



THE INSTITUTE REVIEW

A publication of The NELAC-Institute

April 2018





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2018 Environmental Measurement Symposium

By Lara Phelps, USEPA and Jerry Parr, TNI

For the twelfth year, the Environmental Measurement Symposium, which represents the combined meetings of the National Environmental Monitoring Conference (NEMC) and the Forum on Environmental Accreditation (the Forum), will be meeting at the Hyatt Regency in New Orleans, LA from August 6 – 10, 2018. This year, the Symposium's theme is *"The Future Landscape for Science"*.



Some of the highlights for the week include:

- ◆ A special half-day general session focused on the conference theme, featuring Dr. Paul Gilman from Covanta, Janet Ranganathan from the World Resources Institute, Dr. Beth Karlin from the See Change Institute, and Dr. Anton Simeonov, National Institutes of Health;
- ◆ Over 180 oral and poster presentations on a variety of cutting-edge environmental monitoring issues;
- ◆ Meetings of The NELAC Institute (TNI) Committees to further TNI efforts on environmental laboratory accreditation, proficiency testing, and accreditation of field sampling and measurement organizations;
- ◆ An exhibit program showcasing the latest innovations in environmental monitoring;
- ◆ An innovative new technologies showcase featuring sensors, apps, and personal monitoring devices, among others, that are the latest innovations available;
- ◆ Three special keynote presentations on topics of general interest;
- ◆ An open meeting of the US Environmental Protection Agency's (EPA's) Environmental Laboratory Advisory Board (ELAB); and
- ◆ Three training courses on science communication and radiochemical testing.

Forum on Environmental Accreditation

The NELAC Institute's (TNI's) semi-annual meeting is an integral part of the Environmental Measurement Symposium (Symposium). Highlights from this summer's Forum include:

- ◆ An Assessment Forum and Mentor Session;
- ◆ Meetings of TNI's standard development committees;
- ◆ A special session on the 2017 version ISO/IEC 17025; and
- ◆ Meetings of the TNI executive committees that manage TNI's Proficiency Testing Program and National Environmental Field Activities Program.



As these sessions become further developed, additional details will be available on the TNI website at <http://www.nelac-institute.org>.

National Environmental Monitoring Conference (NEMC)

The National Environmental Monitoring Conference (NEMC) provides the principal forum for addressing policy and technical issues affecting monitoring in all environmental media (i.e., water, air, soil, and waste) and across all environmental programs. NEMC is co-sponsored by The NELAC Institute (TNI) under a cooperative agreement with the U.S. Environmental Protection Agency (US EPA). The technical program is organized by a committee of environmental experts from government and private industry, which brings together a balance of technical and policy topics for each year's symposium that are of interest to all.

NEMC 2018 will feature over 180 oral and poster presentations, organized into concurrent technical sessions from Monday through Friday, with a general session on Wednesday morning. A keynote address on a major topic will kick-off the start of each day.

Technical Sessions for NEMC 2018 include:

- ◆ Academic Research Topics in Environmental Measurement and Monitoring
- ◆ Air Methods & Monitoring
- ◆ Challenges and Opportunities for Solid Phase Extraction
- ◆ Changing the Paradigm for Water Pollution Monitoring
- ◆ Characterization of Perfluoroalkyl Substances in the Environment
- ◆ Citizen Science
- ◆ Collaborative Efforts to Improve Environmental Monitoring
- ◆ Data Quality, Management & Review
- ◆ Field Sampling, Measurement & Sensor Technology
- ◆ Forensic Environmental Chemistry
- ◆ Government Public Health and Private Environmental Laboratory Partnerships
- ◆ Laboratory Informatics
- ◆ Metals and Metals Speciation Analysis in Environmental Samples
- ◆ Microbial Monitoring in Ambient Water
- ◆ Monitoring for Contaminants in Foods & Beverages
- ◆ New Environmental Monitoring Techniques for Organics
- ◆ Operational and Advocacy Issues Impacting the Environmental Laboratory Industry
- ◆ Overcoming Legacy Obstacles with Innovative Approaches
- ◆ Resolving Method Differences for Volatile Organics by GC/MS with Best Practices
- ◆ Strategic Environmental Research and Development Program (SERDP)

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2018 Environmental Measurement Symposium cont.



- ◆ Spotlight on Method 6020 Instrumentation – ICP-MS Metals Analysis
- ◆ Topics in Drinking Water
- ◆ Topics in Shale Gas

Please take a few minutes to look over the preliminary program and register today. To view abstracts and the preliminary program, in addition to conference arrangement details, visit

<http://www.nemc.us>.

We look forward to seeing you in August!!!



Laissez le Bon Temps Rouler!

By Carol Batterton, TNI Program Administrator

In August of this year, attendees at the Environmental Measurement Symposium will have the opportunity to visit one of the South's greatest treasures, New Orleans, Louisiana, otherwise known as The Crescent City, The Big Easy, The City That Care Forgot, or simply NOLA. In New Orleans you will find a unique blend of French, Spanish and Native American cultures all reflected in the architecture, food and music. Our hotel will be within easy walking distance of many of the sights and the city also has a fun system of street cars to take visitors where they want to go. The Hyatt is on the yellow line.

Venues

You will certainly want to visit the French Quarter or Vieux Carré with its European style architecture. Established in 1718, the French Quarter is the oldest section of the city. Jackson Square and the famous Bourbon Street are both found in the French Quarter. Across the street from Jackson Square, you'll find the Café du Monde and its luscious beignets. On the far end of the French Quarter is the Old French Market. You can reach the market by the riverfront streetcar if you don't want to walk.

Adjacent to the French Quarter is Frenchmen Street in the Faubourg Marigny neighborhood of New Orleans. It is best known for a three-block section, which is home to some of the city's popular live-music venues, in addition to restaurants, bars and coffee shops. As Bourbon Street became more tourist-focused, Frenchmen Street has emerged as a spot for locals to party, as it is more geared toward authentic New Orleans musical and gastronomical tastes.

The Garden District of New Orleans was originally developed between 1832 and 1900 and is considered one of the best-preserved collections of historic mansions in the Southern United States. The Garden District is easily accessible using the St. Charles Avenue street car line.

The New Orleans Riverfront is the place to go to relax, eat some great seafood and just watch the comings and goings of Ol' Man River, the Mississippi. The riverfront is home to the Riverfront Outlet Mall, Harrah's Casino, and Woldenberg Park, which runs from Canal Street to Jackson Square along the riverfront. There are number of river boat cruises available from the riverfront ranging from brunch, lunch and dinner cruises to historical and jazz cruises and we are planning a dinner cruise on the Steamboat Natchez for Wednesday evening.

Museums

The National World War II Museum (<https://www.nationalww2museum.org>) has been designated by Congress as THE World War II Museum and offers visitors the opportunity to experience WWII through the eyes of the men and women who fought that war.



The Audubon Aquarium of the Americas (<https://audubonnatureinstitute.org/aquarium>), located on the riverfront at Canal Street, is a place where a Caribbean reef comes alive and penguins and Southern sea otters play. Visitors may touch a sting ray, feed a parakeet, and see sharks, tarpon, and rays in the 400,000 gallon Gulf of Mexico Exhibit.

The New Orleans Museum of Art (NOMA) (<https://noma.org>) is the city's oldest fine arts institution, opened on December 16, 1911, with only nine (9) works of art. Today, the museum hosts an impressive permanent collection of almost 40,000 objects. The collection, noted for its extraordinary strengths in French and American art, photography, glass, and African and Japanese works, continues to expand and grow, making NOMA one of the top art museums in the south.

If you like quirky art, don't miss the Rodrigue Gallery of New Orleans (<https://georgerodrigue.com>), located on Royal Street in the French Quarter. This gallery is home of the "Blue Dog" created by artist George Rodrigue. Rodrigue, a Cajun, sought to portray the Cajun life through his art and much of his work features a blue dog with piercing yellow eyes based on the Cajun legend of loup-garou.

Food

Everyone has their favorite place to eat in New Orleans, whether it's a tried and true original like the Court of Two Sisters, Brennan's, Commander's Palace, Antoine's, or Deanie's, there's a choice for everyone. If you are an Emeril LaGasse fan, you will have your choice of Emeril's in the Warehouse District, NOLA in the French Quarter, or Emeril's Delmonico in the Garden District. Don't miss Mother's on Poydras Street and their famous "debris" sandwiches. On Frenchmen Street, you'll find the Praline Connection serving "down-home" cajun-creole style soul food at affordable prices. Their menu also features New Orleans-style pralines handmade daily in the old-fashioned, spoon-dripped method. And, last but not least, don't forget to try the Maison Soule for breakfast!

Tours

One of the great things about New Orleans and the surrounding areas are the outstanding variety of tours available to visitors. You can find air-conditioned tours of the city, plantation tours leaving from the hotels and visiting near-by plantations, swamp tours, and cemetery ghost tours. The hotel can put you in touch with good tour services and Trip Advisor is also a good source for whatever type of tour you want.

Remember, it will be hot and humid in New Orleans in August, so plan your activities accordingly, but regardless of your interests, there will be something for everyone!

The 2018 Forum on Environmental Accreditation

By Jerry Parr, TNI

Over 175 people attended the Forum on Laboratory Accreditation in Albuquerque, New Mexico from January 22-24, 2018. This article summarizes several meetings that are not otherwise discussed in this issue of *The Institute Review* and is based on notes taken at the closing session on January 24, 2018.

Chemistry Committee

The Chemistry Committee is preparing two (2) guidance documents to accompany the 2016 Standard – one on detection and quantitation and another on instrument calibration. They reviewed the detection and quantitation guidance, seeking public comment on four (4) specific issues. Approval is expected at the February 7, 2018 committee meeting.

Quality Systems (QS) Committee

The Quality Systems Committee is beginning to rewrite V1M2 to adapt to the revised ISO/IEC 17025. This new revision looks different and uses different terms, and QS wants to discuss the changes with the NELAP AC, LASEC, and NEFAP before they begin writing. The committee requested to have a joint session on Wednesday, August 8 in New Orleans, with no competition, in addition to the separate committee meeting.

Radiochemistry Committee

Radiochemistry reviewed its accomplishments and plans for the coming year. They need more AB stakeholder category members as well as members from other stakeholder categories. Small groups from the committee are preparing for the training as well as reformatting the rad chemistry checklist.

Whole Effluent Toxicity Committee

Rami discussed the current issues active in the WET committee:

1. improving the utility of the PT/DMR-QA studies (better data comparability, working with both ELAB/EPA and PTPEC), and
2. revising the WET Module, focusing on how to describe a reasonable demonstration of competency (DOC/IDOC) and the appropriate quality control for chemical support measurements.

They will also consider how to proceed with a request to address WET sampling in the revised FSMO standard.



Proficiency Testing (PT) Expert Committee

PT had an informative session about its accomplishments and plans for the coming year. They will develop guidance for the PT Reporting Limit and some training, in addition to reviewing SIRs as needed. Nicole noted that the discussion about PT frequency in the Assessment Forum will have this committee seeking more information for a discussion in New Orleans on that topic.

Microbiology Committee

Microbiology did not meet at this conference, but has some “marching orders” from other committees. They need AB stakeholder category members.

Laboratory Accreditation Body (LAB) Committee

LAB held a productive and informative conversation with stakeholders about a number of process requirements in the revised ISO/IEC 17011 Standard, and how the TNI language from the 2009 Standard (V2M1/V2M3) fits into the new structure.

Consensus Standards Development Executive Committee (CSDEC)

The glossary of over 300 terms was rolled out for the first time and unexpectedly encountered some concern about the possibility that some definitions may not match those in the Standard. CSDEC will investigate and adapt as needed, and if it gets complicated, they will re-present in New Orleans.

NOTE: Since that session, all definitions have been confirmed as consistent with the Standard.

Laboratory Accreditation Systems Executive Committee (LASEC)

Judy provided an update on the committee’s accomplishments, including a timeline, and described plans for 2018. Participants discussed the Conflict of Interest SOP, with some excellent feedback from the community. LASEC will share its initial draft with the other executive committees through their Program Administrators. Handling of legacy Standards Interpretation Requests (SIRS) was explained, as was the scheme for a final review of the 2016 Standard prior to sending a recommendation about its adoption to the NELAP AC. The Mentor Session and Assessment Forums were well attended (>60 people each) and received positive feedback in the evaluation forms.

NELAP Accreditation Council

The Council discussed accomplishments and plans for 2018. They then provided status updates on evaluations, the implementation of the 2017 Method Update Rule (MUR), and the individual ABs’ processes for implementing the 2016 Standard. Two large ABs will implement the MUR in the first half of 2018, which will impact secondary accreditations significantly. Participants also briefly discussed the review of guidance documents and the impact of those documents on timing for adopting the 2016 Standard, as well as the method selection SOP and the draft decoupling policy. Aaren also put out a call for ABs to have their staff populate the expert committees, since that need has been expressed repeatedly within CSDEC.



NEFAP Executive Committee

NEFAP met jointly with FAC and provided feedback on the revision to the FSMO Standard. In addition, they discussed the joint PTPEC-NEFAP Evaluation SOP 7-101.

Field Activities Committee (FAC)

FAC held a joint meeting with NEFAP. They are starting review of the FSMO Standard, Volume 1, and took comments on that volume. FAC hopes to have a “working draft” by January 2019.

PT Program Executive Committee

Maria provided an orientation intended for the participants about accomplishments and plans for 2018. The highlight was an Analyte Request Application for reporting MFN (most probable number, with separate acceptance criteria for multiple wells and multiple tubes), and the Microbiology committee will be asked to address the needed analyte codes for MPN in LAMS. The committee members discussed the PTPA evaluation SOP 4-104 and its alignment with the combined PTPEC-NEFAP Evaluation SOP 7-101, which is intended eventually to encompass the non-governmental ABs accrediting to the NELAP Standard also.

Advocacy Committee

The group addressed a bit of meeting planning for New Orleans and Milwaukee, and then moved on to the highlights of the current meeting in Albuquerque. Steve noted that the committee is seeking data and documentation that addresses how accreditation improves data quality. Then, topics for the April newsletter were identified; Lynn Bradley will be the editor, and the list will be finalized at the February 1 meeting. Some items for the 2018 work plan were discussed.

Environmental Laboratory Advisory Board (ELAB)

This meeting was primarily a phone meeting, but since EPA was open despite the federal shutdown, it could take place. Participants held in-depth discussions of on-going issues – guidance for selective ion monitoring, volatile organic compound analysis, suitable preservation of acrolein and acrylonitrile samples, and also the new MDL procedure. There is now inconsistency in the MDL procedure, since the 2017 Method Update Rule has led to the drinking water program (OGWDW) having a different MDL procedure than the other Office of Water programs (science and technology, wastewater, wetlands, oceans, and watersheds). ELAB also has concerns about potential variability in implementation among the regions. A new Designated Federal Official will need to be appointed, as Lara Phelps has accepted a new position in the air program. If this appointment has been made already, we do not have the individual’s name available.



2018 Board of Directors Election — Results

By Sharon Mertens

Elections for the Board took place in January and February and the newly elected directors assumed office on March 14 during the Board's regularly scheduled monthly teleconference. The Nominating Committee, including Sharon Mertens, Catherine Katsikis and Aurora Shields, reviewed the qualifications of each of the nominations and assembled the ballot for voting by the TNI membership. In addition to reviewing qualifications, the Nominating Committee must ensure that the Board retains balance and representation from all recognized stakeholder groups.

This year's ballot included three returning board members: David Speis, Jack Farrell and Myron Gunsalus. We also added three new directors: Bob DiRienzo (ALS Environmental) representing the Laboratory sector, Maria Friedman (California ELAP) representing ABs, and Curtis Wood (ERA) in the "Other" designation. Some of you may recall that both Bob and Curtis have served on the Board in the past.

The slate of Directors was elected by the membership with over 90% approval for each candidate. There was a total of 142 votes cast – as compared to 64 in 2017. I personally want to thank all of the membership who voted in this election. Your participation is appreciated.

We have also had a change in representation from our Federal partners who participate as ex-officio members on the Board. Lara Phelps has accepted a new position within EPA as the Deputy Division Director for the Air and Energy Management Division, National Risk Management Research Laboratory, Office of Research and Development (AEMD). Congratulations to Lara and we wish her success in her new position. However, because of these new responsibilities, Lara has decided that is best for her to step down from her role on the Board. Lara will continue to participate in other TNI activities so this is not a farewell!

Since this change occurred after the election cycle had begun, the Board acted to fill Lara's vacancy by a majority vote of the Directors. Lem Walker, the EPA Clean Water Act ATP Coordinator (EPA/OST/EAD), was selected by the Forum on Environmental Measurements (FEM) to replace Lara as EPA's representative to the TNI Board. The Board ratified this recommendation in the February meeting. After the introduction of the new Board members at the March meeting, the Board also held its annual election of officers, which includes the Chair, Vice-Chair, Secretary, and Treasurer. These were all filled by the incumbents. The new 2018 Board membership is listed on page 2.

**2018 TNI Board of Directors**

Jordan Adelson	US Navy NAVSEA Programs Field Office
Aaren Alger — Vice Chair	Pennsylvania DEP
Steve Arms	Retired
Justin Brown	Environmental Monitoring and Technologies
Bob DiRienzo	ALS Environmental
Jack Farrell	Analytical Excellence, Inc.
Maria Friedman	California ELAP
Chris Gunning	A2LA
Myron Gunsalus	Kansas DHE
Daniel Lashbrook	Eurofins Eaton Analytical, Inc.
Sharon Mertens — Past Chair	Milwaukee Metropolitan Sewerage District
Judy Morgan	Pace Analytical
Cheryl Nolan	Louisiana DEQ
Patsy Root — Secretary	IDEXX Laboratories
Debbie Rosano	Department of Energy
Scott Siders	PDC Laboratories, Inc.
Alfredo Sotomayor — Chair	Milwaukee Metropolitan Sewerage District
Dave Speis — Treasurer	Retired
Lem Walker	EPA Clean Water Act ATP Coordinator (EPA/OST/EAD)
Curtis Wood	ERA



Adoption and Implementation of the 2016 TNI Environmental Lab Sector Standard

By Jerry Parr, TNI Executive Director and
Lynn Bradley, NELAP Program Administrator

There is an established process for NELAP to adopt a new TNI Standard, and it's well underway. The process, documented in SOPs 3-103 and 3-106, has evolved over time, as any good quality system should. For now, here's the status of adoption and implementation of the 2016 TNI Environmental Laboratory Sector Standard (the 2016 Standard).

In 2017, the Laboratory Accreditation Systems Executive Committee (LASEC) reviewed each module and recommended that the NELAP Accreditation Council (AC) accept each individual module of the 2016 Standard, which the NELAP AC did. The LASEC has now reviewed both Volumes 1 and 2 for consistency issues and implementability, and offered its recommendation that the AC adopt the revised modules. The Council has two (2) months to conduct its own review of the Standard and decide whether to accept LASEC's recommendation and adopt the Standard. So, the adoption decision should be made by early summer.

The NELAP AC has determined that it will not make the adoption decision, and certainly cannot set an implementation date, until certain requested guidance documents are reviewed and found acceptable, as well as the Standard itself. There are two (2) guidance documents being prepared by the Chemistry Expert Committee and one by the Proficiency Testing Expert Committee. Completion and review of these documents should be completed late this spring, so as not to delay the NELAP AC's adoption decision.

For the 2009 TNI Standard, the implementation date was set for two (2) years after the adoption date, with a rolling implementation based on what each Accreditation Body (AB) is able to accomplish. An earlier implementation date may be set for the 2016 Standard, but this is yet to be decided. Some ABs can adopt immediately if their rules reference the current NELAP Standard, while others require rulemaking. Be assured that, as has always happened, each of the NELAP ABs will recognize the lab accreditations granted by other NELAP ABs, regardless of which Standard that AB is using. The table at the end of this article gives more detail about each individual AB's process for implementing the 2016 Standard.

There are several other actions underway within TNI to support implementation of the 2016 Standard:



- TNI will offer a series of four (4) training webinars for laboratories and ABs across the country, starting in fall of 2018.
- Once the guidance documents are approved, a revised Small Lab Handbook will be published.
- The QA Manual Template for the 2016 Standard is completed and available on the TNI website at <http://nelac-institute.org/content/shop.php>.
- The Quality Systems Checklist, based on the 2016 Standard, has been finalized for use by assessors and laboratories in establishing compliance with the Standard.
- A document comparing the 2009 Standard to the 2016 Standard is completed, and a similar comparison is being created for the 2003 NELAC Standard to the 2016 Standard.
- A review of all Standards Interpretation Requests is underway by TNI's Expert Committees to determine which ones were addressed in the revision and can be archived, and which ones carry forward as applicable to the 2016 Standard.
- The benefits of the 2016 Standard over previous standards will be documented, and that summary published on the website. This will be a marketing tool available for all TNI stakeholders, but will be particularly helpful for NELAP state ABs needing to justify rulemaking in order to transition to the 2016 Standard.
- LASEC will identify sections of the 2016 Standard that can be implemented early, if a lab desires, and is considering a guidance document about how best to move to the new standard.



State	Process for Implementing the Standard	Likely Actual Implementation Date
FL	Requires rulemaking. A rule is underway specifying adoption by reference, but that regulation must have a Notice of Proposed Rule Amendment published in February 2018 or else will need to re-start at the beginning .	Uncertain
IL	Must do formal rulemaking, probably more than two (2) years.	More than two (2) years after rulemaking begins
KS	Rulemaking needed, but regulation is drafted already. Hope to change the regulation to adoption by reference, but may be unable to do so.	Nine (9) to eighteen (18) months after adoption
LA DEQ	Based upon the current language in the Louisiana Administrative Code, LDEQ will implement the revised standard as soon as the NELAP AC votes to adopt it. The implementation process includes updating the program’s quality system documents, which should take no more than four (4) weeks.	One month after implementation date
LA DOH	Must do formal rulemaking, indefinite time needed.	Indefinite
MN	Adopts by reference.	Implementation date as adopted
NH	Needs formal rulemaking. Uncertain when approval to develop new rule can be obtained.	Uncertain
NJ	Adopts by reference, but will need six (6) to twelve (12) months to implement required changes internally.	Twelve (12) months after adoption date
NY	Adopts by reference, but internal documents and certification manual need to be updated. Will implement the Standard with the next renewal date once those tasks are completed.	April 2019
OK	Must do formal rulemaking, at least two (2) years needed.	Two (2) years after rule-making begins
OR	Needs formal rulemaking, but expect that to proceed quickly as it is non-controversial. Also needs time to update internal documents and processes.	Less than two (2) years after adoption
PA	Adopts by reference, just needs time to prepare the necessary “tools” to implement (checklists, etc.).	Shortly after formal implementation date
TX	Will adopt by reference on the implementation date.	Implementation date
UT	Must do formal rulemaking.	Six (6) – twelve (12) months after implementation date
VA	Will begin formal rulemaking once adoption is accomplished, and then will need time to adapt internal systems and documentation. Previous rulemaking took several years.	Uncertain



The NELAC Institute (TNI) Recognizes Oklahoma DEQ as NELAP Accreditation Body

By Lynn Bradley, TNI

On April 2, 2018, TNI's Accreditation Council recognized the Laboratory Accreditation Program of the Oklahoma Department of Environmental Quality as a National Environmental Laboratory Accreditation Program (NELAP) Accreditation Body. Under Oklahoma's program, Oklahoma's laboratories may voluntarily apply to be accredited to the TNI Environmental Laboratory Sector Standard for these categories:

- ◆ **Drinking water laboratory.** A drinking water laboratory may be accredited for Fields of Accreditation in the following categories: metals, general chemistry, microbiology, asbestos, synthetic organic chemicals (SOCs), volatile organic compounds (VOCs), and/or radionuclides.
- ◆ **General environmental laboratory.** A laboratory may be accredited for Fields of Accreditation in the following categories: metals, nutrients, oxygen demands, semi-volatile organic compounds (SVOCs), general chemistry I and/or II, microbiology, asbestos, synthetic organic chemicals (SOCs), volatile organic compounds (VOCs), radionuclides, whole effluent toxicity (WET) testing, hazardous waste characterization, petroleum hydrocarbons, perchlorate, and/or basic environmental laboratory.

NELAP-accredited laboratories in other states may now apply for secondary accreditation from Oklahoma without additional proficiency testing, quality assurance, or on-site assessment requirements.

Oklahoma becomes the 14th state to join TNI's national effort to establish rigorous standards to ensure the competency of laboratories that measure contaminants in environmental media.

For more information about the Oklahoma program, go to <http://www.deq.state.ok.us/CSDnew/labcert.htm>.



Avoiding Fake Cyanide in Wastewater Testing

By Michael F. Delaney and Charles Blodget;
Massachusetts Water Resources Authority (MWRA)

NOTE: This brief article is focused on determining total cyanide in wastewater. There is a parallel article on determining free cyanide in drinking water here: [APHL "Lab Matters" Newsletter, Spring 2018, Issue 2.](#)

As the lead author prepares to retire from the hectic pace of environmental laboratory operations, it seems a fitting time to share some thoughts on cyanide testing. We've been studying drinking water and wastewater testing for cyanide off and on for 20 years and offer these observations and suggestions for successful cyanide testing in wastewater.

Everybody knows that cyanide is a poison, which is reflected in environmental regulation of cyanide as a "classic" pollutant. The general category "cyanides" is classified by EPA as a toxic pollutant (1). Total cyanide (TCN) is also on the list of 126 "priority pollutant" chemicals regulated under the CWA (2).

Most wastewater labs test for TCN, and lots of soil and drinking water samples are tested under other EPA statutes (e.g., RCRA, CERCLA, SDWA). Today's focus is NPDES testing for Publicly Owned Treatment Works (POTW), other NPDES permits, and Industrial Pretreatment Programs (IPP), which regulate discharge of pollutants into sewer systems.

For environmental laboratories, NPDES testing is less prescriptive than drinking water testing, but not as flexible as testing performed for RCRA testing, which might be tailored for specific sites or projects. This position along the "prescriptive/flexible" scale is important to keep in mind as we look at what is possible for testing wastewater samples for TCN.

"First do no harm." This common paraphrasing of the Hippocratic Oath³ administered to physicians is an important mantra for people collecting and testing environmental samples. This application can be reframed as, **"First, alter no sample."** Our job is to get the sample from the field sampling location and through the laboratory testing without altering the sample in a way that will affect the test results ("from field to final report"). The determination of cyanide concentrations in water is problematic due to its diverse chemistry. Cyanide exists in simple, uncomplexed form, known as free cyanide (FCN) as well as complexed forms. Cyanide can be formed and destroyed by a variety of chemical reactions, which makes collecting, preserving, and testing water samples difficult.

Preservation and Holding Times. For NPDES testing, required preservation and holding times are detailed in Table II in 40 CFR 136, and these requirements take precedence over information in the approved methods. Simply put, the requirements for cyanide is to dechlorinate, if necessary, raise the pH, comply with the applicable footnote, cool the sample, and test it within 14 days.



This maximum holding time was set by regulation, accompanied by prescribed preservation requirements, but without any supporting data to substantiate the holding time. The holding time was proposed by EPA in 1979 and set in 1984 (4). Then, as now, the holding time footnote to Table II (5) says (in part): *“Samples should be analyzed as soon as possible after collection. The times listed are the maximum times that samples may be held before the start of analysis and still be considered valid... A permittee or monitoring laboratory is obligated to hold the sample for a shorter time if it knows that a shorter time is necessary to maintain sample stability.”*

The dechlorinating agent was proposed in 1979 as thiosulfate, but was changed to ascorbic acid in the 1984 final rule. Required preservation for TCN or CN “Amenable to Chlorination” in Table II of 40 CFR 136 (5) was: *“Cool 4°C, NaOH to pH >12, 0.6 g ascorbic acid (only in the presence of residual chlorine)” and the 14-day holding time had a footnote indicating that the “maximum holding time is 24 hours if sulfide is present. Optionally, all samples may be tested with lead acetate paper before pH adjustment in order to determine if sulfide is present. If sulfide is present, it can be removed by the addition of cadmium nitrate powder until a negative spot test is obtained. The sample is filtered and then NaOH is added to pH 12.”*

Data to support the TCN holding time and preservation requirements were not cited in either the 1979 proposed or 1984 final rules for 40 CFR 136.

In EPA’s 2007 CWA Methods Update Rule (MUR) (6), a lengthy footnote on cyanide preservation was added, but it was further revised and drastically shortened in EPA’s 2012 MUR (7), adding ASTM D7365–09a (8) on cyanide preservation as a reference. The 2012 MUR footnote gave laboratories a lot of leeway:

“There may be interferences that are not mitigated by the analytical test methods or D7365–09a. Any technique for removal or suppression of interference may be employed, provided the laboratory demonstrates that it more accurately measures cyanide through quality control measures described in the analytical test method. Any removal or suppression technique not described in D7365–09a or the analytical test method must be documented along with supporting data.”

Available cyanide was added to the list of CWA parameters in 1999 and the approved method for this was OIA-1677 (9). Free cyanide (FCN) was added to the list of CWA parameters in the 2012 MUR, and the approved methods for this were listed as ASTM D7237–10 (10) and OIA–1677–09 (11). The preservation and holding time requirements are the same for total, available, and free cyanide, but the required preservation was lowered from pH>12 to pH>10 in the 2012 MUR, without discussion. Presumably this was to lessen the chance of adverse effects from high NaOH concentrations.



“Any technique for removal or suppression of interference...” This Table II cyanide footnote is akin to saying, “do whatever you want, but you need to document that it actually works”. This footnote may be subject to interpretation, in particular *“provided the laboratory demonstrates that it more accurately measures cyanide through quality control measures described in the analytical test method.”* Presumably it means the typical batch QC: method blank, lab control sample, and matrix spike/matrix spike duplicate (MS/MSD). But the method blank and lab control sample don’t have anything to do with the sample matrix, and information from MS/MSD is limited since they are typically only performed several days after sample collection on one or two samples in each batch.

But even if the MS/MSD give good recoveries, what can be concluded about the success of the preservation and interference treatments? These spikes are added at the time of analysis and while they do involve sample matrix, they don’t reflect what happens to the samples in the field as they are preserved and treated for interferences.

When this footnote was published in 2012, we gave it very careful consideration. We knew that many of the samples testing for TCN for our IPP could give low or high MS/MSD recoveries. While the tendency for contract environmental labs is to blame poor MS/MSD recovers on the sample matrix (12), that isn’t a satisfactory response, and leaves the NPDES permit holder or Significant Industrial User (SIU) hanging without reportable regulatory results, and no way to turn back time to collect replacement samples.

Preservation is Part of the Problem. Various studies (references 13-16, and references therein) have shown that how cyanide samples are preserved can lead to losses or formation of cyanide. This is a significant problem, because the Table II preservation is prescribed. In addition to reactions directly involving cyanide, there are many other potential interferences. For example, interferences for the manual and automated pyridine-barbituric acid-chloramine-T colorimetric cyanide methods are reported to include aldehydes, carbonates, fatty acids, nitrate, nitrite, oxidants, sugars, sulfide, other sulfur compounds, thiocyanate, and turbidity (7).

Various reducing agents to neutralize oxidants are allowed for cyanide according to Table II. ASTM Method 7365-09a includes sodium thiosulfate, ascorbic acid, sodium arsenite, or sodium borohydride.

Some POTWs (17) have received approval to dechlorinate, if necessary, but to avoid NaOH preservation as long as they begin sample analysis within 15 minutes of sample collection.

Finally, we’ve found that field dilution is a useful treatment of interferences, especially for problematic sample matrices. Diluting the sample matrix lessens the likelihood of adverse chemical reactions. ASTM Method 7365-09a describes the use of field dilution as a treatment for sulfide. This is helpful when there is room between the test’s reporting limit and the regulatory limit the sample is being tested against, because the field dilution raises the reporting limit by the dilution factor.



How do we know which samples are problematic and how do we improve the sampling, preservation, and testing process?

Field Spikes. In response to the 2012 MUR footnote we began using a complex CN field spike on industrial IPP samples suspected to contain CN. The field spike is created at the time of sample collection by splitting the sample after it has been adequately dechlorinated and spiking a portion before the pH is raised to >10 with NaOH. The field spike is then treated the same as the native sample through transport, interference treatments, and lab testing. If CN is lost or gained in the FS, it suggests that the same thing is happening in the native sample.

Figure 1 shows TCN FS recoveries for complex cyanide field spikes on industrial wastewater samples over about 15 months (13). Many low FS recoveries and some high FS recoveries are evident. Note that the FS recovery is calculated like a MS, taking into account the observed CN concentration for the native (unspiked) sample.

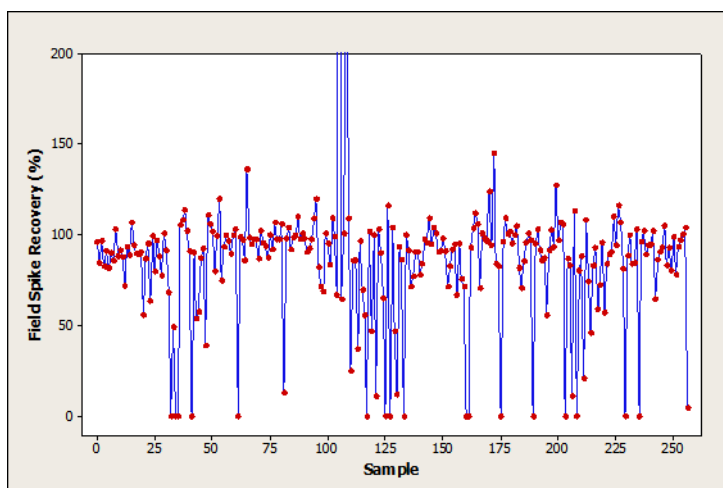


Figure 1. Total Cyanide Field Spike Recoveries using Manual Distillation and Automated Colorimetry. Adapted from (1).

If an industrial sample gives an excessively low or high FS recovery, as some do, we have justification to question the associated native sample CN results. We can also return to that facility and attempt to collect and preserve a sample that gives better FS recovery by using field dilution and/or alternative dechlorination agents.

Use a Gentle Method. Another improvement for TCN testing is to use a method that avoids the harsh chemical conditions of the hot, highly acidic, distillation. After using manual distillation and autoanalyzer colorimetric analysis (EPA 335.4, 18) for some time, we have switched to the flow injection analysis (FIA) method (ASTM D7511–12, 19), which uses digestion by ultraviolet (UV) light and isolation of HCN using a semipermeable membrane. The FIA method selectively detects HCN using amperometry.



Figure 2 shows TCN FS recoveries for complex cyanide field spikes on industrial wastewater samples for manual distillation with autoanalyzer colorimetry versus on-line UV digestion flow injection analysis (FIA) amperometry. Many fewer low FS recoveries are seen with FIA compared to manual distillation. While there is still a lot of variability, just switching to FIA improved the FS precision by a factor of 2.5.

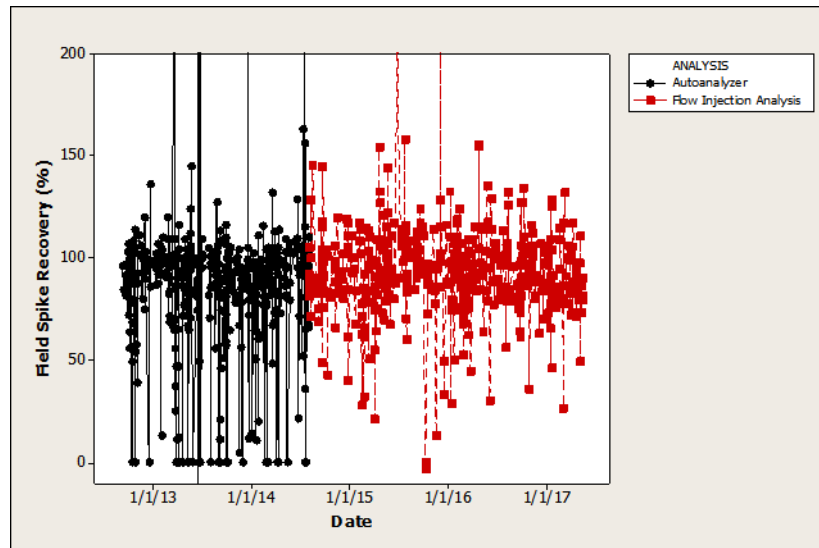


Figure 2. Field spike recoveries (%) for Manual Distillation with Autoanalyzer Colorimetry and Flow Injection Analysis.

In addition, FIA is more automated and less labor-intensive, so we are able to run more samples for investigative purposes than we would have with manual distillation. Also, we can use the same instrument to test samples for free or available CN.

Note that the FS results are using complex CN (e.g., potassium ferrocyanide trihydrate). We intentionally chose this as a safer and more stable alternative rather than handling free CN in the field. Even so, on industrial samples the variability for FS recoveries is larger than the variability seen for MS/MSD recoveries, and larger than LCS recovery variability. This shows that the matrix of industrial samples can have a significant effect on TCN results.

The POTW final effluent MS/MSD results for our two treatment plants are a lot less variable than MS/MSD results for industrial samples. This also suggests significantly smaller matrix effects compared to industrial samples.

How low can or should you go? Is our TCN method “sufficiently sensitive” (19) for testing POTW effluent? Ideally, we would like the Reporting Limit (RL) to be at or below the Water Quality Criteria (WQC) (21). For CN in salt water, the WQC is 1 µg/L. For fresh water, the Criterion Maximum Concentration is 22 µg/L and the Criterion Continuous Concentration is 5.2 µg/L.



The TCN FIA method we reference, ASTM D7511–12, states a Method Detection Limit of 1 µg/L and a Minimum Level of 3 µg/L. For wastewater samples, we have only been comfortable using a RL of 10 µg/L, and because samples with particulates need to be filtered and leached to recover particulate CN, this raises our RL to 20 µg/L. For treatment plant effluent samples, we can't show that the TCN levels are below the WQC, but it is about the most sensitive NPDES-approved TCN method; we have therefore concluded that it is "sufficiently sensitive". Our RL is fine for industrial samples because the Local Limit for TCN in our district is 500 µg/L.

While the FIA method has sensitivity to go lower than 20 µg/L, results below 20 µg/L have a higher chance of being false positives, so we are willing to accept some false negatives below 20 µg/L to avoid having to try to figure out if very low hits are real TCN or fake cyanide caused by interferences.

For raw wastewater samples in our sewer collection system and at our wastewater treatment plant influent, we see apparent TCN concentrations of 20 to 40 µg/L, but it is difficult to determine if these are false positives due to interferences. We don't think these detects are caused by sulfide or any other interference we've been able to study, so perhaps they are real.

What else can we do? For wastewater testing, the method flexibility in 40 CFR 136.6 is important to consider. However, care must be taken to realize when a method modification needs to be reviewed or approved by the permitting authority. But keep in mind that there are a lot of options in ASTM 7365-09a and the EPA "pumpkin book" (22) also encourages considering options that are discussed in the approved methods (e.g., SM, ASTM, and OIA methods).

How does it end? If you want to efficiently process TCN samples, FIA seems to work well. If you need to focus on particular, problematic samples, the FIA method lets you try a bunch of different things. For example, you could try different dechlorination agents, or different field dilutions, each with FS, and when you have all the results decide what worked.



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Call-Out Boxes

“Any technique for removal or suppression of interference may be employed, provided the laboratory demonstrates that it more accurately measures cyanide through quality control measures described in the analytical test method”—From 40 CFR 136.3 Table II Footnote 5. (5)

“Next to oil and grease, cyanide is the pollutant for which the most matrix interferences have been reported to EPA. Cyanide chemistry is very complex, and resolving matrix interferences with cyanides may involve considerable investigation.” (22)

“Cyanide Is the “Baddest” Bad Actor: Of all the tests routinely performed in environmental laboratories, it can be argued that cyanide is the worst in terms of method performance.” (12)

Acknowledgement

This article is dedicated to first author’s mentors, Professors David N. Hume and Peter C. Uden.



NELAP ABs' Implementation of the 2017 CWA Method Rule Update

By Lynn Bradley, NELAP Program Administrator

On August 28, 2017, EPA published the previously announced, but then delayed, "Method Update Rule" (MUR, see <https://www.epa.gov/cwa-methods/methods-update-rule-2017>, or 82 FR 40836, 40836-40941, 8/28/2017), to be effective September 27, 2017. While the rule takes effect at the federal level on 9/27/2017, each state with delegated responsibility for the Clean Water Act regulations will implement the regulation independently and at a time determined by the state itself.

The NELAP Accreditation Council has polled its members about how and when each of the thirteen (13) states (and soon to be fourteen (14), which is why Oklahoma is included) will formally require the elements of this regulation for labs accredited by that state. The table at the end of this article explains the timing and process for each of the NELAP states.

Two NELAP states, New York, and New Jersey, will be officially implementing this federal regulation quite soon, with its updated Method Detection Limit (MDL) procedure as well as its updated methods. New York notified its labs on November 13, 2017, that NY ELAP would require both the MDL and the updated methods as of April 1, 2018. New Jersey notified its labs in early February that it will require the updated methods as of July 1, 2018, and New Jersey has been requiring the updated MDL procedure since September 27, 2017. Both states will require compliance with the regulation for both their primary and secondary accredited labs.

All other NELAP state Accreditation Bodies (ABs) are either requiring or encouraging their labs to use the new MDL procedures, but the transition timing for requiring the updated methods (as the "most recent version") varies from a definite date later in the year to some indefinite date in the future that is dependent on that state's program office decision, as well as whether rulemaking is required, in addition to an official decision.

The NELAP Accreditation Council is well aware that this variability is creating a lot of uncertainty among NELAP-accredited labs that have either primary or secondary accreditation with NY and NJ, two of the largest NELAP ABs. As always, the NELAP ABs are committed to working together to minimize any undue hardship on NELAP-accredited labs.

If you, as a NELAP-accredited lab, have concerns about conflicts between your primary and secondary ABs, please contact each and every one of them to make certain that your ABs are aware of the conflicts. They will know to work towards a successful resolution that minimizes hardship to your lab. You can find contact information for your AB at <http://nelac-institute.org/content/NELAP/accred-bodies.php>, and please do not hesitate to reach out for assistance.



The following table shows the state-by-state status of MUR Implementation within NELAP (from January 24, 2018, NELAP AC minutes):

State	Status	Likely Implementation Date
FL	Rulemaking will be required to implement MUR. Program office attempting "fast-track" regulation. Labs wishing accreditation for new methods will need to apply for scope expansion and pay fee; new methods will then be accredited. If additional analytes are sought, the normal accreditation process (with on-site) applies. PTs for new methods will be required.	Possibly as early as March 2018
IL	Implementation will be slow, but AB is encouraging use of new MDL procedure.	No mandatory date set
KS	Encouraging and providing training for new MDL procedure. AB will accredit new methods on request. Program office is not pushing implementation.	No mandatory date set
LA DEQ	In summary, LDEQ has instructed the laboratories to implement the rule by the time of the next re-assessment or by September 28, 2018, whichever comes first. LDEQ will continue to accept data based upon the previous rule until August 28, 2019.	September 28, 2018, or at the next re-assessment
LA DOH	Implementing new MDL as of February 2018; no new drinking water methods published.	February 1, 2018
MN	Will require new MDL procedure by calendar 2019. New methods are required by renewal date (October 2018), pending availability of IT support.	October 2018 for methods; January 2019 for MDL procedure
NH	Will add new methods at any time. Plans outreach to lab community and to set an eventual deadline for new MDL procedure to be required, possibly with next MDL determination. Needs to talk with EPA regional office before proceeding further.	No mandatory date set
NJ	Required new MDL as of September 27, 2017. Will require new methods as of July 1 renewals.	July 1, 2018, for all primary and secondary accredited labs
NY	New methods and MDL procedure will go into effect April 1, 2018, with issuance of new certificates.	April 1, 2018, for all primary and secondary accredited labs
OK	Need to implement through rulemaking, estimate 20 months' time. Will provide MDL training with implementation.	Anticipate September 2019
OR	Requested decision from program about when to notify labs to begin using new methods.	After October 2018
PA	State program is in no rush to implement, so MUR methods will not be required. New MDL procedure will be required when the next MDL is due. AB will honor lab's transition to new methods when lab chooses to implement them.	No mandatory date set for methods
TX	Program office has not responded to request for guidance. AB not accrediting new methods now, but will do so about six (6) months after program response arrives. Encouraging use of new MDL procedure.	Awaits guidance from program office
UT	Will honor lab's decision to implement new methods, but not required now. Labs will need to implement new MRL procedure at next assessment.	No mandatory date set for methods
VA	VA DEQ will need to update regulations. AB will allow labs to implement earlier, if they choose.	Mandatory date will be set after DEQ rulemaking



TNI Module 2 — New 17025 Coming

By Paul Junio; Chair, Quality Systems Expert Committee

In November, 2017, ISO/IEC 17025:2017 was finalized. Work had been done over the last three years to align the structure and content of 17025 to be consistent with other recently revised ISO documents. It was meant to bring more current technology and terminology into the Standard, and yet to not fix what wasn't broken.

The resulting ISO Standard contains five clauses of requirements rather than two, uses fewer terms to describe the requirements, and offers more flexibility for laboratories. The Standard also has eliminated some of the terms that we are so used to seeing, including Quality Manual, Quality Manager, Technical Manager, and subcontracting. The concept of "risk" is also widely used throughout the Standard, and offers some unique challenges in terms of how TNI will address that concept, as the Standard puts the onus on the laboratory to determine which activities in the lab are of highest risk, and therefore deserve the most attention.

The current TNI Environmental Laboratory Standard Module 2 is based on ISO/IEC 17025:2005. As such, we intend to revise Module 2 to incorporate 17025:2017 language. Our plan is to review the current language that we as TNI have added to ISO 17025:2005, and determine first whether we need to add that language to the new 17025:2017, and then if so, where. Along with all of this work, we will review past SIRs and items we have kept in our "Parking Lot" document (a list of suggestions and requests for possible future inclusion in Module 2) to see how they ought to be addressed in the upcoming revision to Module 2. Outreach efforts will also be made to insure that anyone who might be affected by this update to Module 2 will have an opportunity to make their opinions known.

If you are interested in this process, please visit the Quality Systems section on the TNI website to connect with us: <http://www.nelac-institute.org/committee/quality>.



Field Activities Committee (FAC) Standards Development Update

By Kevin Holbrooks; Chair, Field Activities Committee

The TNI Field Activities Committee (FAC) has started the revision process of the TNI Standard for Field Sampling and Measurement Organizations (FSMO) and is in the early stages of gathering input. Changes planned include incorporating the new version of ISO/IEC 17025, resolving the issues related to the accreditation process for mobile laboratories, and any other changes that will improve the standard to meet the specific needs of the users.

The FAC will also be looking at ways the FSMO Standard can be used to demonstrate competency in field activities beyond environmental testing, such as sampling activities for food or cannabis. Input from TNI members on these topics is requested between now and the summer meeting in New Orleans, where gathered feedback will be presented along with the proposed timeline for completing the working draft standard (WDS).

For more information about the FMSO Standard, visit the “Consensus Standards Development” page on the TNI website or contact the Chair of the Field Activities Committee, Kevin Holbrooks at holbKE@jea.com.

Additionally, the FAC is seeking additional voting and associate members. Contact Kevin for more information and apply to join the committee by visiting the Member Page on the TNI website.



A TNI Glossary of Terms

By Bob Wyeth, CSDEC Chair

The Consensus Standard Development Executive Committee (CSDEC) was requested to develop a glossary of terms for use by all TNI stakeholders. To address this request, the CSDEC formed a task group consisting of Bob Wyeth, CSDEC Chair; Tom Widera, ERA; Larry Penfold, Test America; Jim Brownfield, ESC Lab Sciences; and Dixie Marlin, Marlin Quality Management. The task group worked over the last year to prepare a draft document, which was presented to the TNI community on January 23, 2018 during the Forum on Environmental Accreditation held in Albuquerque, NM.

The glossary was compiled from definitions, terms and language in all TNI documents (SOPs, guidance documents, policy statements, Bylaws, etc.), including all Volumes and Modules of the 2016 TNI Standard. This compendium of definitions and terms was then reviewed for consistency and completeness by the task group. Over numerous conference calls, the definitions were standardized and harmonized to produce the draft glossary.

Following the Albuquerque meeting where the task group was reminded that the definitions from the 2016 Standard must remain as approved by the TNI stakeholder community, these definitions were confirmed as consistent with the Standard. The final draft of the glossary will soon be posted on the TNI website.

It is the intent of the task group, CSDEC and TNI management that the glossary will be used in all forthcoming revisions of all TNI documents. There is not a requirement to modify TNI documents until revisions are made. This approach will ensure that eventually terms utilized in these documents will ultimately be harmonized, as was the goal of the task group consistent with the request of the TNI stakeholder community.



Interlaboratory Validation of Methods 608.3, 624.1, and 625.1 A Cooperative Effort of ACIL, APHL, EPA, TNI, and WEF By Carol Batterton, TNI Program Administrator

On September 27, 2017, three (3) new EPA methods were approved, 608.3, 624.1 and 625.1. These are updates of methods developed in the 1970s. While the technology has changed a lot since then, the method performance data and Quality Control criteria in these new methods are what existed at the time of their validation, and likely do not represent what is now achievable.

As EPA stated in the preamble to the final rule published on August 28:

Although EPA received comments about updating the QC acceptance criteria, EPA did not adopt such changes because EPA lacks data from a multi-laboratory validation study from which to develop such criteria.

In response to concerns expressed by TNI members about these methods, TNI contacted several other organizations that had expressed similar concerns and proposed a partnership which includes TNI, the Water Environment Federation (WEF), the Association of Public Health Laboratories (APHL), and the American Council of Independent Laboratories (ACIL). We have discussed with these organizations the potential for providing data that could be used by EPA to update the old QC acceptance criteria. In a letter to EPA on January 26, 2018, we noted that our organizations represent a significant number of the commercial, state and municipal laboratories that will be using these updated methods in the future. We stated that we would very much appreciate the opportunity to collaborate with the Agency and its staff in addressing this important issue.

In response to the letter, EPA has expressed interest in pursuing this project with the partner organizations. EPA has noted that this is a secondary data collection effort and no “new” (primary) data are being generated. EPA proposes to write a QA Project Plan (QAPP) - Study Plan hybrid document for secondary data collection that outlines what data deliverables will be required, what data review will take place, and how the data will be analyzed to calculate new acceptance criteria.

EPA would like TNI, ACIL, APHL, and WEF to review the QAPP/Study Plan (this may have to be done through the ELAB), help EPA with outreach about this project, and help recruit laboratories that would be willing to submit data. While TNI, ACIL, APHL, and WEF laboratory members may be the primary sources of data, EPA does not want to be exclusive. EPA’s goal is to receive data from a representative cross section of the laboratory community: large commercial laboratory chains, small independent laboratories, and publicly owned treatment works (POTW) laboratories. EPA plans to complete the QAPP/Study Plan and do some outreach by October of 2018. Later this year, laboratories will be asked to volunteer to participate in this project. Data collection would not begin until next fiscal year.

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If your laboratory is interested in participating in this effort, please complete the survey at this link: <https://www.surveymonkey.com/r/JQ3GL65>. This early indication of interest is not binding on your laboratory. There will be an opportunity to review the QAPP/Study Plan before a final commitment is made. This is a unique opportunity for laboratories across all sectors to work with EPA to solve a common concern. We hope you will participate. **Please let us know by May 1, 2018, if you are interested.** Please contact Carol Batterton at carbat@beecreek.net if you have any questions.



Update on Training

By Ilona Taunton, TNI

A number of new training courses are open for registration, or are in development, and should be announced soon:

- ◆ **Sample Collection:** The course will emphasize the importance of collecting samples that represent the source matrix and maintaining the integrity of the sample until delivery to the laboratory. This is an 8-hour course being planned for summer.
- ◆ **Good Laboratory Practice – Internal Audits:** This self-paced course should be available later this spring.
- ◆ **An Asbestos Assessor Training webinar** is planned for May 21-23, 2018. The course will also be recorded as a webcast. This course provides examples of the assessment process for asbestos testing laboratory technologies, based on the 2009 TNI Laboratory Standard. The principles for assessing specific technical disciplines within the laboratory operations are presented. The course presents the fundamentals of how to assess technical operations for the following technologies:
 - Polarized Light Microscopy (PLM)
 - Phase Contrast Microscopy (PCM)
 - Transmission Electron Microscopy (TEM)
- ◆ **Two Basic Assessor classes** are open for registration. One will be held in Richmond, VA from May 8-10 and the other in Austin, TX from August 21-13.
- ◆ **Technical Training Series.** Two courses have been completed. The remaining dates have been set for:
 - Drinking Water Methods – April 20
 - General Chemistry Methods – May 24
 - Soil Methods – June 12

Registration for all of the classes can be found at <http://www.nelac-institute.org/content/eds-home.php>.

Recipe — Shrimp Etouffe (Stew)

By Chris Mayeux, LA DEQ, LELAP

Ingredients

- ◆ ½ cup chopped onions
- ◆ ½ cup chopped celery
- ◆ ½ cup chopped green bell peppers
- ◆ 1 cup very finely diced green onions
- ◆ ¾ cup vegetable oil
- ◆ ¾ cup all-purpose flour
- ◆ 1 Tbsp. Old Bay Seasoning
- ◆ 1 Tbsp. Poultry Seasoning
- ◆ 3 cups seafood stock or vegetable stock
- ◆ 2 sticks butter
- ◆ 1 ½ pounds uncooked medium shrimp
- ◆ 4 cups cooked white rice (aromatic rice like Jasmine, Basmati or popcorn rice only makes this dish taste better)
- ◆ Salt



Preparation

First, you make a roux and cook some rice (all authentic Cajun recipes start this way). Combine onions, celery and bell peppers in a bowl and set aside. Heat the oil in a large, heavy cast iron skillet or over high heat about 2 minutes. Whisk in the flour, stirring until mixture is smooth. Use a metal spatula to keep the mixture moving, scraping the flour off the bottom of the skillet as you go. Lower the heat if needed. Continue cooking, stirring constantly, until the roux is dark reddish-brown (be careful not to burn). The dark color makes the nut-like flavor you want in this dish and many other Cajun dishes. Be careful not to let it scorch or splash on your skin. Remove from the heat as soon as the color is achieved, and stir in the vegetables as soon as possible to stop the browning and avoid burning the roux. Continue stirring until cool, about 5 minutes. Now that cooking has come to a stop take a moment to enjoy the incredible aromas you have just created in your kitchen.

Next, bring 2 cups of the stock to a boil in a 2-quart saucepan over high heat. Add the roux by spoonful to the boiling stock, stirring until dissolved between each addition. Reduce the heat to low and cook, stirring almost constantly, until the flour taste is gone, couple of minutes. Again, be careful not to scorch.

Finally, melt a stick of the butter in a 4-quart saucepan over medium heat. Stir in the shrimp and the green onions, and sauté, stirring almost constantly, for 1 minute. Add the remaining butter, the stock mixture and the remaining 1 cup stock. Cook, constantly shaking (versus stirring) the pan in a back-and-forth motion, until the butter melts and is mixed into the sauce, about 4 to 6 minutes. Add the remaining seasoning, salt to taste, stir well, and remove from the heat. If the sauce starts to separate, add 2 tablespoons more stock or water and shake the pan until it combines. Serve immediately over the rice.



Getting To Know: Carl Kircher, Ph.D.

By Stephanie Drier

Current Position

Twenty-five years with the Florida Department of Health Environmental Laboratory Certification Program as an assessor, evaluator, quality assurance officer and policy and technical contributor to State, National, and International environmental laboratory standards.

Education

A Doctorate degree in analytical chemistry from Michigan State University and Bachelor of Science in Chemistry from the University of Arizona.

Where did you grow up?

I was born in El Paso, Texas, and spent my school aged years in the desert of Yuma, Arizona. I was in the Order of the Arrow while in Arizona and also obtained my Eagle Scout achievement.

Is there a teacher or mentor who has influenced you more than others?

Mr. Johnston, my high school chemistry teacher, who presented chemistry in a thought-provoking and challenging manner. This very same teacher arranged for me to attend the National Science Foundation course for elite high school chemists. I loved physics, chemistry, and mathematics and was the first in my family to pursue a career in science.

What was your first introduction to quality within the USEPA guidelines?

I spent 8 years with Unocal in their Science and Technology Division, as an oil and energy chemist that required compliance

and monitoring of aqueous and refinery waste streams in compliance with NPDES and PSD permits. It was in this role that I became familiar with the USEPA reporting requirements and was routinely audited. I was later hired into FLDOH, which was/is a strong accreditation program, so I tried to pattern the quality system after the ISO Guides and Standards and carry on the work of Dr. Hartwig.

What was your first introduction to the environmental laboratory accreditation program or what is TNI today?

I was elected the inaugural Chair of the TNI Proficiency Testing (PT) Board in ~2006 and an inaugural member of the NELAC Regulatory Coordination Committee in 1995.

When did you attend your first TNI meeting?

I was part of the NELAC Meeting #1 (1995) where the group established the constitution, bylaws, and standards for the



Conference. I worked alongside all the inaugural chairs for the NELAC Chapters and worked towards what is now TNI.

What roles do you play in TNI today?

I am very involved with the TNI organization with the support of the Florida Department of Health. I serve in over six (6) roles in the TNI organization and represent The NELAC Institute on the International Conformity Assessment Committee, and vote on ISO 17011, 17025, 17043, and 17034 Standards and revisions.

Continued...



Any recent honors or awards?

At the 25th Anniversary of NELAC/TNI, I received recognition as the most known and recognized laboratory assessor. Also, with limited retail experience, I received the 2017 Home Depot Cashier of the Year.

Are you active in other quality organizations or memberships?

I attended the ISO/CASCO Plenary Meeting on the U.S. delegation appointed by ANSI, and concurrently serve on CASCO's Technical Interface Group.

Personal:

I have been married to Peggy Kwang for 28 years. She is wonderful and puts a lot of value and work into relationships with

me and with our friends and family that love us.

What motivates you?

God's creation and the entire universe, science, spiritual behavior and knowledge. As for the science, we as humans are mostly water and salt, fats, proteins, and carbohydrates, and somehow we have a spiritual essence and behavior that transcends in tying all these together. I gain knowledge every day that makes the picture more and more complete.

What are your favorite ways to relax?

I listen to music a lot and play recorder and trombone. Also, as a lifetime member of Alpha Phi

Omega, I still enjoy hiking, camping, backpacking, astronomy, and space sciences as hobbies. After all, we, as inhabitants of Earth, have the benefit of circling one of the most stable stars in the Universe, having three coexisting phases of water, and oxygen as the electron repository for biochemical reactions.

“Quote of the Day”

“What good is knowing that 2 plus 2 is commutative if you don't know that it equals 4?”

– Professor Quintus Fernando
University of Arizona



ChairSpeaks — “Musings from the TNI Chair”

By Alfredo Sotomayor

In Praise of Change

“I like change”, my father’s new boss told him early into their first one-on-one meeting. “*I have decided...*”, he continued, keeping his eyes on a document in a rather large open folder. Stop. Gasp. Oh, oh...

The new boss made my father an interim Division Director. He had read my father’s personnel file, liked what he saw, and thought the company could use him in a new capacity. “*I think you should be ready for a change, anyhow*”, the boss added. Six months later my father was a permanent Director and then other promotions followed. Change worked well for him then, in spite of his innate apprehensions.

I like change. Unlike my father, who has a healthier respect for tradition and permanence, I enjoy the unfamiliar and like experiencing what change brings on how and what I think, feel, and learn.

Part of my enjoyment, and may I humbly say success, in being an assessor, came from looking forward to experiencing how laboratories addressed the same challenges differently, how each facility remained unique while operating on a defined system of quality, regulations, and prescribed methods. It was so many times the joy of discovery in familiar, yet different, territory.

I like change. In the last decade, my professional life changed from assessing laboratories, to regulating drinking water, and now to managing a large municipal laboratory. Along the way, I have enjoyed the journey and have been receptive to exploring new paths. So far, I am pleased on how things have turned out.

But, to be clear, I am not a reckless thrill-seeker, a feckless dilettante, or that flaky guy who never made-up his mind. Well... at times I have been all of them, but fundamentally, that is not what informs *my praise for change* now. Some of the changes I have experienced did not happen accidentally; in many cases, I evaluated and considered in detail each possibility before committing, but I did take the plunge.

Change is inevitable — the only constant (a paradox, if there ever was one), the roadway to growth, and a natural outcome of being alive. It can progress or regress us. It can motivate or deflate us. It is unavoidable, inescapable, and a catalyst to improvement.

In a future column, I will extemporize on the value of change, how it is integral to our ethos, and explore how to manage and channel it in our environmental laboratory community. Until then, take a different route back home, try Ethiopian cuisine, listen to gamelan, or just wear pink! Why not?

Only connect...

Alfredo