

# The Value of a NEFAP Accreditation

#### Oregon Environmental Laboratory Association Annual Conference September 28, 2023

#### Jerry Parr, The NELAC Institute





### Brain Eating Amoeba Naegleria fowleri

- 2 deaths in St. John's Parish due to lack of chlorine in the distribution system attributed to lung exposure to amoeba (neti pot)
- Water utility decided to collect samples at the far ends of the system and check for residual chlorine.
- Two utility workers indicted for failing to test the water supply and then lying about it (after).
- Branch did not stop at 30 of the 48 water inspections he claimed to have done and Roussel did not stop for three of the six inspections.









#### The Lowe's Hose

- Residential wells were sampled weekly, and four of the wells revealed consistent PAHs.
- The laboratory blanks were clean, and the bottles were certified for PAHs.
- No field blanks were collected since samples were collected directly into bottles – or so the plan said.
- The spigots at the four locations were too low to the ground to fit the bottles under, so personnel bought and used new sections of hose.





#### **Mercury Boots**

- Surface soil sampling in and around a mercury metering station along a natural gas pipeline.
- Beads of elemental mercury strewn across the floor in the metering station room.
- □ Field Team Leader walked the extent of the floor of the metering station, oblivious as to whether he was stepping on the mercury with his boots.
- Walked out the back station door and used the heel of his boot to mark the surface soil sampling locations to determine the extent of surface soil mercury contamination.









#### **Dissolved Metals Everywhere**

- Groundwater studies on Alaska's North Slope
- ADEC required T/D metals at ultra-trace levels.
- After weeks of sampling, the total metals data made perfect sense with regard to the CSM.
- For the filtered metals, nine metals were consistently present at the same levels in all filtered samples and the filtered blanks, but not in the total samples.
  - Dedicated filters and new lengths of tubing were used, BUT no one thought to flush both with sample before collecting the actual site samples.
  - Flushing the tubing and filters was specified in the SOP.
  - Samples from new tubing/filters confirmed the origin of the nine metals







#### **Sure Looks Clean to Me**

- Monitoring well purge water was being discharged to surface of the parking lot, which then flowed down the edge of the property to a nearby creek.
- Despite the Work Plan specifying that the water must be containerized, the Samplers decided that the water looked pretty clean so there was no reason to containerize the purge water.
- The water was very "clean," but had a pH of 9.3.
- The substantial volume of water, running into the nearby creek resulted in a fish kill, a hefty fine and a furious client.







#### What is in a Vial Anyway?

- Sixteen residential wells sampled weekly, and the first 3 weeks of sampling revealed ALL 16 wells had glycol detections.
- □ The laboratory blanks ND. No field blanks were collected as samples were collected directly in 40-mL HCL- preserved vials
- Upon inquiry, it was determined that the 40-mL HCLpreserved vials were never assessed or certified for use for glycol analysis AND the laboratory used UNPRESERVED 40mL vials for its MBs.

Tracking the lot number of the vials verified the HCI was the ource of glycol contamination in all 45 samples.





- Collected water in marsh with depth of less than 5 cm water (Requirement is no less than 10 cm). Sample not representative. All data were rejected.
- Collection of marsh samples by raking bottle through plants to obtain "water column" sample. Water was filled with detritus and periphyton. Water was then passed through a plastic screen mesh into another bottle which was submitted for "total" nutrients. Sample not representative. All data were rejected.







# What Can Be Done to Ensure Reliable Data?

Competency can be ensured by a robust accreditation scheme with a strong quality management system foundation.

- Laboratories: ELV1, Management and Technical Requirements for Laboratories Performing Environmental Analysis
- Field Sampling and Measurement Organizations (FSMOs): FSMO V1, General Requirements for Field Sampling and Measurement Organizations





## Accreditation of Field Sampling and Measurement Organizations (FSMOs)

- Effort started in 1998 with a belief that field activities should have the same oversight as the laboratory.
- First complete TNI standard approved in 2007 and first FSMO accredited shortly thereafter.
- □ FSMO standard Volume 1 and 2 revised in 2014.
- Like the laboratory standard, basis is ISO/IEC 17025 with additional requirements specific to environmental sampling and field measurements.
- Like the laboratory standard, also contains requirements for ABs based on ISO/IEC 17011







## National Environmental Field Activities Program (NEFAP)

- The purpose is to establish and implement an accreditation program for FSMOs.
- Oversight is provided by the TNI NEFAP Executive Committee.
  - Recognition of Accreditation Bodies
  - Provide training and guidance
- Standards for the program are developed by the TNI Field Activities Expert Committee.







# Major Differences Between NEFAP and NELAP

- Accreditation not required by regulations in states for sample collection.
  - Louisiana has adopted NEFAP accreditation for stack testing
- State or federal agencies do not oversee the accreditation process.
  - > TNI oversees the accreditation process as implemented by the recognized ABs.
- "Umbrella" accreditation possible. (Organization, not location)
- So what ABs Accredit to this Program?

American Association for Laboratory Accreditation (A2LA)

Perry Johnson Laboratory Accreditation, Inc. (PJLA)

https://www.nelac-institute.org/content/NEFAP/nefap-ab.php





#### The TNI Field Activities Accreditation Standards

#### Two Volumes = Two Standards

- Volume 1: Requirements for FSMOs
- Volume 2: Requirements for Accreditation Bodies







## **A New Approach**

- New draft Standard to be published this fall.
- □ Move to the 2017 version of ISO/IEC 17025.
- Add much more specificity, comparable to the TNI laboratory standard, to add value.

The laboratory Quality Systems module, Module 2, is under revision to include 17025: 2017 with approval likely in 2024.





# **Objectives of 17025 Revision**

- Align structure and content with other recently revised ISO standards
  - Other 17000-series documents
  - ISO 9001

Focus on outcomes rather than prescriptive requirements

- Less variety in terms used to describe required documentation
- Elimination of some favorite terms (e.g., quality manual, quality manager, subcontracting, etc.)
- More flexibility for laboratories
- Requirements for information systems/records more reflective of current technologies
- Many requirements are nearly verbatim from previous version, just in different places



# **Key Difference**

#### 3.9 laboratory

body that performs one or more of the following activities:

- testing
- sampling, associated with subsequent testing

**FSMO:** Field Sampling and Measurement Organization body that performs one or more of the following activities:

- Testing in the field (field measurement)
- Calibration in the field (field calibration)
- Field sampling

- Field observation (field conditions related to an environmental activity)





# **Organization of ISO/IEC 17025**

#### 2005

- 1. Scope
- 2. Normative references
- 3. Terms and definitions
- 4. Management requirements
- **5.** Technical requirements

# 2017

- 1. Scope
- 2. Normative references
- 3. Terms and definitions
- 4. General requirements
- **5.** Structural requirements
- **6.** Resource requirements
- 7. Process requirements
- 8. Management requirements



## Additions from the TNI Field Activities Committee (A Few Examples)

- □ 4.3 Data Integrity
- 6.2.x Required licenses/certifications
- 6.2.x Safety and security
- 6.2.x Training
- 6.4.x Calibration
- 6.4.x Cleaning and decontamination
- 7.x Sampling design and planning
- □ 7.8.x Sample location, preservation, transportation, etc.





## Summary

NEFAP - The only independent national or international program to accredit field sampling and measurement organizations.

#### Benefits to FSMOs in becoming accredited

- Increase data reliability
- Reduce risk
- Reduce cost
- Marketing advantages
- NEFAP Future Vision
  - Continue education on the standard and market NEFAP value
  - Increase recognized ABs and FSMOs
  - Increase regulator recognition of the program

