963, U.S. Department of Commerce.
 - No RDL defined for Ba-133; it is not present in a fission event
 - Used MCL for Cs-134
- Uranium
 - No RDL is defined for U (activity) as the MCL is mass concentration. An RDL of 0.67 pCi/L would be calculated using the specific activity conversion factor for natural uranium promulgated for corrected gross alpha (assuming the PT provider uses natural uranium)
- We should invite guidance from EPA OW on MQOs for different tests. Three that may deserve attention are Gross Alpha, Gross Beta, and Ra-226 where LFB acceptance criteria may be optimistically over-restrictive.