



THE INSTITUTE REVIEW

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November 2021

Martina McGarvey
Editor in Chief

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November 2021

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<u>Article</u>	<u>Page</u>
It's Time to Reserve Your Spot at the Forum	5
Welcome to San Antonio	7
Summary of the 2021 Summer Forum on Environmental Accreditation	9
Nominations for 2022 Board of Directors	22
NEMC 2022 Call for Abstracts	24
National Environmental Monitoring Conference (NEMC) Dr. Charlie W. Carter Award	25
EPA Water Laboratory Alliance (WLA) 3-Day Virtual Security Summit	27
The Role of Effective Leadership in Quality Systems Implementation	28
Reimagining the Technical Director/Manager Position	30
EPA Updates from NEMC	32
TNI Expert Committee Openings	37
NEFAP Update	38
Quality Systems ISO 17025:2017—The Same Concepts Stated in a Different Way	40
Silent Everyday Heroes.....	42
Rosario's Award Winning Salsa	44
ChairSpeaks — <i>"Musings from the TNI Chair"</i>	45
Member Spotlight: Carol V. Batterton	47

It's Time to Reserve Your Spot at the Forum

By Jerry Parr, TNI

We are pleased to invite you to the Forum on Environmental Accreditation, the principal conference for addressing policy and technical issues affecting the accreditation of environmental laboratories and other organizations involved in generating environmental data.

Register Now!

Click Here

The Forum will feature open public meetings of The NELAC Institute (TNI) committees to allow quality professionals, chemists, analysts, microbiologists, engineers, and managers from federal and state agencies; commercial, municipal, state and federal laboratories; and many others who are actively involved and interested in laboratory accreditation issues to review what has been done and participate in the efforts to establish a national program for environmental accreditation.

The 2022 Forum will include:

- ◆ Meetings of TNI committees,
- ◆ A mentor session on responding to assessment findings,
- ◆ An assessment forum on writing assessment findings,
- ◆ A general session with updates about TNI programs, including recent new initiatives,
- ◆ A special session focused on the competency of QA and Technical Managers, and
- ◆ Two training courses.

The Forum offers you an opportunity to participate in these sessions; to exchange ideas, findings, and recommendations; and to further TNI's efforts towards national accreditation.

All sessions and TNI meetings are open to all attendees according to your registration. Attendees have the ability to attend any session the week of January 17 in-person, and view any session you missed from January 24 to March 30, 2022. For those that do not plan to come to San Antonio, you have the ability to view a recording of any session from January 24 to March 30, 2022. Registration is by full conference, which includes all events, or daily for the In-Person portion of the conference. For virtual-only registration, you may choose specific tracks or full virtual conference selected days. The two training courses on January 17 are for in-person attendees only that have registered for the course.

SPECIAL SESSIONS AND TRAINING COURSES AT THE 2022 FORUM

New TNI Initiatives

- ◆ Competency Task Force
- ◆ Consumables Task Force
- ◆ Mentor Committee
- ◆ Training Committee
- ◆ Accreditation for Wastewater Epidemiology Testing



TNI Special Session: Quality and Technical Experts

A Joint Meeting of the Competency Task Force, Training Committee, and Expert Committee Chairs

- ◆ Background on the Task Force, Training Committee, and Credentials Subcommittee
- ◆ Work by the TNI Competency Task Force on Redefining the Technical Manager
- ◆ Work by the Credentials Subcommittee on a Quality Management Systems Expert
- ◆ The Concepts of “Credentialed” Experts and Digital Badges
- ◆ Knowledge, Skills, and Attributes (KSAs) of Quality and Technical Experts
- ◆ Overview of Existing Training Courses

Training Course: Risk-based Thinking in the Environmental Laboratory

The concept of risk in management systems was introduced with the 2017 edition of the ISO/IEC 17025 standard. Risk-based thinking is an important concept for correction, corrective action and continual improvement in any laboratory, including environmental laboratories. Establishing a simple approach to addressing risks and opportunities not only allows a laboratory to meet the requirements of the standard, but also provides opportunities for process and management system improvements to be implemented for long term benefits to the laboratory. This course will provide attendees with an overview of the ISO/IEC 17025:2017 requirements for addressing risks and opportunities. Additionally, attendees will learn a simple approach to risk-based thinking. A full case study and small group exercises will allow attendees to apply the concepts of risk-based thinking during the course.

Training Course: Quality Manager – Jack of All Trades

The objective of this one-day course is to provide quality assurance managers with tools and suggestions on how to manage an effective quality management system. The material will be based on the requirements outlined in the V1M2 of the 2016 TNI Standard and will include lectures on basic quality control assessment tools, delegating responsibility, identifying root cause, implementing effective corrective action strategies. Quality Management from the perspective of the lab manager, lab analyst and lab auditor will be explored. The participants will also take part in group activities that will refine their skills as a quality manager.

For more information, visit the conference website [here](#).

Access On-Line Registration [here](#).

Welcome to San Antonio!

By Patty Carvajal, San Antonio River Authority

It has been a long time in coming but in January, we will be gathering in San Antonio for our Winter Meeting. There are a multitude of activities and sites to see in the area and I highly recommend taking advantage of the opportunity to visit some of the historic and cultural sites in the San Antonio and surrounding area.

San Antonio was founded in May 1718 with the founding of the San Antonio de B  xar Presidio and Mission San Antonio de Valero (now the Alamo), whose inhabitants helped lay the foundation for the eclectic art, diverse culture, and stunning innovations that have become signatures of life in San Antonio. San Antonio is now the seventh-largest city in the nation.

If you visit San Antonio, you will likely want to visit the following places:

The Alamo

No visit to San Antonio is complete without a visit to the [Alamo](#), the Shrine of Texas Liberty. The city has grown around this historic site that now sits in the middle of downtown San Antonio, just a short walk away from where the conference will take place.



The Riverwalk



The [Riverwalk](#) is always worth a visit. There are several restaurants and shops along the river and strolling the Riverwalk is always a nice way to end your day. Though many are familiar with this portion of the River Walk, the area has expanded over the past twenty (20) years to include the Museum Reach up to the Pearl to the north and to the Museum Reach to the south. The San Antonio River has been the focus of community and culture in the area since it was founded. This is evident in the location of the San Antonio Missions which are

located along the river to the south. These communities have been such a vital part of the cultural heritage of San Antonio that they are named UNESCO World Heritage sites.

San Antonio Missions

The [San Antonio Missions](#) were designated as UNESCO World Heritage sites in 2015. These sites are a group of five (5) Spanish colonial missions including the Alamo. This great honor has been bestowed upon only twenty-four (24) sites in the United States and the missions are the first and only World Heritage site in Texas. The missions are an example of the interweaving of Spanish and indigenous cultures that are an important part of American heritage. The designation includes Mission Concepcion, Mission San Jose, Mission San Juan, Mission Espada, Mission San Antonio de Valero, Rancho de las Cabras, and their associated irrigation and agricultural features. These communities were formed in 1718 and were at the northern frontier of New Spain, a territory of the Spanish Empire. Mission Concepcion, Mission San Jose, Mission San Juan, Mission Espada are part of the Archdiocese of San Antonio and have weekly religious services to this day.



1Mission Concepcion, NPS Photo



If you are looking for fun stuff to do, these might be to your liking:

Kayaking the San Antonio River

Have you ever wanted to see the [Riverwalk](#) from a different perspective? Prior to COVID it was only possible to be on the water in the Riverwalk on the powered barges. Now it is possible to kayak in downtown San Antonio! Thanks to special permission from the City of San Antonio, a kayak outfitter provides kayaks to those interested in a unique experience. The activity has proven to be very popular and hopes are that it will continue beyond 2021.



Mission Kayak

You can also [kayak](#) in other areas of the San Antonio River such as The King William reach of the river and the Mission Reach of the river for a more natural area of the river.

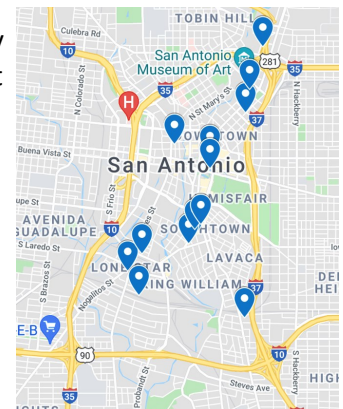
Visit the Texas Hill Country

The [Texas Hill Country](#) was primarily settled by German and Eastern European immigrants. Their heritage evident in the architecture and artifacts that in the area. Texas antique shops on old-fashioned main streets and celebrations with roots in the Old World, like Wursthfest (a sausage festival) and Weihnachten (a Christmas festival).

The Hill Country is also home to several wineries as the Hill Country has become a hot spot for wine connoisseurs. It is the second largest wine producing region on the United States. You can choose to visit these wineries on your own or you can book a Wine Tour for a relaxing fun filled experience. The main grape varieties grown in the Texas Hill Country are Cabernet Sauvignon, Zinfandel, Chardonnay and Chenin Blanc.

Where to eat:

There are so many places to choose from I don't know where to begin. The culinary traditions of the original settlers of San Antonio blend with new, homegrown talent from the Culinary Institute of America San Antonio for a food and drink scene that has something for everybody. A few choice locations have been identified on this [map](#) to help you decide on where to go to get a bite to eat. The majority of them are within walking distance of the hotel where the conference will be taking place.



I hope that you all enjoy your visit to San Antonio. Feel free to reach out to me with any questions about our wonderful city.

Summary of the 2021 Summer Forum on Environmental Accreditation

By Jerry Parr, TNI

This article summarizes committee meetings and other events that occurred at the 2021 Summer Forum on Environmental Accreditation, which was combined with the National Environmental Monitoring Conference (NEMC) under the umbrella of the Environmental Measurement Symposium. Due to the pandemic, the Symposium was held as a hybrid meeting with both in-person and virtual attendees from August 2-12, 2021. Almost 600 individuals participated in the 2021 meeting. A separate article summarizes the other events that occurred at the Symposium.

The TNI Assessment Forum and Mentor Session are now available as a Conference Learning on the TNI website.

Monday, August 25, 2021

Laboratory Accreditation Body Expert Committee

Committee Chair: Carl Kircher, Florida Department of Health

The committee chair, Carl Kircher, led the discussion. The committee has a draft standard under development and this meeting primarily focused on some of the controversial comments that were provided including assessor competency, assessor training, laboratory assessment report contents, and confidential and publicly available information requirements.

The committee also presented a summary of the changes to Volume 2, Module 1 which include:

- ◆ General requirements for the Accreditation Body in Module 1 and specific laboratory on-site assessment requirements in Module 3 were combined into one module.
- ◆ The recently revised international standard for accreditation bodies, ISO/IEC 17011:2017(E) was incorporated.
- ◆ Additional TNI normative language specific for environmental testing laboratory accreditation bodies was retained or revised for improvements, and then moved into the appropriate sections.
- ◆ Some requirements are now deemed redundant, obsolete, or no longer needed and were proposed for elimination.

The committee is currently reviewing all comments to rule them Persuasive, Non-persuasive, or Editorial. They then plan to publish an updated version of the Draft Standard for additional comments with a final approved in 2022.

Chemistry Expert Committee

Committee Chair: Michelle Wade, A2LA Workplace Training

The committee chair, Michelle Wade, led the discussion. A significant portion of the meeting centered around Standard Interpretation Requests (SIRs) regarding analyst training, method-specified requirements and the determination of Relative Error for pH, conductivity, fluoride, ammonia, and other tests performed using ion specific electrodes (ISE).



The committee then had an open discussion as to potential modifications of module including these topics:

- ◆ Terms and conditions
- ◆ Method selection and validation
- ◆ Limits of detection and quantification
- ◆ Evaluation of precision and bias
- ◆ Technical Requirements: Calibration

Tuesday, August 3

TNI Mentor Session – Laboratory Quality: Are You in Jeopardy?

Session Moderator: Dorothy Love, Eurofins Environment Testing America

This session was a combination of an interactive Jeopardy-style game and presentations.

- ◆ Quality Responsibilities - Dorothy Love, Eurofins Environment Testing America
- ◆ MDLs/Control Limits - Michelle Wade, A2LA WorkPlace Training
- ◆ Corrective Actions - Silky Labie, ELCAT
- ◆ Quality Training Tips - Jeanette Hernandez, San Antonio River Authority
- ◆ Report Formats - Key Requirements - Aaren Alger, Alger Consulting & Training

The Jeopardy game PowerPoint is available [here](#).

Wednesday, August 4

Update on TNI Activities

Session Moderator: Alfredo Sotomayor, Milwaukee Metropolitan Sewerage District

This session, moderated by Alfredo Sotomayor, featured six presentations:

- ◆ Reinventing the Technical Manager Position - Aaren Alger, Alger Consulting and Training
- ◆ Applying Management System Concepts to Environmental Activities - Marlene Moore, Advanced Systems, Inc.
- ◆ Benefits of Accreditation for Field Sampling and Measurement Organizations - Justin Brown, Environmental Monitoring and Technology
- ◆ TNI's Training Efforts - Calista Daigle, Pace Analytical Services
- ◆ State of National Accreditation - Jerry Parr, The NELAC Institute
- ◆ TNI's Mentor Initiative - Susie Arredondo, San Elijo Joint Powers Authority



Thursday, August 5

Assessment Forum: Unmasking the 2016 TNI Standard

Session Moderator: Judy Morgan, Pace Analytical Service

TNI's Assessment Forum was structured to provide an opportunity for laboratories and laboratory assessors to share information on how to improve the laboratory assessment process. The 2021 Forum focused on findings from laboratory assessors regarding new language in the 2016 Standard and included the following presentations:

- ◆ % RSE and RE – What is it and how do I use it? – Aaren Alger, Alger Consulting & Training
 - ◇ Focused on clarifying the details around the new concept %RE and %RSE, as described in 2016 TNI V1M4: Section 1.7.1.1.k, which caused some significant misunderstanding and confusion during implementation.
- ◆ Calibration – Creation, Verification, Large Analyte Lists and Dropping Points – Jeanne Mensingh, Labtopia, Inc.
 - ◇ An in-depth look at proper calibration, verification, and a detailed look at handling complex analyte lists relative to dropping points.
- ◆ Method Blank and DL (MDL) – Mitzi Miller, Miller Quality Consulting
 - ◇ The 2016 Standard added a requirement to assess blanks as part of the process. This topic gives an in-depth assessor's look at the relationship between method blanks and detection limit.
- ◆ LOD/LOQ – Valerie Slaven, PDC Laboratories, Inc.
 - ◇ Unraveling the details around spike concentration, frequency, data points, and handling failures
- ◆ Traceability – Where Does it End? – Shawn Kassner, Pace Analytical Services, LLC Corporate
 - ◇ A comprehensive view of Section 4.13 of the 2016 Standard will be given with a focus on SIRs received since the release of the Standard.

Monday, August 9

Quality Systems Expert Committee

Committee Chair: Debbie Bond, Alabama Power

The committee chair, Debbie Bond of Alabama Power, led the discussion with most of the time allocated to comparing the 2005 and 2017 versions of ISO/IEC 17025. The remainder of the meeting focused on other potential changes to specific sections, namely:

- ◆ 5.8.7.1 – preservation
- ◆ 5.10.11 – claiming accreditation
- ◆ 7.11.2 – commercial off the shelf software
- ◆ 8.3.1 – authorized editions
- ◆ 4.13.3
- ◆ 7.5.2
- ◆ 4.4.1.c – definition for customer



NELAP Accreditation Council Meeting

The primary agenda item was an opportunity for each of the NELAP AB representatives present to update participants about three items – current operational status from pandemic disruptions, current implementation status of the 2016 TNI Standard, and expected implementation plans for the 2021 Method Update Rule (MUR). State responses to these items are displayed in the tables below.

Table 1. Current Operational Status of NELAP ABs Following Pandemic Disruptions

State	Status
FL	Has returned to normal, in-office operations with most on-site assessments, but if the Program Manager approves, more data review is being conducted off-site prior to the actual site visit.
IL	Returned to normal in-office April 1, 2021. Had on-site assessments in June and July. Looking at Covid-19 metrics for our assessment this month.
KS	Currently performing all assessments in person, but have started evaluating the current situation in KS to determine if remote or partially remote assessments are needed. We have sent data and recommendations on to our Department of Environment within KDHE and are awaiting their guidance on next steps.
LA	Returned to normal operations on May 10, 2021, but have now scaled back assessments to do the maximum possible off-site reviews. Remote assessments not allowed. If lab reports COVID-19 cases, assessors do not go on-site unless precautions are in place or quarantine period is over.
MN	Mostly back to normal as of July 31, 2021. Remote assessments are no longer allowed, but staff are permitted to work remotely. Staff are not travelling (MN uses third-party assessors exclusively).
NH	Fully operational, but now performing a remote conference with labs on the day prior to the site visit.
NJ	Phased return to full in-office operations. Current return date is planned to be September 7, but that will depend on state caseloads with delta variant surge. Has mostly returned to in-person site visits for assessments.
NY	Staff in Albany are in office 2 days/week, assessors based elsewhere normally work from home. In-state assessments are being performed on-site; out-of-state assessments are remote. As of September 7, will initiate pilot project having 50% of assessments remote.
OK	Working in office full time, and performing on-sites, but as “blended” assessments with much of the data review accomplished off-site/remotely.
OR	Most assessments now are on-site, although Oregon’s declaration of emergency has been extended until December 2021. Some “hybrid” assessments being done, and assessors are working hard to eliminate their backlog of assessments.
PA	Staff still working fully remote and doing only remote assessments, but program is fully operational and all lab assessments are current. No travel being approved except for emergencies. Anticipate permanent telework for staff, with perhaps two days/week in office and social distancing implemented.
TX	Now requires documents to be submitted up front for remote review and conducts virtual opening and closing meetings with shorter on-site times. May need additional adaptations due to Delta variant. Jody Koehler hired as new program manager and transition from Steve Gibson to her is underway, but Steve will remain the primary contact until further notice.
UT	Fully operational. Performing on-site assessments, although running behind on scheduling.
VA	Performing only remote assessments.



Table 2. Implementation Plans for 2021 Method Update Rule

State	Status
FL	AB awaits direction from the program office, FL DEP.
IL	2021 MUR, PFAS methods and 23 rd Edition of SM are all in our legislature awaiting approval, hopefully by October 2021.
KS	Has reached out to the Bureau of Water (enforcement arm within KDHE) to collaborate with them on a go-live date. No date has been set yet, but we are expecting that January of 2022.
LA	Labs must comply with MUR by July 2022 or the next assessment, whichever comes first.
MN	Working with MN Pollution Control Agency to determine implementation and will notify labs of decision when renewal materials are sent in September 2021.
NH	Implementation will be based on lab requests for accreditation of updated methods. Has no directive from program office.
NJ	No firm plans yet, but under consideration.
NY	MUR and drinking water regulations will be implemented at the end of the year for an April 1, 2022, effective date.
OK	Discussions with OK DEQ program staff are in process.
OR	Per OR DEQ, the MUR methods will be phased in as routine assessments occur.
PA	Implementation is under discussion.
TX	Implementation decision is made by Water Quality Division, not yet available. Prior 2016 MUR was only partial implementation.
UT	No firm plans yet, but under consideration.
VA	VA DEQ (program office) will determine when MUR is implemented.

Laboratory Accreditation System Executive Committee

Committee Chair: Maria Friedman, California ELAP

The Committee Chair, Maria Friedman, shared some recent activities, including many improvements to SIR management processes and a new implementation guidance SOP. She then shared the criteria for a valid SIR:

- ◆ Must contain only one question
- ◆ Must apply directly and clearly to cited section of Standard
- ◆ Question is understood without supposition
- ◆ Question is compelling – the language used in the Standard(s) section cited is not clear or where it might have more than one interpretation
- ◆ Cannot be used to settle a dispute between a laboratory and an AB
- ◆ Is not a “how to” question or a method interpretation question
- ◆ Where possible, the question should be framed in a manner that solicits a “Yes” or “No” answer
- ◆ LASEC is responsible for verifying that all SIRs relevant to the module have been reviewed for incorporation when each module of the TNI Environmental Laboratory Sector Standard undergoes revision

Implementation Guidance is available on the TNI website, only to TNI members [here](#).



Tuesday, August 10

Microbiology Expert Committee

Committee Chair: Cody Danielson, Oklahoma DEQ

Committee Chair, Cody Danielson, led a discussion of proposed changes to the Microbiology module. The Draft Standard has been posted on the TNI website for comment over the next 90 days. There is also a copy of the Summary of Changes document on the website.

Upcoming Projects: Implementation Guidance for Equilibrium Testing V1M5: 1.7.3.7.b.v.a

SIR 414 Regarding DOCs and Variability/Reproducibility Testing

Whole Effluent Toxicity Testing Committee

1. Updating the WET Module V1M7 – Discussion of Proposed Changes

Rami's presentation mostly followed the presentation presented on the WebEx screen to participants. An outline of the presentation is included in these minutes as Attachment 3, and the presentation itself is being distributed to committee members with the minutes. He noted that the module will be renumbered prior to publication of the Draft Standard for comments, to make eight sections instead of eight subsections all numbered "1.*", but for now, it is easier to reference the existing module with the revisions by retaining the same numbering. In the summary below, comments are indented while the main presentation points are not.

§1.1 Introduction – This section is essentially unchanged. There were many discussions about whether to limit this module to whole effluent toxicity testing only, but the committee settled on including all forms of aquatic toxicity testing relevant to wastewater programs.

§1.2 Scope – The module addresses specific quality management aspects relevant to aquatic toxicity testing and supplements the more general requirements of the Quality Systems module, V1M2.

§1.3 Definitions – A few new definitions will be added.

§1.4 Method Selection – This section is expanded to clarify exactly what constitutes a "reference method" (which does not require full validation, only verification) and then addresses various non-reference methods that may be needed and requested by clients that may require some degree of validation, depending on the anticipated use of the data obtained from them.

§1.5 Method Validation – This section was expanded to itemize and describe the various parameters to be considered when validating a non-reference method in the lab, and includes some explanatory language to aid assessor understanding.

A committee member suggested that the Standard should address when (and how) validation is done when a method is modified, and what degree of modification warrants further validation, or at least requires that the lab define its rationale for whether or not such validation was performed. Another participant rephrased this to say that language should be added to guide when validation is needed, and an option (with justification) for some "limited validation". There was general agreement that such complex determination needs to be documented and have client agreement.



Another comment from a committee member suggested that the statement about “accuracy is not applicable to WET testing” should be qualified to explain that there is no “true value” in existence for toxicity testing, although “bias” is what does exist. This needs to be further explored, compared to whatever definitions might already exist in the TNI glossary, and added in the definitions Section 1.3.

§1.6 Demonstration of Competency – The committee spent several years seeking consensus on what will constitute an acceptable initial DOC for a new analyst, and that language is now settled. After thorough training, participation by the analyst in one successful Standard Reference Test (SRT) is adequate, with the analyst performing all tasks that the individual will be assigned to do.

The introduction for this section is unlikely to change, but further revision is needed to separate the laboratory DOC (typically specified in the method manuals) from the individual analyst DOC, and how the two overlap, as well as to distinguish initial DOCs from ongoing DOCs. As WET testing relies on team assignments for many routine tests (but with team composition variable depending on staffing availability, not “fixed”), there is overlap between the lab and analyst DOC, however, the two are documented separately. Rami explained the table of substitutable chronic-for-acute tests for analyst DOCs.

One participant noted that for ongoing DOCs, analyst participation in the annually-required lab DOC should be adequate to meet the requirements for the analyst also.

Rami explained that the list of tasks for which an analyst could be trained and qualified to perform through a DOC will likely be included as an explanatory note rather than a requirement, but that the committee has yet to fully address this. Each lab will need to define and document its own procedures for performing DOCs and qualifying both the lab and its analysts.

An audience participant asked whether SRTs are appropriate DOCs for sediments or whether the negative control would be preferable (i.e., can the analyst get within the required recovery limits for the test organism). Rami agreed that this issue should be considered for the DOC section.

Another participant commented that, if an SRT is not applicable to the IDOC as a positive control, then duplicated precisions could be appropriate from a “well characterized” sediment, and Rami noted that the sensitivity of the organism is determined using an aqueous test and then the sediment test is performed. This too should be considered for inclusion in this section. Rami explained that the challenge with sediments and soils is the lack of homogeneity and also that the sediment/soil itself often affects bioavailability of the toxicants.

§1.7 Technical Requirements – There are several distinct subsections to this. Most are still undergoing revision or in some stage of review, so that final language is not available. Rami noted that the standard cannot get specific about many items because labs are required to “follow the permit” (the NPDES permit) which typically specifies many of the variable parameters in WET methods.

- ◆ §1.7.1 – 1.7.1.5 – Will be restructured completely.
- ◆ §1.7.1.6, except 1.7.1.6.e – Is being reviewed to ensure that details not in the WET method manuals are addressed and also to clarify some terminology (such as “randomization”).



- ◆ §1.7.1.6.e, Chemistry Support Measurements, was addressed and agreed upon early in the revision process, to clarify that such tests (pH, conductivity, temperature, etc.) need not be accredited since they are not reported as compliance measurements, unless otherwise required by the AB, but that equipment used for them must be calibrated according to the manufacturer's instructions.

One committee member belatedly raised multiple questions about this approach, suggesting that such measurements are critical for reproducibility and that it is essential to know what is required for accuracy, as manufacturer instructions range from non-existent to stringent. The issue of traceability (per the Quality Systems module V1M2) was also mentioned, as was the need to be clear in the report to the client about what tests were not accredited. There was also some discussion of using language from the Microbiology module V1M5 about what constitutes an "applicable reference method" and whether the QC data for support chemistry measurements needs to be scrutinized.

§1.8 Proficiency Testing – This will be an entirely new section added to the next revision of Volume 1, along with language in the PT Volume 3 of the standard, directing PT providers to specify certain parameters to be used in WET PTs, rather than the current practice where labs perform PTs in accordance with the requirements of the NPDES permit. This will address the WET Committee's stated goal of achieving standardization of PT data so that the results are comparable among the small number of WET labs. The language in the WET module will require that a laboratory document its compliance with the specifications from the PT provider in six different areas, and assessors will be able to verify that the PTs were performed appropriately. This scheme was agreed upon in the January 2021 TNI virtual conference, during a joint meeting of the PT Program Executive Committee, the PT Expert Committee and the WET Expert Committee, and the language for the standard has been drafted but not yet reviewed.

Other points noted by Rami were:

- ◆ for PTs/DMR-QAs where only 2-3 labs participate, those tests should be dropped from the requirement;
- ◆ PMSD only applies to the NOEC endpoint, and the WET committee would like to drop that endpoint completely; and
- ◆ Regarding statistical significance, the WET guidance is not comprehensive.

At this point, there were no further questions. Lynn predicted that the Draft Standard may be available for comment sometime during calendar 2022.

Wednesday, August 11

Proficiency Testing Program Executive Committee

Committee Chair: Shawn Kassner, Pace Analytical Services

Radiochemical PT Limits

Shawn shared a PPT regarding the development of the limits.

He would now like to send it to the NELAP AC for comment and for the entire committee to review it for additional discussion during the September meeting.



PTPA Reports

A2LA

- ◆ 12 analytes have failure rates larger than 10%. This accounts for less than 1% of the data.
- ◆ In conclusion - No big changes between 2020 and 2021. No analytes with average failure rates over 20%.
- ◆ The 4 analytes to look at are Aroclor 1221, Benzo(a)anthracene, Dinoseb and Mercury.

ANAB

- ◆ There was one complaint received – a mislabeled PT test item.
- ◆ Residual Free Chlorine – 5 of 12 studies less than 90% pass rate. They are looking into this further. One provider.
- ◆ Failure rates consistent.

Someone asked about preparation methods on FoPT tables. Shawn noted that it is on the Committee's list of things to look at. Getting data from the labs could be difficult. Not all PT Providers are requesting it.

Carl noted another issue is different technologies for the same analytes. ICP vs ICP MS. Shawn commented that these types of issues are brought to the committee by PT Providers.

PT Program Metrics and Charter

- ◆ What is the purpose of the PT Programs?
 - ◇ To provide PTs for labs to demonstrate they can analyze them to a known value
 - ◇ Equivalency between labs
 - ◇ Demonstrating competency
 - ◇ Method evaluation
 - ◇ Method validation
 - ◇ Some labs use PTs for Demonstration of Capability for personnel
 - ◇ Uncertainty
 - ◇ Method equivalency
 - ◇ Independent spot check – does not need to include every analyte
 - ◇ Comment: They do not accurately assess lab performance in regard to reporting. Reporting PTs is very different than reporting regular samples.
 - ◇ PTs can be used as part of Corrective Action
 - ◇ Comment: Successful results are not as important as failures.
- ◆ How many labs are using PTs as part of their regular operations? Is this something for the Advocacy Committee to look at? Need a simple poll. Pull from LAMS database. Jerry will bring this up with Advocacy. Shawn will try to attend on Thursday.
- ◆ How do we measure that we are being successful in meeting the goals?
 - ◇ Need to talk to PTPA's about what data is available and what is confidential.
 - ◇ Work with Advocacy.
 - ◇ Become more involved in evaluation teams.
 - ◇ Review material from Jerry and how we can use this to involving non-TNI ABs.



New FoPTs

- ◆ CA Microplastics session Tuesday - Listen to Christine Sotelo's presentation. She is interested in possibly developing PTs and limits. Asking how to do this and wants TNI's help.
- ◆ Jerry commented: Also SARS-CoV-2 in WW and PFAS.
- ◆ Shawn reminded people that we will be looking at Air too.
- ◆ Microcystins - PT in DW- CA has new FOAs, pseudomonas in PT in DW. Jennifer noted these are being discussed with the next updates to the drinking water regulations. Shawn will ask Christine about this.

Subcommittee Updates:

Chemistry FoPT

- ◆ PFAS – reviewed the data, but there was not as much data as preferred. The Committee is working on a survey to get information from the labs to help with PFAS discussion.
- ◆ Looking at dissolved solids too.

Microbiology FoPT

- ◆ Jennifer Best. The Committee has not been meeting because there is nothing on their plate. The Drinking Water MUR is on their radar.
- ◆ Shawn and Jennifer talked about Legionella and adding that to the FoPT table.

Field Activities Committee

Committee Chair: Scott Haas, Environmental Testing, Inc.

The Committee worked on the FSMO Standard update today. Scott provided some history to share how the Committee got to this stage. The Committee started with ISO/IEC 17025:2017 and then inserted TNI language and missing ISO/IEC 17025:2005 language. The Committee is now going back through this document to decide what to keep from the 2014 Standard and ISO/IEC 2005 language, and make additions to improve the Standard.

Marlene is also working on Volume 2 – the AB portion of the Field Standards. She sent a DRAFT update around to the ABs and committee members. She has some comments from ANAB and PJLA. She is hoping to incorporate these and send them out to everyone for comment in 30 days. She used the Draft NELAP version of this Standard to help with this update. She hopes to have a Draft Standard for the Committee to vote on by the end of the year.

Scott brought up a copy of the document (Standard Update) to work on. The black italic language is ISO/IEC 17025:2017 language (none of this language can be deleted), the blue italic language is from ISO/IEC 17025:2005 (language that didn't make it into the 2017 version) and the regular blue text is from the TNI 2014 FSMO Standard.

Section 5.6: Do we need a quality manual? See Section 8.2. Marlene does not think we need a Quality Manual. Ilona noted that Quality Systems is working on this too and we should keep track of what they decide to do. Add note to introduction about following more stringent requirements imposed by states, regulations, or clients. See 6.2.2 note. Doesn't need to be added to introduction.



Section 5.6 d: Remove requirement for Quality Manager in favor of defining specific responsibilities required by the Standard. Doesn't necessarily need to be done by one person with the Quality Manager title.

Marlene noted that we need to make sure the responsibilities are clear and who is responsible and has the authority.

The Note in 6.2.2 should be a requirement. It should not be a Note. It should also apply to the entire Standard and not just 6.2.2.

The Committee decided to eliminate all the blue language in Section 5.6. It is all covered within the new ISO/IEC language.

Section 5.7: Delete blue language.

Section 6.2.2: The Note in 6.2.2 should be a requirement. It should not be a Note. It should also apply to the entire Standard and not just 6.2.2.

The Public Webinar had a comment to develop language to require a demonstration of capability for field personnel. Marlene noted that would have to be broken down. Scott pointed to Section 6.2.3.

Add a note to 6.2.3 stating that a demonstration of capability may be used to demonstrate competence for field test. An observation/witness of technique by a trainer may be more appropriate for sample collection activities. These may be incorporated into internal audit activities. There was another comment that PT studies might also be used where applicable.

Section 6.2.3: Remove blue language. Add: This shall also include any certifications or licenses required.

Section 6.2.4: Remove blue language.

Section 6.2.5: The Committee read Sections 8.2.2 and 8.2.3. The following comment was added to this section:

Consider adding something along these lines. See previous discussion at 6.2.

The laboratory shall provide evidence that top management has communicated the importance of meeting customer, statutory, and regulatory requirements.

Laboratory policies shall include the importance of meeting customer, statutory, and regulatory requirements.

There was agreement to remove blue language in c) and d). No need to add the need to evaluate effectiveness. It is covered by monitoring competence.

Should safety language be added? Change last bullet from "should" to "appropriate." The first two bullets are suggestions and could just be notes. Bullet 2 changed to "should" instead of "shall".

It was commented that Safety doesn't belong in the Standard. Marlene noted this is only saying it should be considered in planning, not how to do it. There was general agreement to leave these in with the changes above.



There was a comment to add something about vehicle safety too.

Scott recommended adding an annual data integrity training requirement to item c, including the level of detail we deem appropriate from 4.2.8 of the 2014 Standard.

There was discussion to keep this language but make it consistent with 2016 TNI Lab Standard. Should not require a specific procedure.

From 2016 Lab Standard

4.2.8.1 The laboratory shall establish and maintain a documented data integrity system. There are four (4) required elements within a data integrity system. These are

- ◆ 1) data integrity training,
- ◆ 2) signed data integrity documentation for all laboratory employees,
- ◆ 3) periodic in-depth data monitoring, and
- ◆ 4) data integrity procedure documentation.

The data integrity procedures shall be signed and dated by top management. The requirements for data integrity investigation are listed in Section 4.16. The requirements for data integrity training and documentation are listed in Section 5.2.7.

Management shall annually review data integrity procedures and update as needed.

a) Laboratory management shall provide a procedure for confidential reporting of data integrity issues in their laboratory. A primary element of the procedure is to assure confidentiality and a receptive environment in which all employees may privately discuss ethical issues or report items of ethical concern.

Adopt the language from NELAP instead of the 2014 FSMO language. There was agreement.

Scott thought the 2014 language in 5.2.2.2 would make a good note to go along with item f being kept above rather than making it an absolute requirement. Adding it as a note allows room for creativity on the part of the FSMO while also giving an auditor ground for at least making an observation if the FSMO plan is subpar.

Section 6.3.1: Delete blue language (covered in new Section 6.3.1) except make 2014 language in 5.3.1 a note:

NOTE: Field personnel should document sampling and measurement conditions that may affect the quality of results including, but not limited to, air temperature, ambient conditions, weather conditions, tides, stream stage, etc. Descriptions of sample conditions (e.g. turbidity, odor, less than optimal sample quantity, etc.) should also be noted.

Section 6.3.6: Delete language noted from Summary of Changes document to make an addition. It was decided this information is actually addressed in new Sections 7.3 and 7.4.1.

There was discussion on whether to use “must” or “shall.” Other committees are moving over to use of “must.” We can state they are equivalent or start using “must.”

Section 6.4: Delete blue language.



Section 6.4.2: Retain blue language from 2014 Standard, but make 5.5.2.1 a note.

Section 6.4.3: Move blue language from 2014 Standard 5.6.2.1.3 into this section. Delete all other blue language.

Section 6.4.5: Change second sentence originally from the 2014 Standard 5.5.6.1 to “Processes” instead of “The FSMO shall establish and maintain procedures.”

Section 6.4.6: Delete blue language. See new 7.6.

Section 6.4.7: Language originally from the 2014 Standard 5.6.2.1.4 is more along the lines of testing, not sampling. This needs to be rewritten to help assessors understand when it applies / possibly taken out / revised as a note / notes.

Remove blue language dealing with calibrations programmes.

Section 6.4.1.2: Delete blue language.

Section 6.4.1.3: Scott had suggested adding language suggested by the Summary of Changes document as a new subsection under 6.4 of the Draft Standard. The discussion today pointed out that these items are technically covered in other elements of Section 6. Perhaps these specifics would be better as notes distributed where applicable.

The Committee finished up the review of Sections 5 and most of Section 6. Review ended at 6.5 (Metrological traceability).

Thursday, August 12

Advocacy Committee

Committee Chair: Steve Arms, Florida DOH (Retired)

Under accomplishments, Steve noted:

- ◆ Jerry’s presentation on the State of National Accreditation was well received.
- ◆ Susie Arredondo’s presentation on the Mentoring Initiative was well done and is available for viewing. She reported 9 labs had applied to be mentored, but only 5 mentors are available. Jerry will put this on the TNI Board agenda.

Under goals, Steve noted:

- ◆ We have not yet taken any action on updating the “Introduction to TNI” presentation and converting it to a webinar.
- ◆ Jerry is working with ACIL and APHL to make a list of state contacts for sharing the State of National Accreditation report.
- ◆ We have one potential addition to the TNI Ambassadors, Mike Delaney. He would be the Ambassador to Region 1.

Nominations for 2022 Board of Directors

By Sharon Mertens, MMSD

The election for new Directors will begin soon and nominations for individuals to serve a three-year term on the TNI Board of Directors are now being accepted. TNI members may self-nominate or nominate another individual. There are up to eight (8) open positions for 2022.

TNI is governed by an elected Board, including five (5) officers. Directors are responsible for decisions regarding TNI's goals, objectives, and allocation of resources. By law, Directors are obligated to

- 1) act only in the best interests of TNI and to avoid conflicts of interest;
- 2) act honestly, in good faith, and on an informed basis when making decisions; and
- 3) pursue the objectives of TNI's mission.

TNI holds in high regard Directors who accept these obligations to serve as stewards of the organization.

Having a strong Board of Directors is vital to the strength and future of our organization. Our Board is balanced and has representation from all recognized stakeholder groups.

TNI's Board culture is characterized by full and open participation by all Directors. We believe that this approach maximizes group energy to address major issues facing our profession and organization. We rely upon diverse perspectives to reach well-informed decisions that further our mission. Our Board exercises strategic leadership through its focus on policy, direction, and strategy.

Qualifications for Directors

The Nominating Committee seeks candidates for the TNI Board of Directors who demonstrate strong leadership, commitment, and contributions to the field of environmental laboratory accreditation. We need candidates who have a broad knowledge and awareness of issues facing TNI and are willing to uphold TNI's mission, goals, priorities, and Code of Ethical Conduct.

Directors must demonstrate a commitment to TNI's priority to be a highly functioning organization that is continually enriched by its commitment to balance and inclusion and must possess strong interpersonal skills with the ability to objectively consider various perspectives to guide major policy decisions.

In addition, Directors need to be able to make the necessary commitment of time and other resources to serve effectively as a Director and to serve as an effective ambassador for TNI and its principles.

Finally, a Director must be a current member of TNI.

These qualifications are designed to ensure that elected Directors are prepared to fulfill their designated responsibilities, including:

- exercising fiduciary responsibilities and stewardship with regard to TNI's goals, policies, and allocation of resources;
- contributing to a policy governance model that provides leadership for TNI with a focus on mission; and
- identifying and cultivating future leaders.



Time Commitments of Board Service

Directors are elected for a term of three years and are renewable. The Board meets by teleconference monthly and in face-to-face meetings, as necessary.

This year, we have two (2) director openings for partial terms. This is due to the resignation of Curtis Wood and the death of Bob DiRienzo. We are seeking nominees willing to serve the remainder of those positions – that is, a two-year term. To maintain stakeholder balance, we are looking for candidates from the “other” and “accredited organization” stakeholder groups.

Directors receive detailed agenda materials for study prior to each meeting. From time to time Directors may also volunteer or be asked to serve on committees that may conduct business by email, conference call, or additional meetings.

If you are interested in serving on the Board, please complete the [TNI Board Nomination Form](#).

Special Note Regarding Federal Officials: Federal laws prohibit individuals that work for the Federal government from serving on a Board of a non-profit organization in a fiduciary capacity. This law has been interpreted differently by various Federal agencies, but for the sake of consistency, TNI has decided that any Federal official that wishes to serve on the TNI Board can only do so in an Ex-Officio role. Currently, three Ex-Officio Directors, representing the Department of Energy, Department of Defense, and Environmental Protection Agency, serve on the TNI Board. If you are a Federal official and would like to serve on the TNI Board, please contact Sharon Mertens, the Chair of the Nominating Committee, at SMertens@mmsd.com.

2022 Election Timeline

November 1 –

December 31, 2021..... Nominations accepted

January 3-14, 2022..... Nomination Committee will review the nominations and prepare a slate of candidates.

January 17, 2022 Voting opens with the announcement of the slate of candidates on the TNI website

February 17, 2022 Voting closes

March 16, 2022 Newly elected Directors assume office

Finally, all TNI members have the opportunity and responsibility to vote to select the TNI Board of Directors. The process is through our website and is easy and quick. Our membership is not large; each and every member's vote can make a difference.

NEMC 2022 Call for Abstracts

By Earl Hansen, TNI

Organized by The NELAC Institute (TNI), the 2022 Environmental Measurement Symposium is a combined meeting of the National Environmental Monitoring Conference (NEMC) and the Forum on Environmental Accreditation. It is the largest conference focused on environmental measurements in North America, and this year is planned as an in-person event for the week of August 1, 2022. Abstract submissions should be made through the Symposium website abstract submission link at envirosymposium.group. This year's Symposium theme is *Where Do We Go from Here?* The NEMC Steering Committee is inviting abstracts for oral or poster presentations in these specific topic areas:

Topic Areas for Abstracts

- Academic Research Topics in Environmental Measurement and Monitoring
- Advances in High Resolution Mass Spectrometry
- Advances in Sensor Technologies in Environmental Monitoring
- Air Monitoring, Methods, and Technology
- Analyzing Microplastics in the Environment
- Best Management Practices for Environmental Laboratories
- Challenges of Certified Reference Materials for Emerging Contaminants
- Community Based Monitoring and the Role of Citizen Science
- Collaborative Efforts to Improve Environmental Monitoring
- Crafting Consensus Methods for Environmental Sampling and Measurement
- Data Quality, Management, and Review
- Drinking Water
- Ensuring Reliable Data
- Environmental Forensics
- Identifying and Combatting Inappropriate Laboratory Practices
- Instrumentation Focus: Reducing Interferences in ICP/MS
- Laboratory Informatics
- Metals Analysis and Remediation
- New Organic Monitoring Techniques
- Operational Issues Impacting the Environmental Laboratory Industry
- Polyfluoroalkyl Substances (PFAS) in the Environment
- Public and Private Environmental/Public Health Laboratory Partnerships
- Reinventing the Regulatory Framework
- Shale Oil and Gas
- Using Laboratory Data to Drive Infrastructure Change: Upgrades and Maintenance
- Wastewater Surveillance
- Where Do We Go from Here?

National Environmental Monitoring Conference (NEMC)

Dr. Charlie W. Carter Award

By Lara Phelps, USEPA

Dr. Charles (Charlie) William Carter dedicated over 30 years to the environmental laboratory business and community. Considered a highly respected environmental testing genius by everyone fortunate enough to know him, he was brilliant and had relentless energy, work ethic, and passion for advancing the environmental testing industry by providing critical scientific expertise and support. Charlie was deeply involved in many environmental organizations and a frequent speaker at conferences, forums, and meetings. He was a leader in the industry and one you could count on always pushing the envelope to help the environmental measurement, monitoring, and laboratory community excel in meeting the highest levels of integrity and quality.



This award has been established to recognize a technically competent individual and leader in the environmental measurement, monitoring, or laboratory industry, embodying Charlie's strengths in scientific expertise, communication, and mentoring. One recipient will be selected annually and recognized at the National Environmental Monitoring Conference (NEMC) as part of the Environmental Measurement Symposium (Symposium) held jointly with the Forum on Laboratory Accreditation. The recipient will provide the Monday Keynote Address at the Symposium, receive free registration for the full Symposium, and be presented with the award in the year that follows the nomination.

Nominations will open on the first day of each year's Symposium and close on January 31st of the following year. Submissions must be made through the Environmental Measurement Symposium website (envirosymposium.group) and not exceed three (3) 8.5 x 11 inch pages of single-spaced, standard twelve (12)-point type with one (1)-inch margins.

All nominations must include the nominee's name, affiliation, address, phone number, and email address, in addition to a written submission considering the following criteria:

1. What technically innovative and impactful contribution(s) has this individual made to the environmental measurement, monitoring, and/or laboratory industry?
2. How does this individual demonstrate their understanding of the technology and policy implications this (these) innovative and impactful contribution(s) have on the industry?
3. How does this individual communicate, mentor, and/or outreach throughout the community to share this (these) contribution(s)?
4. In what ways does this individual demonstrate their leadership by giving of themselves?
5. What professional organizational and/or community membership(s) does this individual hold in addition to leadership service within them?

THE INSTITUTE REVIEW

November 2021

NEMC Dr. Charlie W. Carter Award cont.



Each nomination must also be accompanied by the name, affiliation, address, phone number, and email address of two nominators to complete the submission. Self-nomination is not permissible.

The NEMC Steering Committee, which is comprised of representatives managing the conference in addition to representatives from federal government, state government, laboratory community, and industry will serve as the independent review panel for award selection. The selected recipient and their nominators will be notified by March 15th of the award year.

EPA Water Laboratory Alliance (WLA) 3-Day Virtual Security Summit

Water Sector-related emergencies demand attention and advance preparation, especially during a global public health crisis. To help you prepare for these emergencies, this year's U.S. EPA Water Laboratory Alliance (WLA) Security Summit will take place VIRTUALLY on November 16-18, 2021.

The virtual Security Summit will feature:

- ◆ Educational programming geared to the unique demands of wastewater and drinking water utilities;
- ◆ State of the art discussions on challenges driven by climate change and cybersecurity threats;
- ◆ Opportunities to become familiar with valuable WLA resources such as the Water Contamination Information Tool (WCIT), the Compendium of Environmental Testing Laboratories (CETL), and others;
- ◆ Engaging presentations on environmental justice in the Water Sector; and
- ◆ A collaborative tabletop exercise, which includes a scenario-based water contamination event where you can update your utility's Emergency Response Plan.

Day 1 will feature state of the art discussions of the challenges presented by climate change and cybersecurity. Speakers will present useful resources from EPA's Water Security Division, partner utilities, and laboratories to support preparedness and response efforts for you and your stakeholders.

On Day 2, we are excited to host panel presentations on environmental justice, a spotlight on Tribal utilities, and a special session highlighting WLA emergency response planning. The resources presented in these sessions, paired with the expertise of our panelists, will enhance your water contamination response readiness.

Day 3 will walk participants through a collaborative WLA Tabletop Exercise, featuring a scenario-based contamination event as a backdrop for developing emergency response plans that address analytical support.

For more information and to register for the EPA Water Laboratory Alliance (WLA) 3-Day Security Summit, see the [WLA Security Summit webpage](#).

The Role of Effective Leadership in Quality Systems Implementation

By Trinity O'Neal, Austin Water

Laboratory leadership is tasked with implementing TNI and other quality elements through our laboratory quality management plan. As leaders, we come up with amazing ways to meet these requirements and swiftly put into action successful workflows for our team to follow, without fail. We communicate these plans to our team and the plans are implemented without any issues or ambiguity. These workflows are so effective, in fact, that we never have to make any improvements, and they stand the test of time. Then, we pat ourselves on the back! Job well done, Leader!

I hope by the end of reading that you sensed a small level of sarcasm. I could wager that most of us look to achieve the following goal or some version of it: Implementing swift and streamlined action that not only gets the job done, but gets it done in a way that is sustaining. There can be serious consequences to unsuccessful quality management implementation. We therefore work hard to create systems, plans, and workflows, on top of the other responsibilities that we have in laboratory leadership, such as budget, personnel, and answering to stakeholders.

What I have experienced myself, as well as understand after talking to other leaders, whether it be lab managers, supervisors, quality assurance managers, or team leads, is that we focus on meeting the requirement, missing the underlying elements of how these plans are put into action. We talk about our pain points and come up with great ideas to meet the requirements and eliminate obstacles, but do we ever stop to think about how our leadership affects the laboratory's success in implementation? By definition, "leadership" is about leading people. Sounds like a no-brainer, but when writing about a laboratory leader's hopes, dreams, and the sweat and tears associated with quality management implementation, up to this point, never did I mention the words "person" or "people." A swift Google search will tell you that the most valuable asset in an organization are its employees. This is because the employee - a person, an individual contributor, and the one doing the work - carries with them unique skills, knowledge, and experience to perform the job. In addition, and in my opinion, more importantly, the employee can champion the goals of the laboratory...or not. Making a system successful...or not.

In 2019, I gave a workshop on "The Practical Implementation of the 2016 TNI Standard." One of the first slides said the following:

"How To Make Implementation Work: You can have the best process or plan in the world, but it won't be effective without accountability, engagement, commitment, and a positive, forward moving culture."

I thought it important this disclaimer to get the attendees in the mindset of including their team in implementation activities; however, getting people involved is only half the battle. Fostering a culture of involvement, among other things, can serve as a foundation to sustain implementation efforts, but that includes a lot of important details that we as leaders may still have to learn through trial and error, even after receiving formal training. There are many, MANY tools for leadership and management out there, but distilling



it down into a doable leadership approach can take time that many of us feel we don't have. However, striving for effective leadership is not an option – it is very much a necessity. Although we may not discuss the “how-to's of leadership” enough in the TNI setting, the 2016 TNI Standard V1M2 4.1.5 does mention employees having the resources needed to carry out their duties, including “the implementation of the quality system and ensuring that they are aware of the importance and relevance of their activities” and “how they contribute to the achievement of the quality management objectives.” This sounds like leadership activities: Fostering a culture of knowledge, autonomy, buy-in, accountability, and engagement among a group of people to meet laboratory goals, and providing what is needed to the employee to ensure success.

So how do we link leadership to quality management implementation? Having more discussions on leadership is a good start! One of the best things about being engaged in TNI are the resources, including provided templates, training courses, The Small Lab Handbook, The Small Lab Advocacy group on LinkedIn, and having discussions with fellow lab professionals who may be going through the same thing as you, or with those who have addressed similar pain points. If you attended the NEMC Conference, you might have heard Rick Parmley's keynote on “Leading through Effective Leadership.” He hit on so many great points, including highlighting the need for leaders to effectively communicate trust to their employees to create engagement, ownership, and motivation. This is less about the “how-to's”, and more about how effective communication can organically create the culture we need for quality management implementation through openness, clear direction, and collaboration. If you didn't attend the conference, Rick's keynote is available on the TNI website as a training course.

Another good resource to take advantage of is using the contact information provided by speakers at conferences. If someone gave a presentation on Corrective Actions, instead of asking “How did you implement your corrective action process?”, ask “How do you get your team involved in the corrective action process?” Also, as we learn tools along the way, determine how you can incorporate them organically into your existing processes. For example, if you like the idea of implementing LEAN 5S or Kaizen practices into your lab, include it in your corrective action process by adopting the principles and lead discussions on continuous improvement and identification of waste as you develop the root cause and subsequent corrective and preventative actions with your team.

Lastly, make small moves when making changes to work culture. Sometimes our employees are just tired of hearing the same thing over and over from us, and it falls on deaf ears. There are a lot of interesting presentations or videos on the web that can fortify the point we are trying to get across. For example, if you are getting push back on an improvement idea you have, the “5 Monkeys Experiment” can be shown to get your team open to letting go of the current process and spur creativity. Similarly, if there is disagreement among the group, a double approach in conducting a Basadur survey and showing the “Super Chicken” TedTalk can get the team to understand that differences and diversity provide more valuable robustness in the group, and cohesive teamwork is better for the team over personal excellence. These are just a few ideas.

Bottom line: If we expect our team to have commitment to our organizational goals, such as quality management implementation, then we need to show a level of commitment and investment in our team by developing them, providing a space for open dialogue and ideas, and providing well thought-out workflows with opportunities for input. If improvements in leadership approach can result in this, think of how that could influence implementation efforts for the better.

Reimagining the Technical Director/ Manager Position

By Aaren S. Alger, Alger Consulting and Training, LLC

In 2020, after adopting its most recent Strategic Plan, the TNI Board of Directors established the Competency Task Force (Task Force), made up of more than twenty (20) members from the TNI community, to explore and make recommendations about whether and how to document competencies for various positions within the regulated environmental laboratory community. In early 2021, the Task Force turned its focus to qualifications, skills, and training related to the Technical Directors/Managers.

Since the late 90's, the NELAC Standard and subsequent TNI Standards have consistently established specific education and experience qualifications for the Technical Director/Manager (TD/TM) position in a laboratory. Since that time, laboratories have been faced with many difficulties associated with these qualification requirements. Difficulties can include a laboratory owner having known and proven personnel that they want to promote from within, but cannot because the preferred candidate might not have the requisite educational qualifications. Some laboratories face difficulties finding a qualified candidate that is willing to relocate to perform the functions of the TD/TM for the pay scales supported within the industry at a particular geographic locale. Other unintended consequences include that the lab may designate an individual who meets the education and experience qualifications, but is ill-suited to perform all of the functions and serves as the TD/TM "in name only."

The Task Force attempted to define general roles within the laboratory and found that each laboratory operates, and is structured, so differently that establishing the knowledge, skills, and abilities (KSAs) for even the role of a TM/TD became an exercise in frustration and did not yield usable results. However, the 2016 TNI Standard does establish many very specific requirements that the laboratory must meet, and the Accreditation Body (AB) and/or Assessors evaluate to determine compliance or non-compliance before granting or extending/renewing an accreditation certificate. The TNI Standard might identify a QA Manager or a more general "Laboratory Management" as being responsible for identifying the individual(s) who are responsible for compliance. But, regardless of who the laboratory employs or deems 'responsible,' the laboratory must ultimately demonstrate compliance.

This prompted the Task Force to shift the paradigm of Technical Manager within the accredited environmental laboratory. We all agreed that technical expertise is invaluable and absolutely necessary. Some of us wanted to remove the terms and citations related to TM/TD from the Standard entirely, while others of us thought the concept of Technical Manager/Director should be reimagined. After discussion with all of the expert committees, the NELAP AC, and presentation to the TNI stakeholders at the summer conference in Bellevue, the Task Force reworked a three-pronged proposal.

The laboratory community was virtually 'all-in' with removal of the TD/TM requirements, which, if adopted, would allow the individual laboratory management and ownership to determine who in the laboratory is responsible for compliance provided that compliance is achieved. In contrast, the ABs were averse to this proposal because, in their view, the risk was not acceptable. The Task Force always recognized that without buy-in from the NELAP Accreditation Council (AC), the proposals would fail and after multiple conversations,



decided to use the New Jersey DEP's state regulations as a template where extensive experience could be used to apply for an exception to the educational experience requirements.

After some additional discussion with members of the AC, the Task Force is considering replacement of the TD/TM terminology with a new concept of a Technical Expert (TE). The TE would serve as the individual with expertise and experience with the assigned analytical technologies and other associated responsibilities (such as sample preparation, instrument operation, quality control, calibration, data evaluation, etc.) and must have the requisite KSAs to know and understand the technical aspects of the laboratory's methodology. This shift in concept from a "Technical Manager" to a "Technical Expert" would allow the laboratory to determine separately who manages or supervises laboratory employees from who understands and serves to ensure that the laboratory's instrumentation and technical operations are functioning satisfactorily, while meeting the needs of the NELAP AC regarding minimum qualification requirements, and allowing for exceptions for individuals with extensive experience for the laboratories.

When all the details are finalized, the Task Force will deliver the TE concept to the Quality Systems Expert Committee with a recommendation to include it in the next revision of the Quality Systems module (V1M2) of the TNI Standard.

The Task Force understands that we have a long road ahead of us and we do not expect that we have all of the answers. We are a small group of dedicated volunteers who want to see our community succeed. To that end, we welcome any feedback or participation in our endeavors. We want to ensure that the NELAP AC can enforce the Standard consistently and fully; we want to ensure that the laboratories can hire and promote the best person for the job; and we want to ensure that the data users are confident in the quality of the laboratory's accreditations which brings data of known and documented quality.

This issue will be discussed in a special session planned for TNI's Forum on Environmental Accreditation scheduled for January 17-21, 2022 in San Antonio, TX and all will be invited to participate.

EPA Updates from NEMC

By Jerry Parr, TNI

On August 2, 2021, as part of the National Environmental Monitoring Conference (NEMC), the Environmental Protection Agency (EPA) provided updates from the RCRA, CWA, and SDWA programs. Portable Document Files (pdfs) of these presentations are available on the NEMC website at <https://envirosymposium.group/meeting/2021/techprog.php>.

EPA Clean Water Act Methods

- Developing methods for E. coli and enterococci by droplet digital PCR for ambient water.
- Updating Method 900.0 for gross alpha and beta based on work by the drinking water program.
- Working with ASTM and ORD for a method for Adsorbable Organic Fluorine.
- Working with DOD to develop Method 1633 for PFAS. This method was published in early September and a copy can be found here: <https://www.epa.gov/cwa-methods/cwa-analytical-methods-and-polyfluorinated-alkyl-substances-pfas>
- Working with ASTM and Standard Methods for a method for total nitrogen.
- Conducting a pilot study for continuous monitoring for residual chlorine.
- Developed Method 1628 for PCB Congeners by Low Resolution GC/MS. A copy of the method and supporting validation data can be found here: <https://www.epa.gov/cwa-methods/pcb-congeners-low-resolution-gc-ms-method-1628-not-yet-approved>

Safe Drinking Water Act Updates

- America's Water Infrastructure Act requires small systems (3,300 to 10,000) to apply to UCMR 5. This will add > 5,000 systems.
- UCMR 5 lab approval program: UCMR_Lab_Approval@epa.gov.
- Microbial and Disinfection By-Products (MDBP) rule identified eight analytes for review: chlorite, Cryptosporidium, haloacetic acids, heterotrophic bacteria, Giardia, Legionella, trihalomethanes, and viruses.

SW-846 Methods Program Update

- Published a revision of Methods 3512 and 8327 for PFAS. These methods are available at: <https://www.epa.gov/hw-sw846/sw-846-update-vii-announcements>
- See **Attachment 1** for more details about the changes to 3512/832.
- Revising Method 3050C for Acid Digestion of Solids (see **Attachment 2**).
- Developing LEAF Methods for Organics (see **Attachment 3**).
- Revising Methods 3050C and 5035A and solicit comments in late 2021.
- Developing headspace method for "light hydrocarbons."



- Revising Chapter 9 (See Attachment 4).
- On the Horizon:
 - ◆ 6200: X-Ray Fluorescence for metals
 - ◆ 1340: In-vitro Bioaccessibility for lead
 - ◆ 3110/6870: Arsenic species by IC/ICP-MS
 - ◆ 0023A, 3542Q/8290: Chlorinated Dioxins and Furans from stationary sources
 - ◆ 8321: HPLC/TS/MS or UV for non-volatile compounds
 - ◆ Non-porous graphitized carbon cleanup for pesticides



Attachment 1 Changes to Methods 3512/8327

Definitions and designations for target analytes table in Section 1.

Recommends statistically-based recovery limits once the laboratory has acquired sufficient data.

Qualitative identification criteria

- Secondary product ion ratio: recommended $\pm 50\%$ acceptance limit.
- Retention time:
 - ◆ Primary: within ± 0.1 min of corresponding isotopically labeled analog.
 - ◆ Secondary: within ± 0.2 min of target analyte in preceding standard.

Aqueous holding time: 14 days

- Guideline until formal holding time study is published.

SW-846 Methods for non-Method Defined Parameters are considered guidance, and isotope dilution is an allowed modification, as long as:

- Laboratory demonstrates it can generate data of appropriate quality for the intended application (i.e., meet project-specified Data Quality Objectives).
- Modification is acceptable to the end data user.

Method 8327 was validated using external standard calibration, and EPA met validation study goals for 23 of 24 target analytes

- exception: 6:2 FTS, due to contamination in half of participating labs).

Average recovery of target analytes and isotopically labeled surrogates in study samples was near 100%.

See “Frequent Questions” in SW-846 Update VII Announcement for more information and references: <https://www.epa.gov/hw-sw846/sw-846-update-vii-announcements>



Attachment 2 Changes to Method 3050C

Strong acid digestion to solubilize metals that could become “environmentally available.”

3050B has different digestion steps for ICP-OES (6010D)/AA and ICP-MS (6020B).

- Two digestions needed to analyze a solid sample by both ICP and ICP-MS.
- No HCl added during digestion of samples to be analyzed by 6020B.

ICP-MS collision cell technology reduces Cl-related interferences, so system can tolerate more Cl in digests

3050C changes:

- Add HCl earlier, improves performance of some metals (e.g., Antimony).
- One solids digestion for both ICP and ICP-MS.

Post method for public comment by the end of 2021.

Attachment 3 LEAF Methods 1313a and 1316a

Leaching Environmental Assessment Framework

- Parameter-based aqueous leaching methods, LeachXS-Lite software for data management/ visualization/analysis, case studies.

Evaluate effect of key environmental conditions on leaching behavior

Modifications to accommodate SVOCs:

- Replace plastic with glass, stainless steel.
- HCl/KOH instead of HNO₃/KOH for pH adjustment.
- Alum or centrifugation for liquid-solid separation - no particle filtration for organics.
- Sorbent for 1315 to maintain gradient for evaluation of contaminant flux for less soluble target analytes.

Start multi-laboratory validation in Spring or Summer 2022



Attachment 4 Revisions to Chapter 9 (Sampling)

Add new methods series (2000 series) for representative sampling

- Metals in Soils - Written by US Army Corps of Engineers.
- Explosives Residues in Soils – Currently an appendix to Method 8330B.
- Volatile organic chemicals in soils.
- Passive sampling of PAHs and PCBs in sediment – SERDP-funded project.

TNI Expert Committee Openings

By Paul Junio, Northern Lake Services

TNI's "Procedures for Expert Committee Operations (SOP 2-101)" requires that we annually post the number of openings available for Committee Members for each of our Expert Committees. Regardless of when committee membership changes, members who are interested in participating on committees are encouraged to submit an application. Membership on an Expert Committee can be time-consuming, but also very rewarding. If you feel that you are able to provide input on the basis of your Stakeholder Group (Accreditation Body, Laboratory, or Other), and have an interest in joining a committee, the table below shows the number of committee members present on each Expert Committee as of the conclusion of the Summer Meeting, along with the Interest Category they represent.

Committees may have from 5 to 15 members and must maintain balance among the different stakeholder groups. Balance means that no one stakeholder group represents more than 50% of committee membership. Also, Committee membership is limited to no more than two (2) members of the same organization sitting on a particular Expert Committee, unless approved by the TNI Board of Directors. While TNI members are allowed to serve on more than one Expert Committee at a time, keep in mind the time commitment hoped for among our volunteers.

Committee	AB	Lab	Other
Asbestos	2	4	3
Chemistry	5	6	3
Field Activities	4	6	2
Laboratory Accreditation Body	3	3	5
LASEC	4	3	4
Microbiology	4	5	3
PT Expert	2	5	4
PTP Executive Committee	4	3	2
Quality Systems	3	5	5
Radiochemistry	4	3	4
Stationary Source Audit Sample	2	4	3
WETT	5	7	3

All TNI members are welcome to apply by filling out an application. You will be notified that your application has been received. New members are generally added at or during the first Expert Committee meeting of the calendar year, although they may be added at any time. Expert Committee members serve a three-year term, with the possibility of serving a second consecutive term.

The Laboratory Accreditation Body Expert Committee will be in particular need of members. If you have an interest in a committee that is already full or cannot accommodate another person in your stakeholder group, remember that you can also participate as an Associate Committee Member. Any TNI Member can request to become an Associate Member of any Expert Committee, by contacting the Program Administrator or Chair of the particular committee. Associate Members are frequently chosen to become full Committee members.

These numbers are subject to change. With all of that said, if you are interested, but still have questions, feel free to [contact me](#), and I will help where I can.

NEFAP Update

By Ilona Taunton, TNI

The National Environmental Field Activities Program (NEFAP) encourages the application of ISO/IEC standards to field activities as a way to improve overall environmental data quality. Two committees drive these efforts – the NEFAP Executive Committee and the Field Activities Committee (FAC). NEFAP is separate and distinct from other TNI programs. This is not a regulatory program. The information may be used to support regulatory reporting by requiring the field sampling and measurement organization (FSMO) to be accredited to the TNI Field Sampling and Measurement Organizations (FSMO) Standard in the contract with the FSMO.

The mission of the **TNI Field Activities Committee (FAC)** is to develop standards for accreditation bodies and field sampling and measurement organizations (FSMOs). The FAC engages experts to develop consensus-based standards with the goal of improving the consistency and implementation of field sampling and testing methods. The standards, policies, procedures, and implementation programs developed by the FAC may be used by any type of FSMOs such as consulting engineers, sample collection organizations, regulatory sample collection operations, and laboratories performing sample collection. Input from all interested parties is encouraged by attending the monthly FAC meetings. To learn more, visit the NEFAP website [here](#).

FSMOs may be currently accredited to Volume 1 of the 2014 Standard while Accreditation Bodies are governed by Volume 2. The FAC is currently developing the third update for both of these standards. This update will incorporate ISO/IEC 17025:2017 into Volume 1 and ISO/IEC 17011:2017 into Volume 2.

All are invited to attend FAC meetings to assist in the development of this standard. Contact the Chair of the FAC, Scott Haas (shaas@etilab.com) or TNI staff, Ilona Taunton (ilona.taunton@nelac-institute.org) for additional information.

The NEFAP Executive Committee (EC) establishes and implements guidance, policies, procedures, and tools necessary to promote and maintain a national accreditation program for FSMOs. The Executive Committee is composed of representatives from various interested parties. TNI is making an effort through this committee to promote consistent application of the NEFAP Standard through the accreditation of FSMOs across federal and state agencies and accreditation bodies.

In 2021, the NEFAP EC continued to focus on implementing elements of the 2020 TNI Strategic Plan.

The NEFAP EC is marketing and promoting NEFAP and the merits of accreditation for field activities. The NEFAP EC has established a subcommittee dedicated to identifying opportunities and developing marketing media to share the benefits of the program for all stakeholders. We are actively seeking opportunities to submit articles and/or presentations to applicable forums. If you or anyone you know are aware of a group, conference, or periodical that would be interested in learning more about NEFAP, please contact the chair of the EC or the marketing subcommittee.

The NEFAP EC established a subcommittee focused on identifying training needs and opportunities for the field community. This group is developing training course(s) as well as identifying opportunities for TNI to facilitate additional training to help support the stakeholder groups involved in NEFAP. Training is a primary component



of our strategic plan and focus of the NEFAP growth strategy. We are seeking input on training needs, requests, and opportunities from the TNI community. Should you know of any opportunities, please contact the Chair of the EC or the training subcommittee.

All are invited to attend the NEFAP marketing and training subcommittee meetings (teleconferences) to assist in the development of training courses, materials for publications, and news articles to promote the TNI program for field activities in the environmental community. Contact any of the following persons for additional information:

- Chair of the NEFAP Executive Committee, Justin B. Brown (mailto:jbrown@emt.com)
- Chair of the Marketing subcommittee, Tracy Szerszen (Tszerszen@PJLabs.com)
- Chair of the Training subcommittee, Paul Bergeron (Paul.Bergeron@LA.GOV)
- TNI Staff, Ilona Taunton (ilona.taunton@nelac-institute.org)

To learn more about NEFAP, visit us on the [TNI website](#).

Quality Systems ISO 17025:2017 – The Same Concepts Stated in a Different Way

By Paul Junio, Northern Lake Services

Do you remember years ago when TNI first incorporated ISO 17025 language into our Standard? We had to point out all those things that didn't apply (calibration tests and calibration certificates), those things that meant something different than what we were used to (standard methods wasn't Standard Methods), and those that were redundant or didn't really add to the Standard (a signed title page to the Quality Manual or the requirement to have a 'Methods Manual').

As the Quality Management Systems Committee begins to create a Draft Standard for Module 2, we are going to repeat parts of this process. There's been widely publicized debate about the future of the Quality Manual (I'll predict that we'll keep it, but described slightly differently to allow for different manners of complying with the requirement). There is a new group within TNI called the Competency Task Force, and among their daunting assignments is working toward a new set of requirements for what a Technical Manager ought to be. (Rest assured that there are also Expert Committee Chairs contributing to this process, and this will all be subject to the Consensus Standards Development Process, so comments will be received and considered once the language is drafted.)

Potentially more important than any of these items is work being done by a workgroup formed by the Quality Management Systems Committee. This workgroup is comparing the ISO 17025:2005 language to the document that has combined ISO 17025:2017 with the TNI language that exists in our current standard. The Committee wants to assure that there is no concept in the 17025:2005 language that we miss in this new Module 2.

As part of that review, the workgroup is seeing that the same language does not exist, but the new version of 17025 says the same thing in another way. For example, Section 4.1.6 of Module 2 states:

"Top management shall ensure that appropriate communication processes are established within the laboratory and that communication takes place regarding the effectiveness of the management system."

The new version of ISO 17025 says the same thing in a different way:

"Laboratory management shall ensure that communication takes place regarding the effectiveness of the management system and the importance of meeting customers' and other requirements."

Another example is found in how the appropriateness of subcontractors is maintained. Section 4.5.4 states:

"The laboratory shall maintain a register of all subcontractors that it uses for tests and/or calibrations and a record of the evidence of compliance with this International Standard for the work in question."



The new ISO language says the same thing in a different way:

“The laboratory shall have a procedure and retain records for defining, reviewing and approving the laboratory’s requirements for externally provided products and services defining the criteria for evaluation, selection, monitoring of performance and re-evaluation of the external providers ensuring that externally provided products and services conform to the laboratory’s established requirements, or when applicable, to the relevant requirements of this document, before they are used or directly provided to the customer.”

That’s an awful lot of language that doesn’t explicitly address subcontracting, but subcontracting is an external provider, so it is covered.

The short version of all that is that we will have some new language in the next version of TNI Module 2. It will be important for all of us to read what it says, and to have explanations in place when the Draft Standard is open for comment, that point out why these different words often mean the same thing as what we have been used to reading.

Silent Everyday Heroes

By Christine Sotelo, CA Environmental
Laboratory Accreditation Program

The environmental testing laboratory workforce plays an undeniably crucial role in the protection of public and environmental health. Unfortunately, due to the “behind the scenes” nature of the industry, this essential workforce often goes unrecognized. Similar to how the pandemic daylighted our medical professionals as heroes, it has also shined a light on these silent, unseen everyday heroes in the environmental testing laboratory industry. For too long, this specific industry of scientific laboratory professionals has been out of sight and out of mind. They have not received the recognition, support, and appreciation they deserve for the essential services they provide within the nation’s critical infrastructure, and especially during times of crisis. The California experience can help to illustrate this.

In March 2020, Californian’s were sent home under the Governor’s Shelter-in-Place Order to prevent the corona virus from spreading, but, undeniably, Californian’s still needed safe drinking water; they desired clean beaches, and waterbodies free from bacteria and other pollutants; they wanted to know with absolute certainty that toxic substances like PFAS weren’t infiltrating their environment and potentially causing harm to them or their children. None of the work to protect Californian’s from these public and environmental threats could be achieved without the environmental testing laboratory workforce. These essential professionals often work around the clock to produce critical data used for countless public and environmental health decisions every single day. These heroes work tirelessly in environmental testing laboratories across California to keep the drinking water and wastewater systems running and the sampling and analysis process flowing.

At the beginning of the pandemic, many of the California state agencies didn’t hear from environmental testing laboratories, assumed that they had shut down due to the shelter in place orders, and believed critical sampling would not be conducted. In addition, various California counties weren’t aware that environmental testing laboratory staff and their vendors were considered essential workers as part of the state’s critical infrastructure. This error threatened public and environmental health protection because of the failure to elevate and publicly notice the environmental testing laboratory workforce as essential workers. As the program manager of the State’s Environmental Laboratory Accreditation Program (ELAP), I received numerous calls from laboratory professionals saying their laboratories were closing down because they were not essential workers. This kicked us into gear to help elevate environmental testing laboratories and spread the word about their critical nature.

ELAP created a COVID-19 website to help distribute information to the environmental laboratory testing community and worked with our partners at the California Water Resources Control Board’s Emergency Management Program (EMP) — a program created to support situations that pose an immediate risk to waters of the state, to people’s access to drinking water or sanitation, environmental testing laboratories, or to water or wastewater utilities and their supply chains. ELAP and EMP constantly monitored the pandemic and other impacts for all hazards through the use of various emergency awareness tools, such as GIS maps and dashboards. EMP provided pertinent information to ELAP about labs that were either potentially or immediately impacted by an emergency event such as pandemic-related business shutdowns, California wildfires, or Public Safety Power Shutoff Events & Rolling Blackouts. ELAP would then reach out to these labs, and track their issues or needs they might be experiencing, such as finding another laboratory that might run



their samples if their facilities were impacted by a power failure, or reduced staff from wildfire evacuations or destruction of their laboratory. If their needs were unmet at the local and regional levels, EMP and ELAP could elevate it through California's Environmental Protection Agency and the State's Emergency Operations Center, which is a central hub for statewide coordination for emergency activities.

Although the pandemic elevated this issue to our attention in California, additional state crisis situations have brought clarity to the importance of advocating for these unseen, everyday heroes and their essential nature in California. My hope is that our lessons learned can serve as another state's cautionary tale about the importance of environmental testing laboratories and how these essential workers ensure our health and safety every single day.

Rosario's Award Winning Salsa

By Sharon Mertens, MMSD

Rosario's has been a popular restaurant in San Antonio, and one of my favorites for almost thirty (30) years. Their recipe for salsa is by far the easiest that I have made, and if you start with good tomatoes, some of the best. It has won awards and was featured in Texas Monthly magazine on several occasions over the years. When I have a good grill going, I just throw the veggies on for a few minutes to char. The salsa will keep for at least a week in the frig.

Here's the recipe as published in the magazine...

[Recipe from Rosario's, San Antonio](#)

5 medium ripe tomatoes
3 jalapeño peppers
1 medium garlic bud
salt

Charbroil the tomatoes, peppers, and garlic until blackened all over, then blend. Add salt to taste. Salsa is best when vine ripened tomatoes are used.

Enjoy!



ChairSpeaks

“Musings from the TNI Chair”:

Good Science

Last week a friend got me “The Science of Good Cooking” (Cook’s Illustrated), not telegraphing that I had to improve my game, but after seeing me many times cooking like a chemist, she thought I would enjoy delving deeper into the whys. “Master 50 Simple Concepts to Enjoy a Lifetime of Success in the Kitchen”, the book promised, along “with 400 Recipes Engineered for Perfection”. Impressive book cover: 50 concepts and 400 recipes! I wish I had gotten the abridged version. But then, who really believes that mastering anything is quick? Becoming a world expert in five easy steps can taste like scam spam.

“The Good Science of Cooking,” I incorrectly called the book when talking about it to another friend, and that mistake gave me pause. Good science...Isn’t science always good? That is what I was taught, that science is inherently good. But we do hear the term “bad science” batted about by skeptics. And there is also pseudo-science as in alchemy and phrenology. So, if pseudo-science is bad, isn’t plain science just good?

The pure pursuit of science is never bad, but like any other pursuit attempting to seek truths, it can be put to bad use. Bad science fails to follow the scientific method out of expediency or ulterior motives. So, it is not the science itself that is condemned with the word “bad,” but the process followed in an experimental design to arrive at a conclusion, or the improper framing of a hypothesis.

Trained scientists are versed in spotting bad experimental design. By questioning and suggesting alternatives to debunk a claim, they can spot bad science all the way to Mars.

What concerns me today is not the lack of ability and knowledge to evaluate scientific claims properly, but the growing propensity of educated people to distrust science, label it broadly “bad,” and to seek and believe unsustainable claims out of a distrust of all things science.

If you do not like it or cannot stomach it, call it “fake” and there will be a medium there to disseminate your views and an audience ready to believe and cite you as a source. Promote a baseless alternative, and there will be many that distrusting the canon will give credence to delusional marginalia. Witness the blobby debate around vaccination and global warming.

I understand, but do not necessarily condone, some of this behavior by considering a few concepts describing human tendencies:

- Twice is always. Something that fails a few times makes us think that all past and future attempts at it were or will be equally bad.
- It is hard to take immediate action to address a problem that progresses at a very slow rate because it is easy to believe there will always be time in the future to address it.



- Emergencies demand decisive, quick action, but when those actions lack effectiveness or are contradicted by future evidence, we tend to blame it on incompetence, not new information.
- Because objectivity is never absolute, we believe that any objective evidence shows bias and cannot be trusted.
- Because widely held notions can change with time, it is easy to conclude that all knowledge is mutable.
- We lack a good understanding of risk in deciding how far to push and how much to let go. Black and white is easier.
- Many times, we err on the side of defensibility and reliability out of fear of being proved wrong. Avoiding liability is a powerful motivator and a great constrictor.

Understanding these seven principles does not make me a master, but it carves a corner of order out of chaos and allows me continuing to make observations to eventually formulate workable hypotheses.

Recently, Apoorva Mandavilli in the New York Times (“The U.S. is Getting a Crash Course in Scientific Uncertainty”) opines that although most Americans understand basic health concepts, many are never taught how science progresses. She adds: “Is it really so surprising, then, that Americans feel bewildered and bamboozled, even enraged, by rapidly changing rules that have profound implications for their lives?”

At the heart of this, as in most things, there is a communication problem. As scientists we must communicate honestly in ways that are understandable to our intended audience. Mandavilli concludes: “The first step toward educating the public and winning their trust is to make plans, and then communicating them honestly – flaws, uncertainty and all.”

Believe science is good. Keep the faith and do not give up on the scientific method. Hone your communication to convey what you know understandably, honestly, and without distortion. Disagreement among experts leads to more discussion and eventually achieves consensus. That is very familiar to all of us at TNI. Apply the same concepts when you observe and try to understand the world you live in. If you do that at least fifty times, perhaps one day you may become a master.

Only connect.

Alfredo

Alfredo Sotomayor
TNI Chair

Member Spotlight: Carol V. Batterton

By Zonetta English, Louisville Metropolitan Sewer District

Carol worked for the Texas Commission on Environmental Quality (TCEQ) for 25 years. At TCEQ, she served in a variety of positions related to compliance and enforcement, including Director of Field Operations Division, Director of the Compliance Support Division, and Special Assistant to the Deputy Director of the Office of Compliance and Enforcement. Carol retired from TCEQ in 2004 and began serving concurrently as the Executive Director of the Water Environment Association of Texas (WEAT) and a Program Administrator for The NELAC Institute.

Carol began her involvement with national laboratory accreditation in 1993 as a member of the State/EPA focus group which was established by EPA to follow up on the report from the Committee on National Accreditation of Environmental Laboratories (CNAEL). The role of the State/EPA focus group was to develop a draft set of environmental laboratory accreditation requirements based on ISO 25 along with a proposed organizational structure following the recommendations of the CNAEL report. These draft requirements eventually led to the formation of NELAC in 1995 where Carol served on the Board of Directors and as Chair of the Board.



Carol and Calista at the Golden Gate Bridge

"I support national environmental laboratory accreditation because I spent a big part of my working life in regulatory enforcement. I know how important it is to have legally defensible laboratory data based on a sound quality management system. I also know from having been involved in developing a state laboratory accreditation program from scratch that it is not as hard as some people think it is. It is a matter of educating the right people and being patient with the process."

"Throughout my almost 30 years being involved in NELAC, INELA, and TNI I have made some amazing friends. I have been privileged to work alongside Jerry Parr and many others as we have worked toward the vision of a national environmental laboratory accreditation program."

Carol is a past president of WEAT and past chair of the Institute for National Environmental Laboratory Accreditation (INELA). She is the 2009 recipient of the Arthur Sidney Bedell award from the Water Environment Federation. Carol received a B.S. in Biology from Baylor University and a M.A. in Biological Sciences from the University of Texas, Marine Science Institute in Port Aransas, Texas.

In her spare time, Carol likes to cook, fish, watch football, and travel. Currently, she and her husband, John, have trips scheduled for river cruising in Germany, grouse hunting in Wisconsin, and sightseeing in Tuscany. She will also be making her third trip to Costa Rica for tarpon fishing in February 2022. Carol and John have three grandchildren, and Carol loves to take her grandchildren on travel adventures as well.



4th of July 2021