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Water Laboratory Alliance (WLA): Enhancing Water Sector Preparedness

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Agenda

- Emergency Response Laboratory Network (ERLN)
- WLA Background & Implementation
- WLA: Enhancing Water Sector Preparedness
- WLA Response Plan (WLA-RP)
- WLA Plans for 2019
- How can WLA Benefit Monterey County?

Environmental Response Laboratory Network (ERLN)

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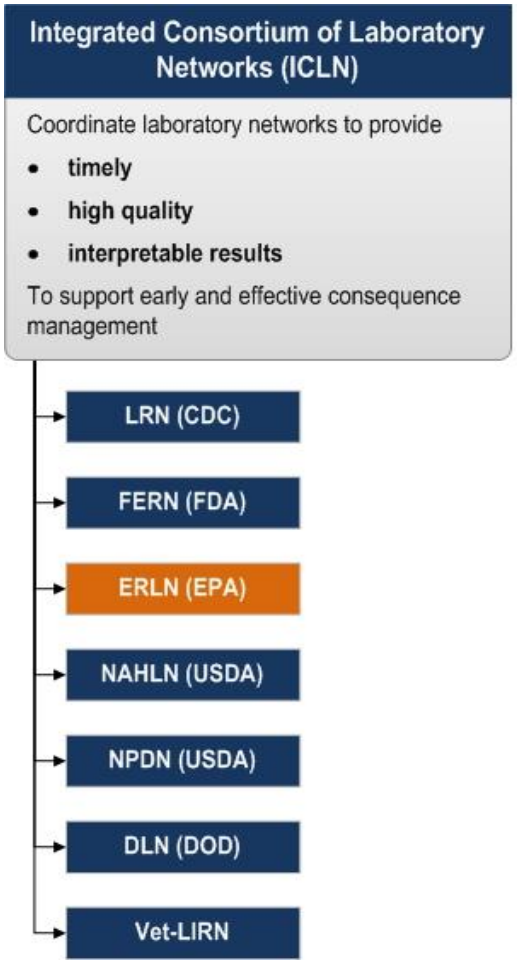
Field Operations Branch
CBRN Consequence Management Advisory Division

What is the Environmental Response Laboratory Network (ERLN)?

- A comprehensive, all-hazard/all environmental media laboratory network for chemical (including CWA), biological, and radiological contaminants supporting the needs of the response community
- Allows for day-to-day use supporting incidents of any scale during preparedness, response and remediation
- Provides a network of laboratories with known quality

Why Laboratory Networks?

- Laboratory networks increase consistency, provide diverse capability and expand analytical capacity
- Through planning, networks can provide laboratory surge capacity support and help define key process steps for information exchange and data sharing during an incident
- ERLN's National Role
  - Environmental
  - Drinking Water



	Laboratory Support to Response Phases			
	Monitoring/ Surveillance	Incident Response	Remediation	Forensics
Human Clinical	HHS	HHS	HHS	FBI
Environmental	EPA	EPA	EPA	FBI
Food	USDA/ HHS	USDA/ HHS	USDA/ HHS	FBI
Animal	USDA	USDA	USDA	FBI
Plant	USDA	USDA	USDA	FBI
Drinking Water	EPA	EPA	EPA	FBI

ERLN Plans for FY19-FY20

- Summarize and report FY19-FY20 ERLN requests and utilize this report-out to member laboratories as a reminder to update Lab Compendium information
- Identify member laboratories that are interested in participating in an exercise of our new web-based data assessment and management tool EXES (Electronic Data Exchange & Evaluation System)
  - EPA will assist volunteer laboratories in producing compliant staged electronic data deliverables (SEDD) files
  - Laboratories without the capability of generating SEDD files can use the SEDDSpread tool and manually create a SEDD file from existing data

ERLN Questions/Comments?

To find out more about the ERLN/WLA application process, go to: https://www.epa.gov/emergency-response/who-should-join-environmental-response-laboratory-network

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WLA Background & Implementation

Authority

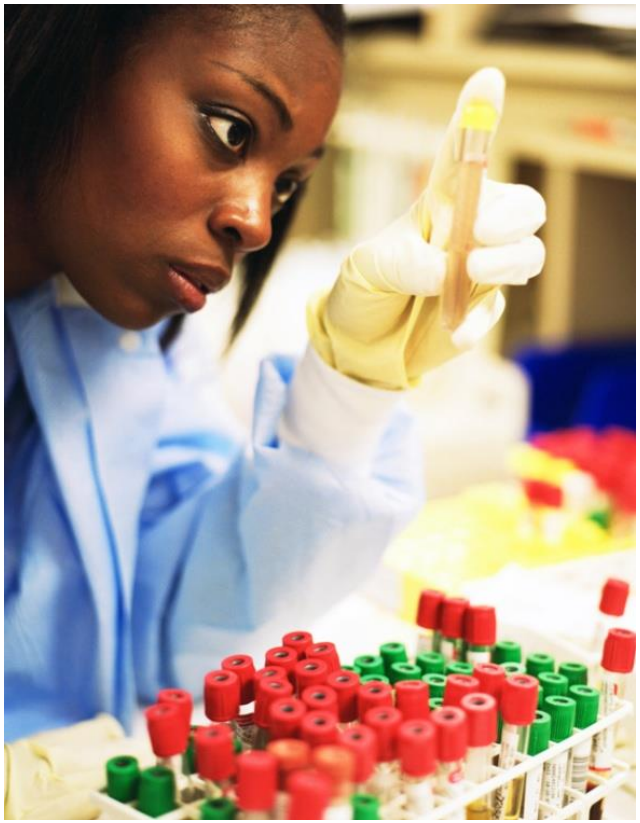
Homeland Security Presidential Directive 9 (HSPD-9) Directs the EPA to:

- "develop ***nationwide laboratory networks for . . . water quality*** that integrate existing Federal and State laboratory resources, are interconnected, and utilize standardized diagnostic protocols and procedures"
  - EPA Response: **Water Laboratory Alliance**

Integrated Consortium of Laboratory Networks

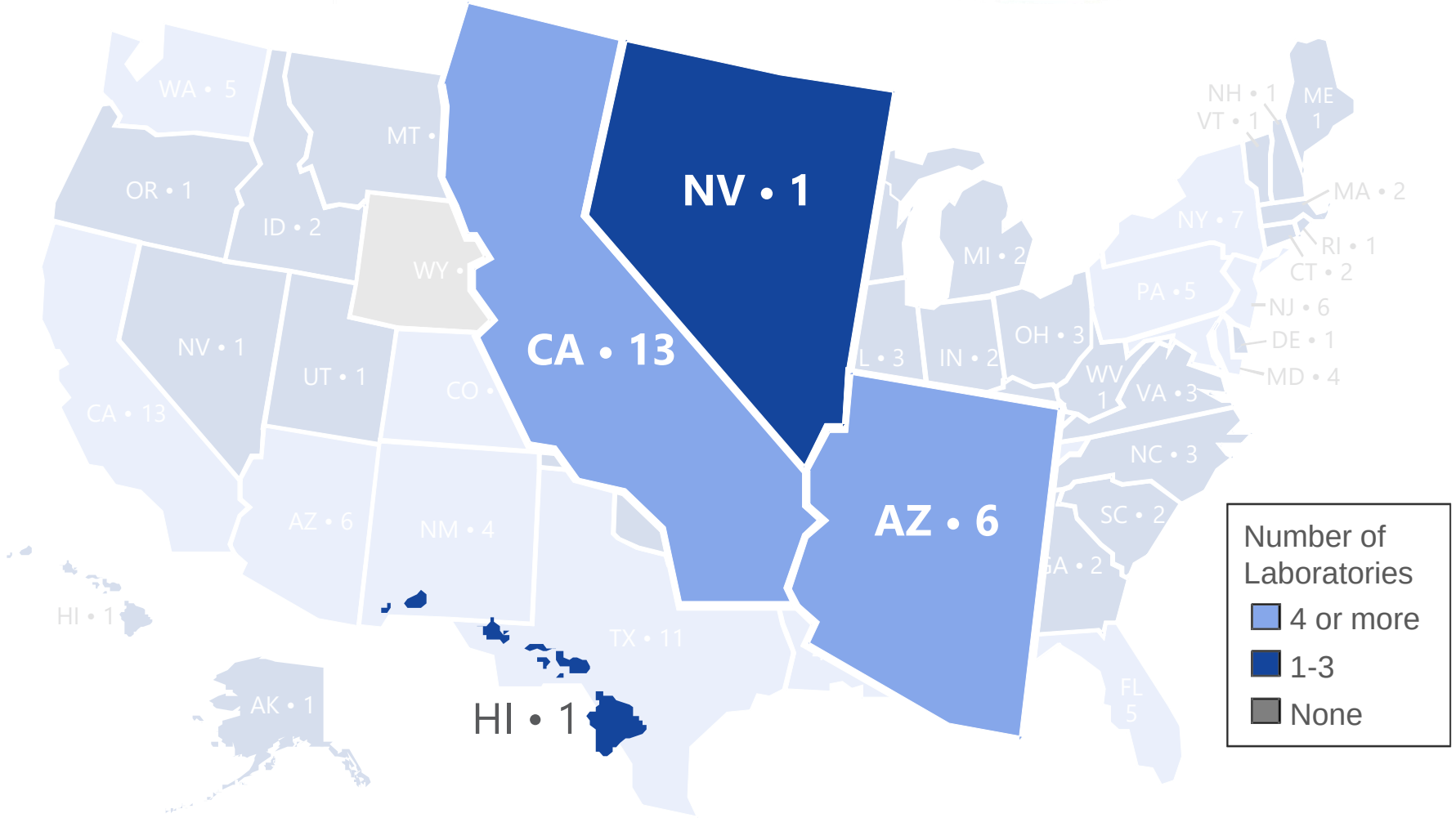
WLA Current Status

WLA Member laboratories fall into a number of categories:



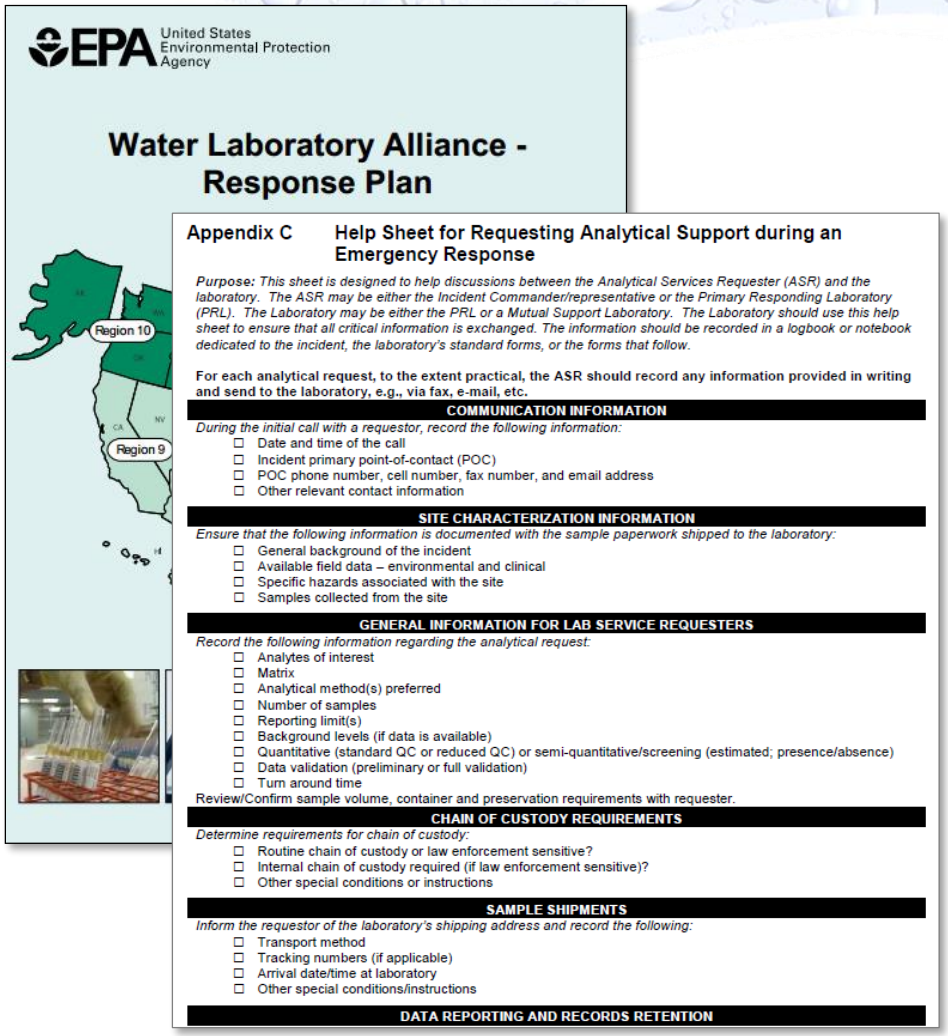
- Commercial
- EPA
- State Government
- Local/Municipal
- Utility
- Government Owned Contractor Operated (GOCO)
- Other Federal Laboratories
- College/University

WLA Membership:
140 Laboratories



Water Laboratory Alliance Response Plan (WLA-RP)

- Establishes a comprehensive, national approach to laboratory response to intentional or unintentional water contamination incidents
- Can be used to coordinate laboratory response for multi-regional and smaller scale incidents
- Provides guidance on communication, sample analyses and data reporting issues



EPA United States Environmental Protection Agency

Water Laboratory Alliance - Response Plan

Region 10

Region 9

Appendix C Help Sheet for Requesting Analytical Support during an Emergency Response

Purpose: This sheet is designed to help discussions between the Analytical Services Requester (ASR) and the laboratory. The ASR may be either the Incident Commander/representative or the Primary Responding Laboratory (PRL). The Laboratory may be either the PRL or a Mutual Support Laboratory. The Laboratory should use this help sheet to ensure that all critical information is exchanged. The information should be recorded in a logbook or notebook dedicated to the incident, the laboratory's standard forms, or the forms that follow.

For each analytical request, to the extent practical, the ASR should record any information provided in writing and send to the laboratory, e.g., via fax, e-mail, etc.

COMMUNICATION INFORMATION

During the initial call with a requestor, record the following information:

- ☐ Date and time of the call
- ☐ Incident primary point-of-contact (POC)
- ☐ POC phone number, cell number, fax number, and email address
- ☐ Other relevant contact information

SITE CHARACTERIZATION INFORMATION

Ensure that the following information is documented with the sample paperwork shipped to the laboratory:

- ☐ General background of the incident
- ☐ Available field data – environmental and clinical
- ☐ Specific hazards associated with the site
- ☐ Samples collected from the site

GENERAL INFORMATION FOR LAB SERVICE REQUESTERS

Record the following information regarding the analytical request:

- ☐ Analytes of interest
- ☐ Matrix
- ☐ Analytical method(s) preferred
- ☐ Number of samples
- ☐ Reporting limit(s)
- ☐ Background levels (if data is available)
- ☐ Quantitative (standard QC or reduced QC) or semi-quantitative/screening (estimated; presence/absence)
- ☐ Data validation (preliminary or full validation)
- ☐ Turn around time

Review/Confirm sample volume, container and preservation requirements with requester.

CHAIN OF CUSTODY REQUIREMENTS

Determine requirements for chain of custody:

- ☐ Routine chain of custody or law enforcement sensitive?
- ☐ Internal chain of custody required (if law enforcement sensitive)?
- ☐ Other special conditions or instructions

SAMPLE SHIPMENTS

Inform the requestor of the laboratory's shipping address and record the following:

- ☐ Transport method
- ☐ Tracking numbers (if applicable)
- ☐ Arrival date/time at laboratory
- ☐ Other special conditions/instructions

DATA REPORTING AND RECORDS RETENTION

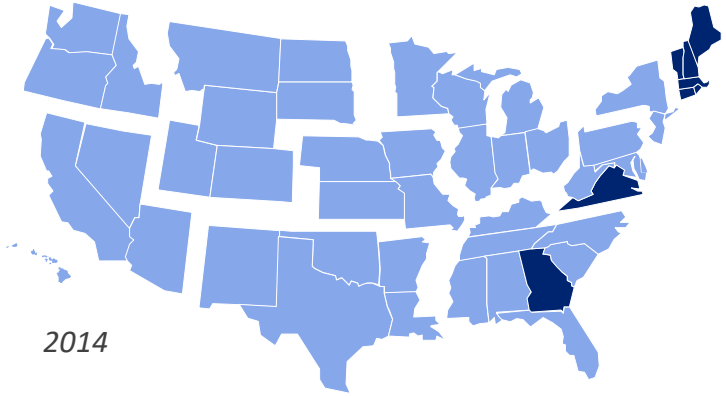
https://www.epa.gov/waterlabnetwork/water-laboratory-alliance-response-plan

Examples of WLA Analytical Preparedness Full-Scale Exercises (AP-FSEs)

EPA conducts AP-FSEs in multi-regional and utility-led formats to increase use of WLA-RP best practices and enhance communication in the Water Sector.

Region 1: 6 AP-FSEs

Utility-Led • ERLN/WLA

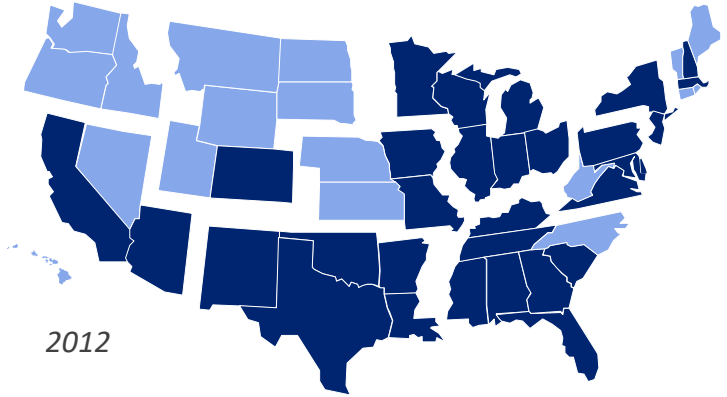


2014

6 Simultaneous Utility-Led Exercises
8 States
7 State Laboratories
7 Commercial Laboratories
1 Wastewater Laboratory
2 Concurrent Scenarios: Chemical Pesticide and *Salmonella* (Biological)
~170 Water samples analyzed for chemical or biological contaminants

Regions 4, 5 & 6 AP-FSE

ERLN/WLA•LRN•FERN



2012

30 States **5** Federal Agencies: CDC, EPA, FDA, NOAA and USDA
40 State Laboratories **5** Federal Laboratories
2 Commercial Laboratories **2** Mobile Laboratories
2 Non-profit and Academic Laboratories
4 Concurrent scenarios: Chemical Pesticides, CWA, CWA Degradation Products, Select Agent (Biological), Non-select Agent (Biological)
>7,000 Multi-media samples analyzed for chemical or biological contaminants

Incidents that Required Analytical Support

Boston, Massachusetts
Water Main Break, 2010

New England Regional Laboratory requested in-kind support of laboratory supplies for analysis

Fukushima, Japan
Daiichi Nuclear Power Plant, 2011

ERLN/WLA laboratory analyzed drinking water samples for Cesium 134 and 137 by gamma spectroscopy

Incidents, continued

Eden, North Carolina - Coal Ash Spill, 2014

ERLN/WLA laboratory provided particle size distribution (PSD) analysis of water samples

Toledo, Ohio - Microcystin Contamination, 2014 (no WLA involvement)

Communication between all organizations involved

WLA: Enhancing the Nation's Laboratory Preparedness

Have you or your organization been involved in a response to a water contamination incident?

- What went well?
- What could have been improved?
- Did you have access to the resources that you needed?

The WLA is here to help!

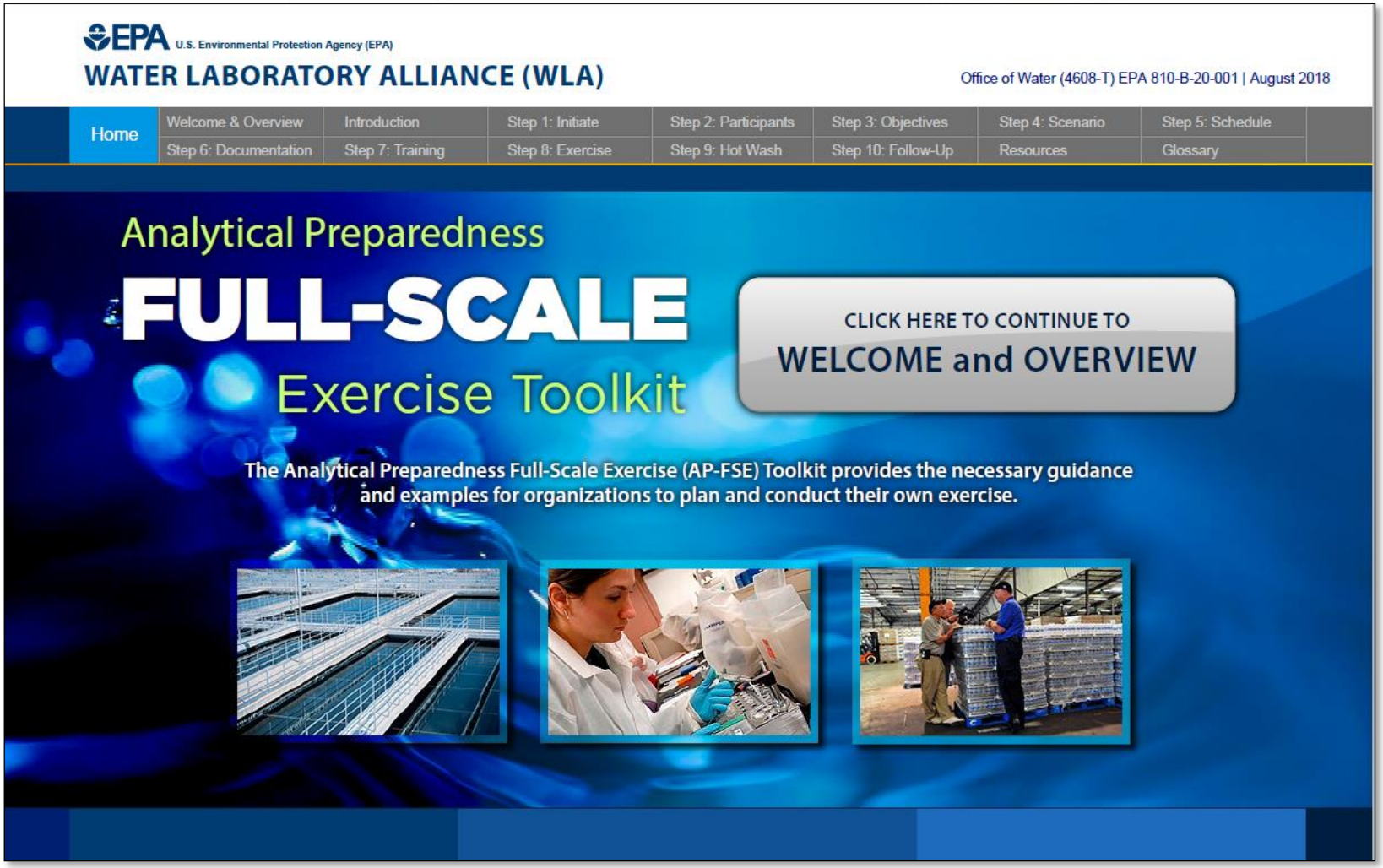
The WLA has developed tools and resources to aid in an analytical response

- **WLA Analytical Preparedness Full-Scale Exercise (AP-FSE) Toolkit**
- **Analytical Preparedness Self-Assessment (APS)**
- ***Sampling Guidance for Unknown Contaminants***
- Water Contaminant Information Tool (WCIT)
- Laboratory Compendium
- Continuity of Operations Plan (COOP) Template
- Accessing Laboratory Support

Plan a Laboratory Full-Scale Exercise

https://www.youtube.com/watch?v=y4U3HPj2wgQ&feature=youtu.be

WLA Analytical Preparedness Full-Scale Exercise (AP-FSE) Toolkit



https://www.epa.gov/sites/production/files/2018-09/documents/ap_fse_toolkit_0.pdf

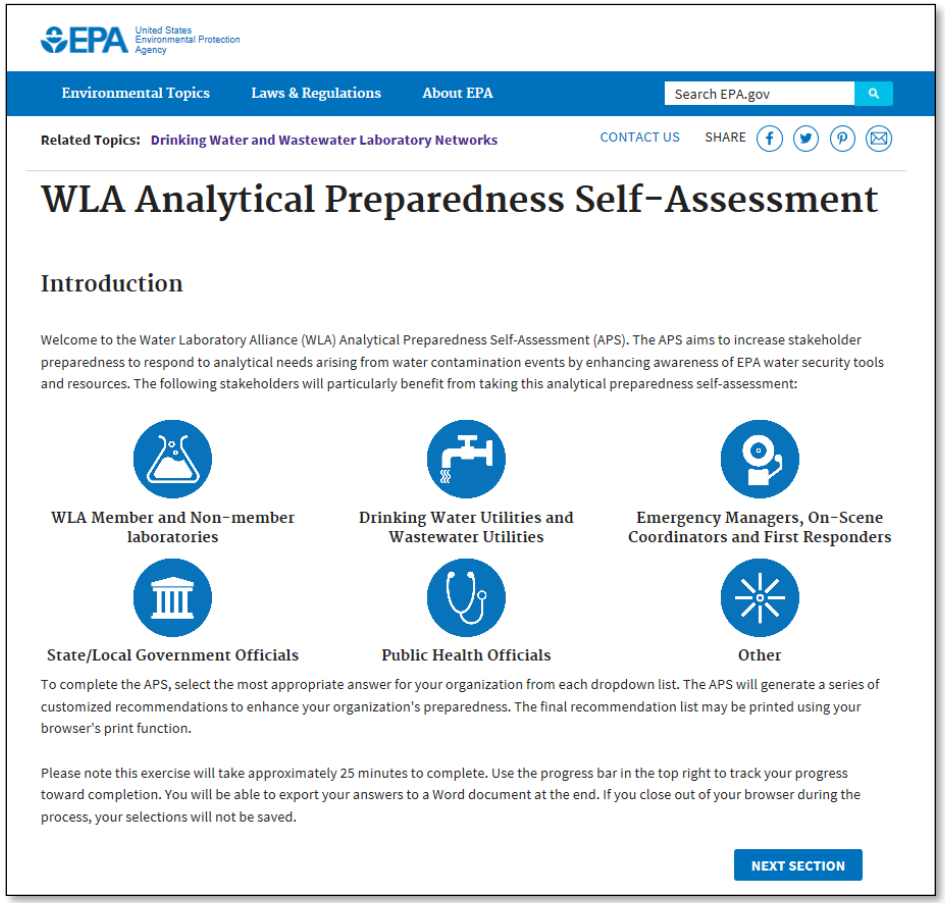
AP-FSE Toolkit: 4 Utility-Led Pilot Exercises

- **Utilities leveraged resources within the toolkit to design an exercise to meet their specific objectives**
  - Master scenario events lists (MSELs)
  - Exercise evaluation guides (EEGs)
  - PowerPoint training templates
- **Using the same toolkit materials, the utilities developed three very different exercises**
- **The toolkit allowed utilities to develop and conduct their exercise in 3 – 6 months**
  - Significantly reduced the timeframe for developing an HSEEP consistent exercise
  - Significantly reduced amount of time for utility staff to prepare and conduct their exercise
- **Pilot Exercise Feedback**
  - “This is one of the best tools we have used recently”
  - “Very worthwhile to participate in the exercise”

WLA Analytical Preparedness Self-Assessment (APS)

Purpose: Increase stakeholder preparedness to respond to analytical needs arising from water contamination events by enhancing awareness of EPA water security tools and resources

- Easy-to-use starting place to assess preparedness for water contamination incidents
- APS is a Toolbox that:
  - Provides a customized checklist of recommendations to improve preparedness
  - Identifies and guides users to existing analytical preparedness tools and resources



https://www.epa.gov/waterlabnetwork/wla-analytical-preparedness-self-assessment

Sampling Guidance for Unknown Contaminants in Drinking Water

- Integrates sample collection, preservation and transport procedures
- Provides an example of what is required for a comprehensive sampling program
- Supplements emergency response plans
- Includes helpful resources, including approaches to collaborate with other agencies

Table 7-2: Chemical and Toxin Collection Guidelines

Contaminant Class/Type	Container Volume and Type	No. of Containers	Disinfection Reducing Agent	Preservative	Holding Time	Analytical Technique
Toxin	100 mL - 1 L; refer to analytical method and/or SCID for toxin-specific requirements	Method-specific	None	Transport on ice or at (-) 20°C (on dry ice); refer to SCID for toxin specific requirements	Minimize transport and storage time. If feasible, analyze or extract immediately upon receipt at the laboratory.	Varies
Volatiles (Methods 502.2, 8021B, 524.3, 8260B)	40 mL, Glass w/ PTFE-lined septa	5	Ascorbic acid (0.25–0.5 g)	1:1 HCl to pH ≤2 Store at <4°C	14 days	P&T - GC/MS P&T - GC/PID/ELCD
Carbamate Pesticides (Methods 531.1, 531.2)	40 mL, Glass w/ PTFE-lined septa	4	Sodium thiosulfate (12.5 mg)	Potassium dihydrogen citrate; adjust sample pH to ~3.8 Store at ≤4°C	28 days	HPLC-fluorescence
Unknown organics (volatile)	40 mL, Glass w/ PTFE-lined septa	5	None	None - mark samples not preserved Store at <4°C	7 days	P&T - GC/MS
Metals/ Elements (Methods 200.7, 200.8, 200.9)	500 mL, Plastic (i.e., HDPE)	2	None	Trace metal grade nitric acid to pH ≤2	6 months	ICP-MS ICP-AES AA
Organometallic compounds	125 mL, Plastic (i.e., HDPE)	2	None	Nitric acid to pH ≤2	30 days	AA - cold vapor manual AA - cold vapor automated
Toxicity	125 mL, Glass	2	Consult manufacturer's instructions	Consult manufacturer's instructions	Consult manufacturer's instructions	Rapid toxicity assay (several vendors)

https://www.epa.gov/waterlabnetwork/sampling-guidance-unknown-contaminants-drinking-water

Water Contaminant Information Tool (WCIT)

- Released in 2005
- Describes 811 contaminants that pose a serious threat if accidentally or intentionally introduced into water systems
- Data are reviewed by experts and regularly updated
- Data are specific to the needs of drinking water and wastewater systems

https://www.epa.gov/waterlabnetwork/access-water-contaminant-information-tool

ERLN Laboratory Compendium

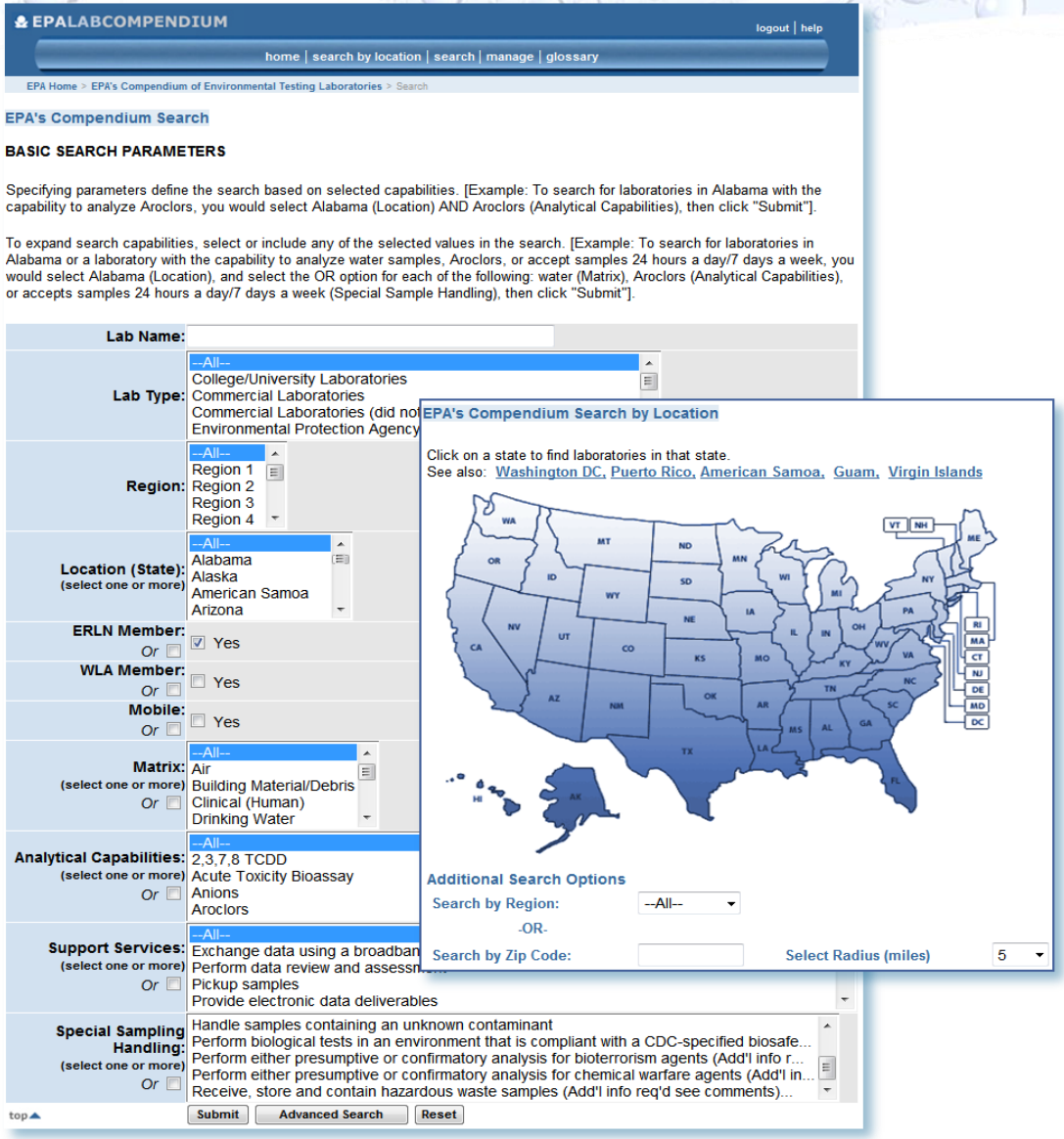
EPA's Compendium of Environmental Testing Laboratories (Laboratory Compendium)

- **Environmental Response Laboratory Network (ERLN) tool housed on a secure web-based server**
- **An online database of nationwide environmental laboratories available to:**
  - EPA, Federal, State and local emergency responders
  - Laboratory personnel
  - Water utilities
- **Contains records of laboratories with the capability and capacity to analyze a variety of agents:**
  - Chemical, biological and radiochemical

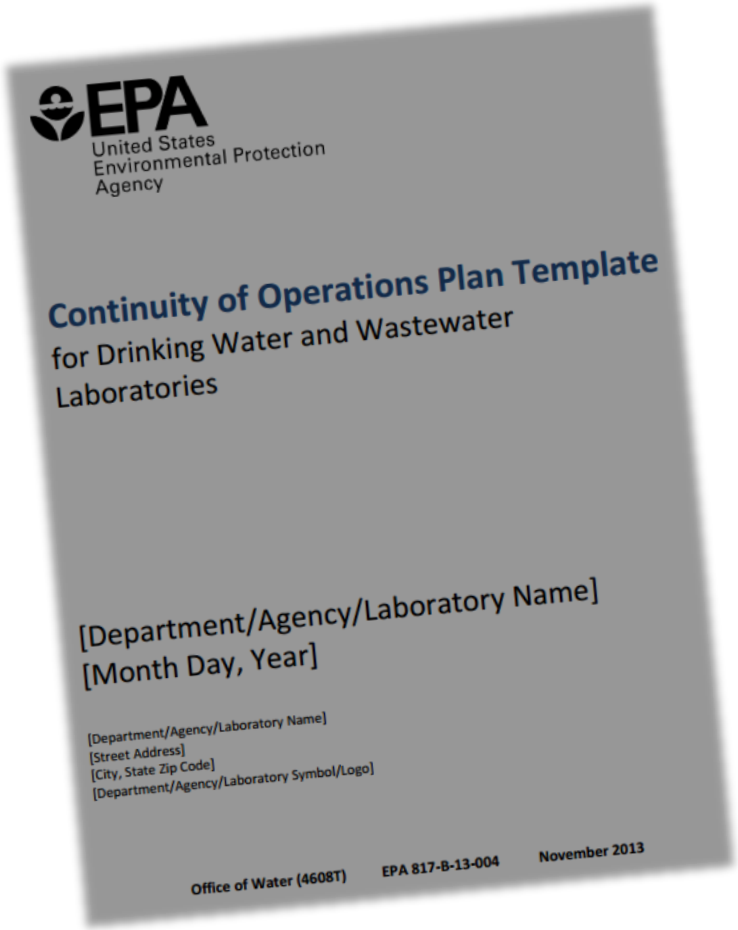
https://cfext.epa.gov/cetl

ERLN Laboratory Compendium (cont'd)

- Searchable EPA Laboratory Compendium for rapid identification of quality laboratory resources
  - Capabilities
  - Capacities
  - Certifications
  - Instrumentation
  - Personnel
- The Compendium search is done for the customer and capabilities of the member laboratories are verified
- The Compendium is much more than just homeland security related analyses



COOP: Value to Laboratories



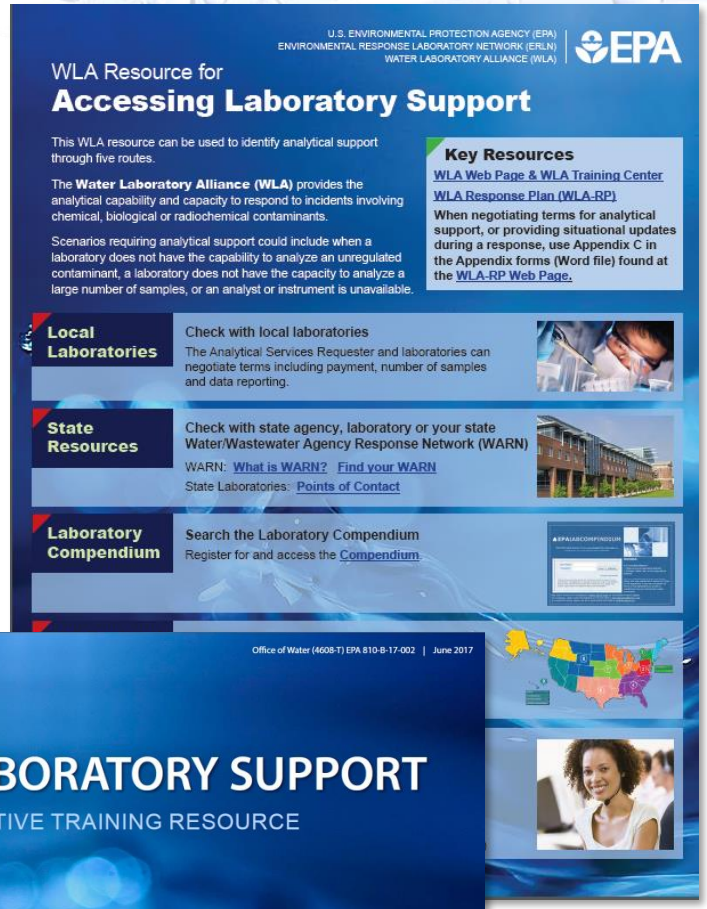
Continuity of Operations Plan (COOP)

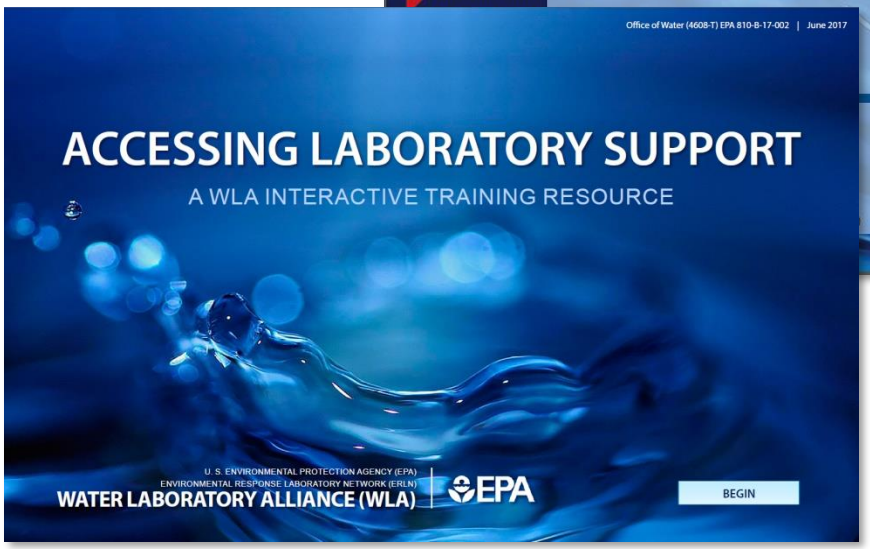
- **Establishes policies and procedures to ensure a laboratory *can perform critical and essential functions* during a wide range of emergencies**
- **The COOP Template**
  - Allows laboratories to develop a COOP specific to their laboratory in a stepwise fashion
  - Provides the framework and guidance to prepare a comprehensive COOP
  - Makes it easy to update the COOP
  - Includes supplemental resources such as the *COOP Instructions* and fact sheet

Accessing Laboratory Support Interactive Training: Summary Resource

Would you know where to find analytical support if:

- Your laboratory was expecting a large number of samples and a key staff member had an emergency?
- Your supply of a critical reagent was on backorder and you received unexpected samples?
- After a major flood, a huge surge of *Cryptosporidium* samples were received?





https://www.epa.gov/waterlabnetwork/accessing-laboratory-support

Water Laboratory Alliance Response Plan (WLA-RP)

Laboratory Black Box

Often during emergency response, laboratories are treated as a “black box” for data generation:

Samples go in and data comes out.

WLA Response Plan (WLA-RP)

- Establishes a comprehensive, national approach to laboratory response to intentional or unintentional water contamination incidents
- Can be used to coordinate laboratory response for multi-regional and smaller scale incidents
- Provides guidance on communication, sample analyses and data reporting issues

WLA-RP Roles and Responsibilities

Analytical Service Requester (ASR)

- Primary point of contact who requests analytical assistance
- Primary decision maker regarding analyses needed, data turnaround times, etc.

Primary Responding Laboratory (PRL)

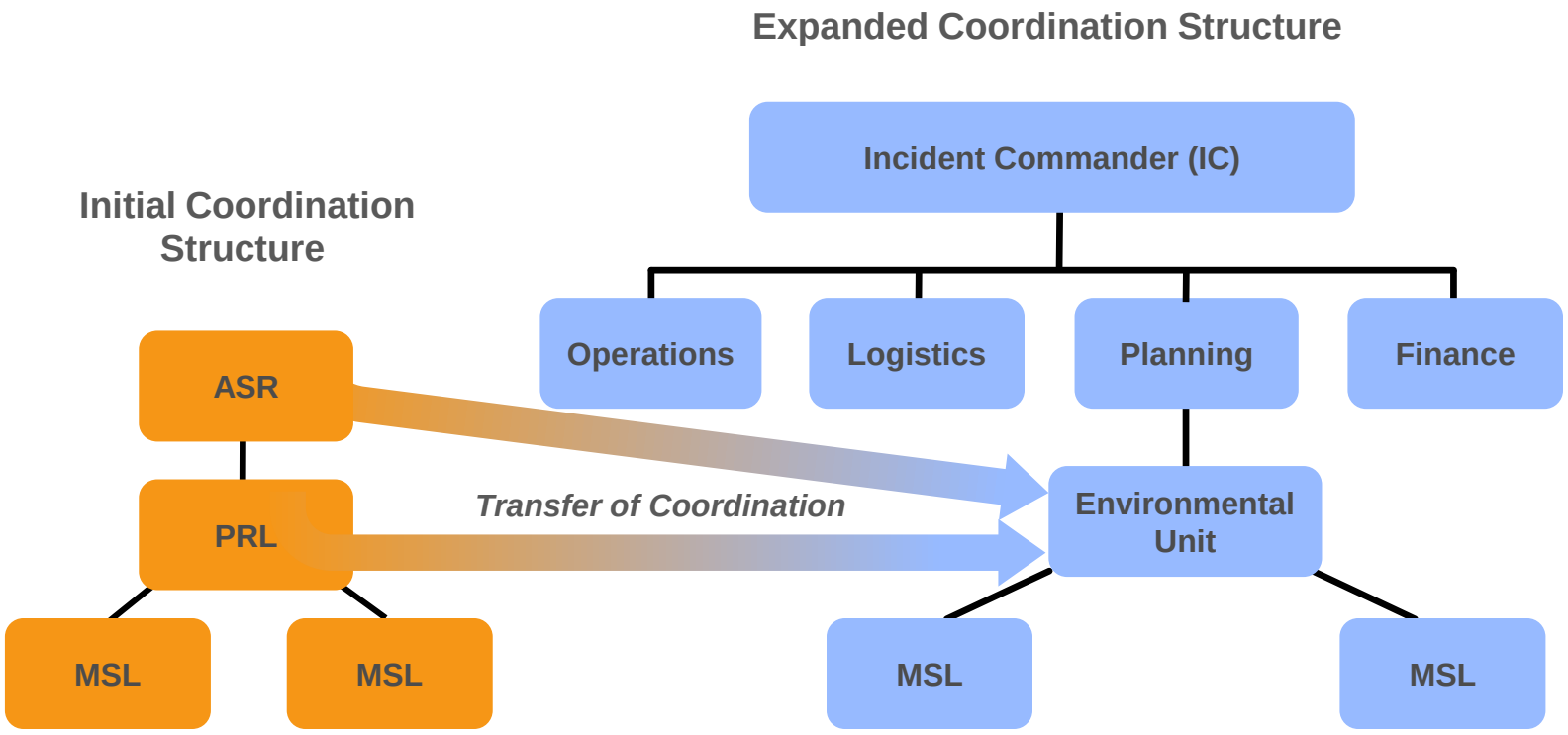
- Initial laboratory contacted by the ASR
- Help coordinate activities of other support laboratories

Mutual Support Laboratory (MSL)

- Additional laboratory engaged by ASR or PRL to provide resources to meet the analytical needs of an incident

Laboratory Coordination

Laboratory coordination within the Incident Command System (ICS)



Sample Shipping and Tracking

- Have staff trained in shipping and receipt of hazardous materials and dangerous goods
- Agree on chain-of-custody (COC) requirements

- If sample is compromised during shipping (e.g., holding time or sample temperature exceeded), laboratories should consult with the ASR

https://www.epa.gov/waterlabnetwork/water-laboratory-alliance-training-center

Analytical Methods and Quality Control (QC)

Analytical Methods

- Provides guidance on basic field/safety screening, rapid analysis, confirmatory methods
- Suggests selection of methods is based on monitoring needs, including data turnaround times
- Provides preferred sources for confirmatory methods

Quality Control (QC)

- Emphasizes setting quality assurance (QA)/QC requirements based on monitoring needs
- Establishes a minimum set of QC that should be performed for all analyses

Appendix C: Help Sheet for Requesting Analytical Support

Appendix C Help Sheet for Requesting Analytical Support during an Emergency Response

Purpose: This sheet is designed to help discussions between the Analytical Services Requester (ASR) and the laboratory. The ASR may be either the Incident Commander/representative or the Primary Responding Laboratory (PRL). The Laboratory may be either the PRL or a Mutual Support Laboratory. The Laboratory should use this help sheet to ensure that all critical information is exchanged. The information should be recorded in a logbook or notebook dedicated to the incident, the laboratory's standard forms, or the forms that follow.

For each analytical request, to the extent practical, the ASR should record any information provided in writing and send to the laboratory, e.g., via fax, e-mail, etc.

COMMUNICATION INFORMATION

During the initial call with a requestor, record the following information:

- ☐ Date and time of the call
- ☐ Incident primary point-of-contact (POC)
- ☐ POC phone number, cell number, fax number, and email address
- ☐ Other relevant contact information

SITE CHARACTERIZATION INFORMATION

Ensure that the following information is documented with the sample paperwork shipped to the laboratory:

- ☐ General background of the incident
- ☐ Available field data – environmental and clinical
- ☐ Specific hazards associated with the site
- ☐ Samples collected from the site

GENERAL INFORMATION FOR LAB SERVICE REQUESTERS

Record the following information regarding the analytical request:

- ☐ Analytes of interest
- ☐ Matrix
- ☐ Analytical method(s) preferred
- ☐ Number of samples
- ☐ Reporting limit(s)
- ☐ Background levels (if data is available)
- ☐ Quantitative (standard QC or reduced QC) or semi-quantitative/screening (estimated; presence/absence)
- ☐ Data validation (preliminary or full validation)
- ☐ Turn around time

Review/Confirm sample volume, container and preservation requirements with requester.

CHAIN OF CUSTODY REQUIREMENTS

Determine requirements for chain of custody:

- ☐ Routine chain of custody or law enforcement sensitive?
- ☐ Internal chain of custody required (if law enforcement sensitive)?
- ☐ Other special conditions or instructions

SAMPLE SHIPMENTS

Inform the requestor of the laboratory's shipping address and record the following:

- ☐ Transport method

Appendix C, continued

Appendix C Form Part 1: Requesting Analytical Support during Water Emergency Response (ASR⇔ PRL)

Purpose: This sheet is designed to help discussions between the Analytical Services Requester (ASR) and the Primary Responding Laboratory (PRL). Potential PRLs should use this help sheet to ensure that all critical information is exchanged. The PRL can recruit Mutual Support Laboratories to perform the work which they cannot do, so the PRL needs to record all of the required analytical work regardless of whether the PRL can perform the work in house.

COMMUNICATION INFORMATION

Date of initial call:

Time of initial call:

Who is in charge of the incident (Analytical Services Requester (ASR) or Incident Commander(IC))?

ASR/IC name:

ASR/IC phone number:

ASR/IC cell number:

ASR/IC fax number:

ASR/IC email address:

Other contacts (utilities, labs, public health, law enforcement, etc.):

EPA/Public Information Officer (PIO) contact:

SITE CHARACTERIZATION INFORMATION

Ensure that this information is documented with the sample paperwork shipped to the laboratory:

Nature of threat:

How was the threat determined (who, what, when):

Threat investigation status, circle one: a) possible b) credible c) confirmed d) other - list here:

Incident information:

Has distribution system been shut down? a) yes b) no c) don't know

Is this incident law enforcement sensitive? a) yes b) no c) don't know

Who has been contacted?

Any known exposure risks: a) contact b) inhalation c) ingestion d) other - specify:

Appendix G: Chain of Custody Form

Appendix G Example of a Chain-of-Custody Form

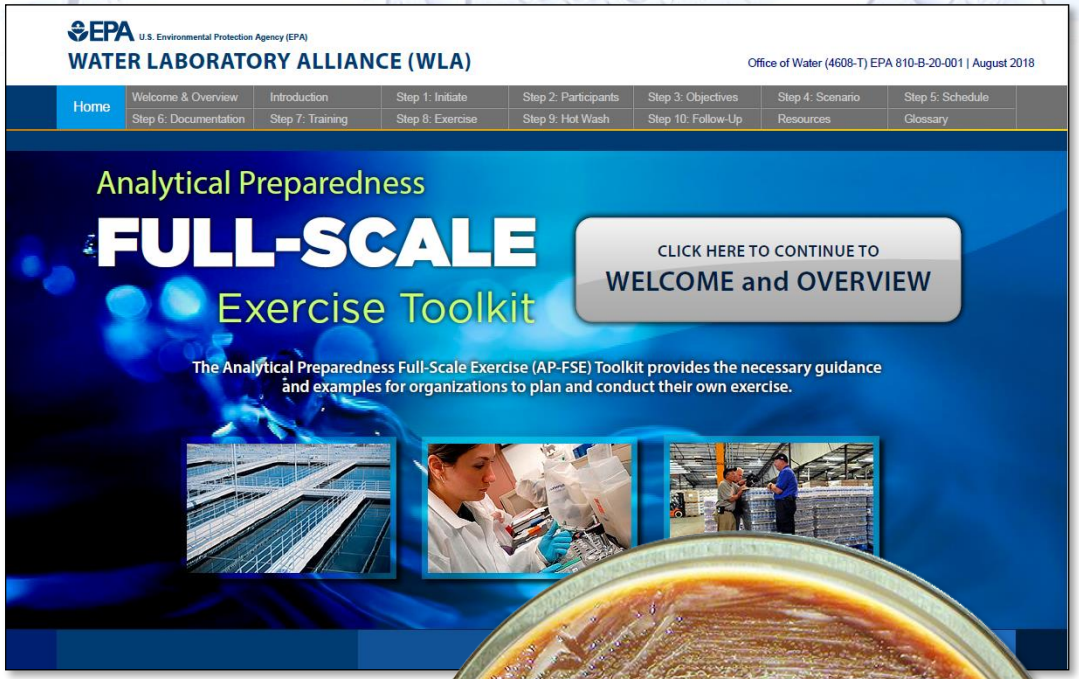
Chain of Custody Form							
Site Name:			Sample Owner/Collector:				
Contact Information:			Signature				
Sample ID	Collection Date/Time (24 h)	Sample Location	Sample Type (Matrix)	Grab/ Composite	Preservative(s)	No./Type of Bottles	Comments
Matrix: DW = Drinking Water, RW = Reservoir Water, UW=Untreated Water, SD = Sediment, SL = Sludge, SO = Soil, SM = Misc. Solid Material							
Relinquished By:		Received by:			Date/Time:		
Relinquished By:		Received by:			Date/Time:		
Relinquished By:		Received by:			Date/Time:		
Relinquished By:		Received by:			Date/Time:		
Relinquished By:		Received by:			Date/Time:		
Dispatched by:	Date/Time:		Received by:		Date/Time:		
Method of Sample Transport							
Shipper:	Phone No.:		Shipper's Tracking No.:				

Attach additional pages as required.

WLA Activities for 2019

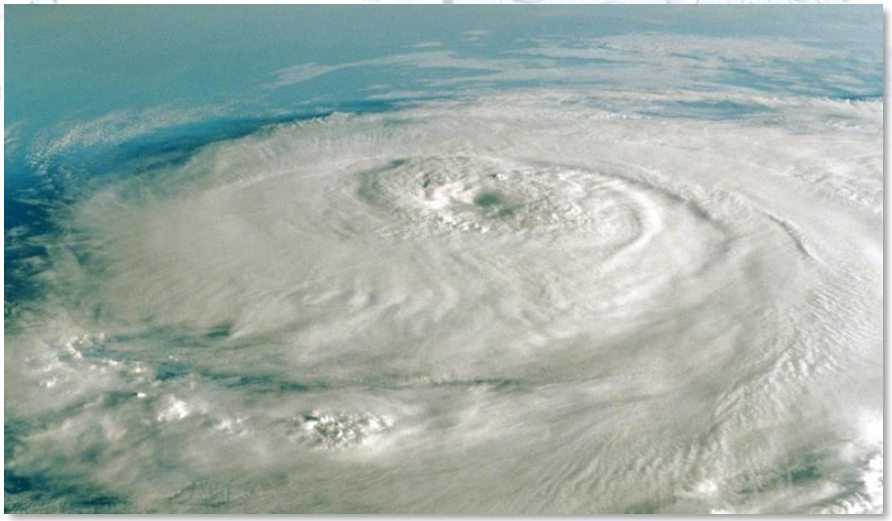
2019 Utility-led AP-FSEs

- Up to 2 utilities will plan and conduct their own AP-FSE using the toolkit
- New scenario and supporting documentation for *Yersinia pestis*
- Collecting multi-laboratory method performance data on EPA NHSRC's *Protocol for Detection of Yersinia pestis in Environmental Samples During the Remediation Phase of a Plague Incident*



WLA SECURITY SUMMIT

November 13-14, 2019
U.S. EPA Region 4 (R4)



- The WLA Security Summit is a great way to network with potential Response Partners—prior to a water contamination emergency. Learn more about EPA Water Security products during a hands-on exercise.
- Tech Town will feature live demonstrations of various EPA tools, including the Water Contaminant Information Tool (WCIT) and *Sampling Guidance for Unknown Contaminants in Drinking Water*.

How can WLA benefit your organization?

How does the WLA benefit you?

- Networking opportunities to enhance relationships and improve communication (e.g., Summits, exercises)
- Improved Water Sector preparedness for response to water contamination incidents
- Access to laboratory support when contaminant analyses exceed in-house capabilities or capacity
- Tools, resources and training

WLA Training Opportunities: Live Events

WLA Response Plan Tabletop Exercise (TTX)

Continuity of Operations (COOP) Template

Analytical Preparedness Full-Scale Exercise Toolkit

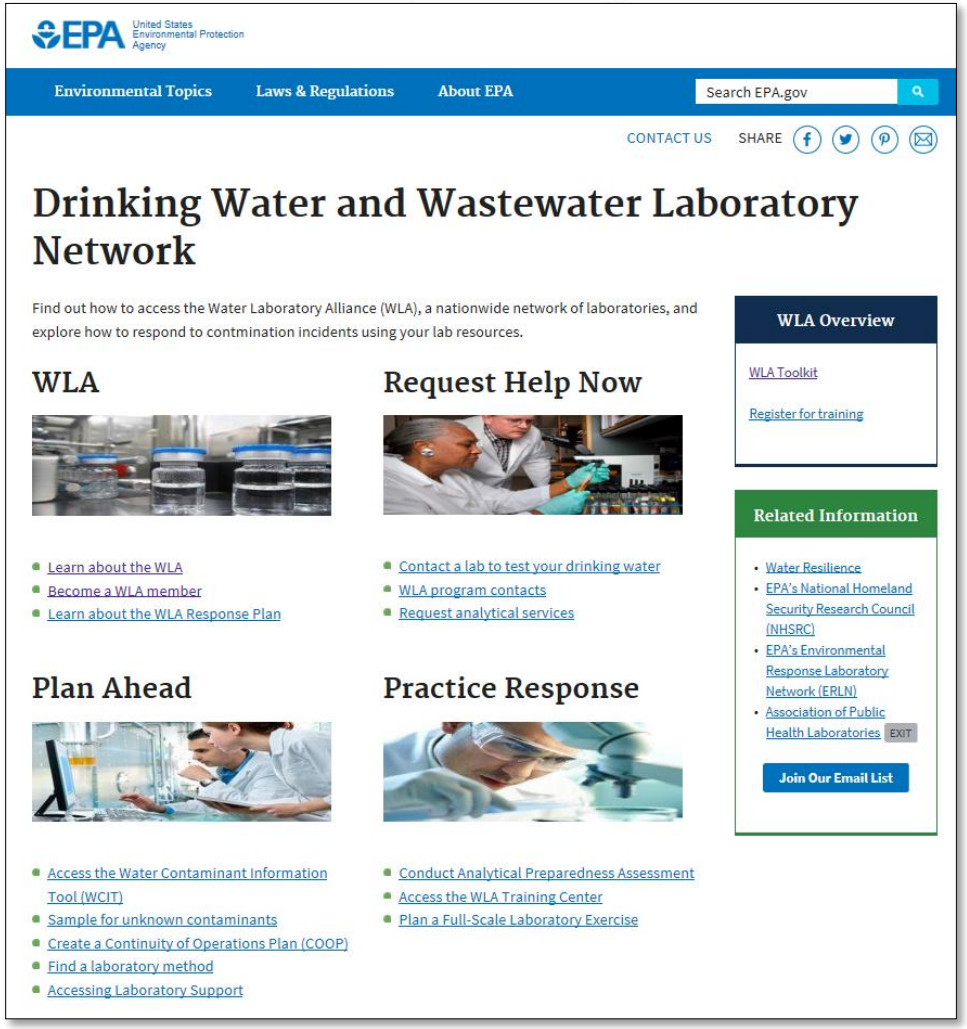
Sampling Guidance for Unknown Contaminants

Water Contaminant Information Tool (WCIT)

Decontamination Strategies

To learn more these training opportunities and how to register, please visit
https://www.eventbrite.com/o/epa-office-of-water-water-security-division-water-laboratory-alliance-8453004715
or email the WLA Team at WLA@epa.gov

WLA Training Opportunities: On-Demand



- **WLA Response Plan (WLA-RP) Training Module**
- Handling Criminal Investigation Samples: Maintaining Chain of Custody (Parts 1&2)
- Automated Ultrafiltration (UF) Device Videos
- Becoming a Water Laboratory Alliance Member
- Water Laboratory Alliance Overview for Members

https://www.epa.gov/waterlabnetwork

WLA Liaisons are an Important Part of Water Sector Security and Preparedness

WLA Liaisons play a central role.

WLA Liaisons include staff from:

- Drinking water utilities
- Wastewater utilities
- Emergency management agencies
- State public health laboratories
- State environmental laboratories
- Drinking water programs
- Water Sector associations

WLA Liaisons have direct access to:

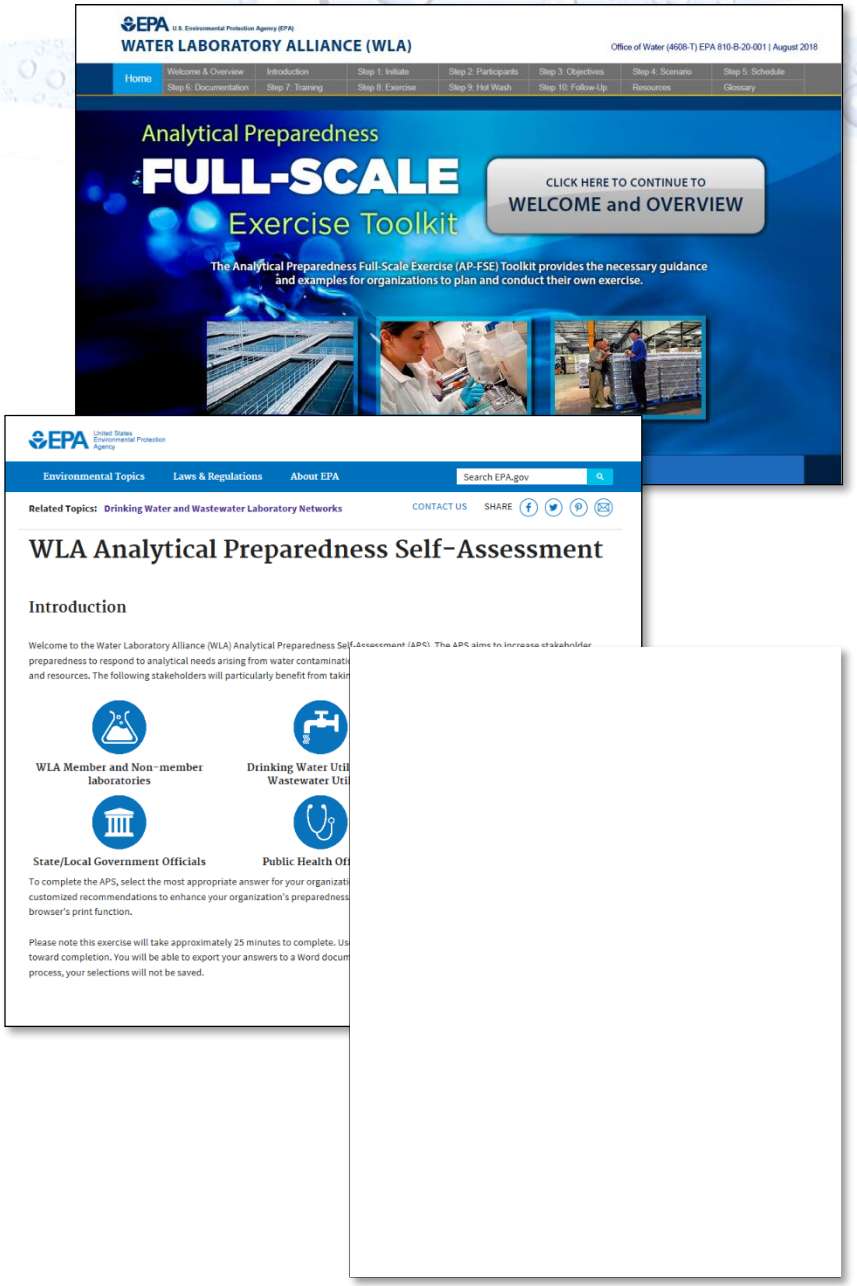
- Networking across sectors
- Reviewing and commenting on tools and resources that are under development
- Participating in tabletop and full-scale exercises
- Providing ideas and feedback for further collaboration and growth

Interested in becoming a WLA Liaison, or nominating a colleague?

Please contact us by email at WLA@epa.gov.

Action Items

- **Participate in an AP-FSE**
- **Complete the Analytical Preparedness Self Assessment for your organization**
- **Become a WLA Liaison**
- Prepare sampling kits for unknowns in advance
- Participate in a webcast or take advantage of online training
- Share information on EPA tools and resources with your colleagues
- Have multiple staff sign up for WCIT
- Update your Laboratory Compendium profile

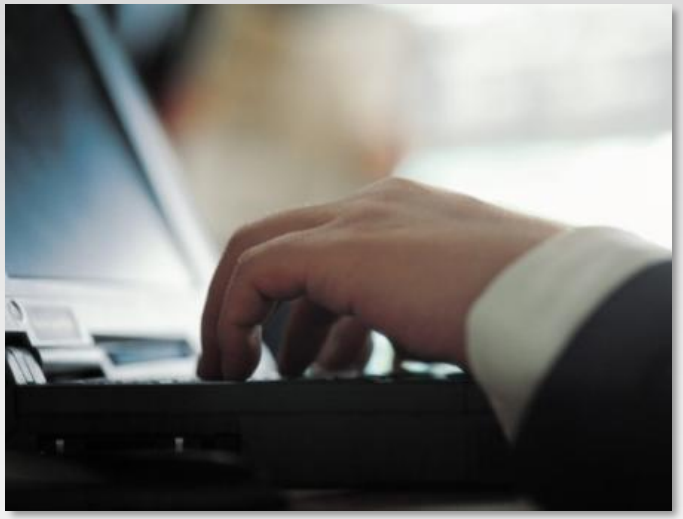


Utility and Laboratory: Potential Response Partners

- State drinking water agencies
- State Water/Wastewater Agency Response Network (WARN)
- Local and state elected officials
- Local and state emergency management agencies
- Local and state emergency operations centers (EOCs)
- Local and state health departments
- Drinking water associations (e.g., rural water associations)
- Federal government agencies (e.g., EPA, Centers for Disease Control and Prevention [CDC])
- First responders/emergency managers
- Hospitals, including emergency rooms
- Law enforcement (including the Federal Bureau of Investigation [FBI])
- Media
- Other water utilities
- Phone companies
- Poison Control Centers
- Power companies

We are Here to Help!

For information on joining ERLN/WLA visit:
https://www.epa.gov/emergency-response/who-should-join-environmental-response-laboratory-network



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