



EPA Region 9 & 10 Laboratory Full-Scale Exercise After-Action Report – Chemical Warfare Agent and Toxic Industrial Chemicals Environmental Scenario

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4. Points of Contact:

Adrian Hanley
Chemist
U.S. Environmental Protection Agency Office of Water
1200 Pennsylvania Avenue, N.W.
Mail Code 4608T
Washington, DC 20460
202-564-1564; e-mail: hanley.adrian@epa.gov

Jennifer Scheller
Senior Project Manager
CSC
6101 Stevenson Avenue
Alexandria, VA 22304
703-461-2118 e-mail: jscheller@csc.com

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Region 9 and 10 Full-Scale Exercise Design Team

Antley, Allan	Computer Sciences Corporation (CSC)
Balderas, Eloy	U.S. Environmental Protection Agency (EPA) – Region 9
Barnes, Pamela	EPA
Berges, Jack	EPA – Region 9
Boykin, Michael	EPA – Region 10
Chambers, Yildiz	CSC
Chao, Kevin	California Public Health Laboratory
Davis, Jerrod	Washington State Department of Health
Dodo, Gerald	EPA – Region 10
Fitz-James, Schatzi	EPA
Gray, Fredianne	EPA – Region 10
Haigh, Ted	EPA – Region 10
Hanley, Adrian	EPA
Harris, Stephanie	EPA – Region 10
Holt, Phil	Centers for Disease Control and Prevention (CDC)
Jevitt, Laura	CDC
Kobelski, Robert	CDC
Mahlik, Doak	Federal Bureau of Investigation (FBI)
Mapp, Latisha	EPA
Maxfield, Robert	EPA – Region 1
Mcknight, Gregory	Washington State Department of Health
Modigliani, Lisa	CSC
Morris, Tony	EPA – Region 10
Parker, Kathy	EPA – Region 10
Pepich, Barry	EPA – Region 10
Petro, Alan	CSC
Raynor, Malik	EPA
Reimer, Steve	EPA – Region 10
Rhodes, Blain	Washington State Department of Health
Scheller, Jennifer	CSC
Smith, Terry	EPA
Warner, Trace	Washington State Department of Health
Waterman, Ernest	EPA – Region 1
Workman, Rosemary	EPA

Participant Laboratories

Arizona Department of Public Health Laboratory	Nevada State Laboratory
CH2MHill, Inc., Applied Sciences Laboratory	Oregon Department of Environmental Quality
City of Phoenix Water Services Laboratory	Pima County Compliance Laboratory
City of Scottsdale Water Quality Laboratory	TestAmerica Laboratories, Inc. (Irvine, CA)
EPA Region 9 Laboratory	TestAmerica Laboratories, Inc. (Phoenix, AZ)
EPA Region 10 Laboratory	TestAmerica Laboratories, Inc. (Sacramento, CA)
Hawaii Department of Health Laboratory	Washington Department of Ecology
Idaho Bureau of Laboratories	Washington State Public Health Laboratories
Metro Water District of Southern California	

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Executive Summary

The U.S. Environmental Protection Agency (EPA) Office of Ground Water and Drinking Water (OGWDW), EPA Office of Emergency Management (OEM), and Centers for Disease Control and Prevention (CDC) collaborated with EPA Regions 9 and 10 to plan and conduct a full-scale laboratory response exercise. The goals of the exercise were to test EPA's Water Laboratory Alliance (WLA) Response Plan (WLA-RP) and Environmental Response Laboratory Network (ERLN) emergency response procedures during a large-scale, multi-regional incident. Other goals included identifying opportunities for enhancement and improvement of collaboration, communication, and coordination between EPA's ERLN and CDC's Laboratory Response Network (LRN). The full-scale exercise (FSE) assessed the effectiveness of laboratory response to a combined chemical and biological warfare agent attack.

The FSE in EPA Regions 9 and 10 was conducted during the week of August 23, 2010, with key initial steps starting on Friday, August 20, 2010. The FSE was divided into three major scenarios which are described as follows:

- *Chemical Warfare Agent (CWA) and Toxic Industrial Chemical (TIC) Environmental* – A light aircraft, operated by a terrorist, sprays a large, fully-occupied sports arena with the CWA Mustard-Lewisite. Shortly after the attack, the airplane collides with a yacht club facility in which TICs are stored, resulting in a fire and explosion.
- *CWA Clinical* – As a result of the CWA attack, many people are exposed to CWAs and are seeking care in their local hospitals. Patient specimens are sent to state public health laboratories for analyses.
- *Biological Select Agent Environmental* – A bacterial select agent is introduced directly into a metropolitan drinking water distribution system by the same terrorist cell responsible for the CWA attack on the stadium.

This After-Action Report (AAR) addresses the findings and input related to the CWA and TIC Environmental Scenario. Separate AARs present the findings from the CWA Clinical and Biological Select Agent Environmental Scenarios.

The FSE involved participants from EPA Regions 9 and 10; EPA headquarters; CDC; public health, environmental, and commercial laboratories; a drinking water utilities; and federal first responders. This multi-region exercise provided a venue for participants to practice procedures related to providing support to an environmental and public health incident that includes actual sample analyses, communication, coordination, and data reporting. Many of the steps and issues covered in the scenario were taken from lessons learned and corrections to plans and procedures derived from the Regions 1 and 2 FSE held in 2009.

The CWA and TIC Environmental Scenario of the FSE was designed to meet the following objectives:

- Test the procedures of the WLA-RP.
- Practice ERLN/WLA environmental laboratory procedures integration, including use of the Incident Management Team (IMT) according to EPA's Incident Management Handbook.
- Practice coordination between two national laboratory networks (EPA's ERLN and CDC's LRN) to respond to a combined public health and environmental emergency.
- Provide the EPA regions and laboratories with an opportunity to practice multi-regional coordination during a large-scale contamination incident.
- Identify additional systems, operations, and mechanisms for the continued improvement of sample transport, data management, data transfer, and analytical support in response to a major contamination incident.

Exercise Findings and Key Lessons Learned

In general, the participants rated the exercise as successful and stated that they enjoyed the interaction between the laboratories, implementation of the WLA-RP, and the opportunity to work with real samples. Since many of the participants within this component have worked and participated in exercises together, they were well accustomed to the implementation and activation of response activities.

Significant Findings

- Laboratories were able to successfully analyze the exercise samples.
- The laboratories communicated and coordinated effectively throughout the exercise.
- Laboratories identified internal issues that warrant review and update of their own processes and procedures.
- Most of the laboratories were able to successfully upload their data to WebEDR; however, most laboratories indicated they had issues initially due to lack of familiarity with the software and some formatting issues with their electronic data deliverable (EDD) files. Having a WebEDR programmer in each location had a significant positive impact on resolving data entry issues.
- Future exercises should emphasize the interaction between the IMT and the laboratories providing analytical support to the incident. The WLA-RP needs to expand to an all hazards/all matrices Response Plan.
- There is a need for additional standardization of methods, including rapid methods, and minimum quality control (QC) requirements to assure data comparability.

Key Lessons Learned

- The forms provided in the WLA-RP should be reorganized to be more user-friendly and help facilitate communication between the primary responding laboratory (PRL) and the mutual support laboratory (MSL).
- In the case of a large incident the analytical services requestor (ASR)/laboratory coordinator should not be limited to a single individual, as the demands may be overwhelming.
- Electronic data reporting needs further standardization, review, and testing with input from all involved parties (i.e., ERLN, WLA, regional laboratories, EPA emergency response community, etc.). Automation that includes direct reporting of electronic data deliverables from Laboratory Information Management Systems (LIMS) would facilitate these goals.
- Multiple people should be familiar with laboratory operations to serve as Analytical Coordinators (Incident Management Handbook, pg 10 – 15) during an emergency response.
- Laboratories should establish command centers to facilitate communication during an emergency response.
- Forms for requesting analytical services should be completed and sent to potential support laboratories prior to telephone contact to facilitate exchange of information.
- Additional standardization of the EDD format to facilitate data upload to WebEDR is needed.
- Additional training and exercises focusing specifically on laboratory/field data reporting using WebEDR are needed.
- Most of the laboratories were able to successfully upload their data to WebEDR; however, most laboratories had issues with the use of WebEDR. Issues that need to be addressed through refinement of the software and training include interface with Excel spreadsheets, improvement in the software tool to provide a message regarding the reason for upload failure, and lack of familiarity with WebEDR.

Section 1.0 General Full-Scale Exercise Design Summary

The multi-regional full-scale exercise (FSE) was designed to exercise and evaluate the Water Laboratory Alliance (WLA) Response Plan (WLA-RP) and other Environmental Response Laboratory Network (ERLN) and Laboratory Response Network (LRN) emergency response procedures, and identify opportunities for enhancement and improvement of collaboration, communication and coordination. The FSE assessed the effectiveness of response to a combined chemical and biological warfare agent attack.

1.1 Exercise Purpose

The U.S. Environmental Protection Agency (EPA) Office of Ground Water and Drinking Water (OGWDW), EPA Office of Emergency Management (OEM), and Centers for Disease Control and Prevention (CDC) collaborated with EPA Regions 9 and 10 to plan and conduct a full-scale laboratory response exercise. One goal of the exercise was to evaluate EPA's WLA-RP and ERLN emergency response procedures. Other goals included identifying opportunities for enhancement and improvement of collaboration, communication, and coordination between EPA's ERLN and CDC's Laboratory Response Network (LRN). The FSE assessed the effectiveness of response to a combined chemical and biological warfare agent attack.

The FSE in EPA Regions 9 and 10 was conducted primarily during the week of August 23, 2010 with several preliminary stages of the exercise notionally occurring Friday, August 20, 2010 through Sunday, August 22, 2010. The FSE was divided into the following three major components:

- *Chemical Warfare Agent (CWA) and Toxic Industrial Chemical (TIC) Environmental* – A light aircraft, operated by a terrorist, sprays a large, fully-occupied sports arena with the CWA Mustard-Lewisite. Shortly after the attack, the airplane collides with a yacht club facility in which TICs are stored, resulting in a fire and explosion.
- *CWA Clinical* – As a result of the chemical warfare agent attack, many people are exposed to chemical warfare agents and are seeking care in their local hospitals. Patient specimens are sent to state public health laboratories for analyses.
- *Biological Select Agent Environmental* – A bacterial select agent is introduced directly into a metropolitan drinking water distribution system by the same terrorist cell responsible for the CWA attack on the stadium.

This AAR addresses the findings for the CWA and TIC Environmental scenario. Findings from the CWA Clinical and Biological Select Agent Environmental Scenarios are presented in separate After-Action Reports.

The FSE involved participants from EPA Regions 9 and 10; EPA headquarters; CDC; public health, environmental, and commercial laboratories; a drinking water utility; and federal first responders. This multi-region exercise provided a venue for participants to practice procedures related to providing support to an environmental and public health incident that included actual sample analyses, communication, coordination, and data reporting. Many of the steps and issues covered in the scenario were taken from lessons learned and corrections to plans and procedures derived from the 2009 FSE held in EPA Regions 1 and 2. While the exercise was designed to evaluate and practice multi-regional response procedures, the exercise also provided the opportunity for participants to review their internal operations and procedures. However, those issues are not included as part of the purpose of the exercise, and observations for correction and enhancement are to be determined by the participants themselves.

The FSE provided an opportunity to evaluate multi-regional laboratory coordination and communication against existing plans and procedures as well as the draft WLA-RP. In support of these goals, the CWA and TIC Environmental Scenario component of the FSE focused on the following objectives:

- **Objective 1:** Test the procedures of the WLA-RP.
- **Objective 2:** Practice ERLN/WLA environmental laboratory procedures integration, including use of the Incident Management Team (IMT) according to EPA's Incident Management Handbook.
- **Objective 3:** Practice coordination between two national laboratory networks (EPA's ERLN and CDC's LRN) to respond to a combined public health and environmental emergency.
- **Objective 4:** Provide the EPA regions and laboratories with an opportunity to practice multi-regional coordination during a large-scale contamination incident, including data review and reporting using WebEDR.
- **Objective 5:** Identify additional systems, operations, and mechanisms for the continued improvement of sample transport, data management, data transfer, and analytical support in response to a major contamination incident.

1.2 Exercise Design

The FSE was designed to include three scenarios (CWA and TIC Environmental, CWA Clinical, and Biological Select Agent Environmental) to address the particular area of effort for each group of participants. The exercise design for each component consisted of an Exercise Design Team composed of EPA, CDC and contractor staff to develop and implement the exercise.

The exercise was designed to be flexible and allow for multiple laboratories from across various regions to participate from their respective locations. This design allowed participants to address the geographical and time zone issues that may affect response actions and interactions during a real-world incident. The documentation for the design of the exercise include a Master Scenario Events List (MSEL) and Exercise Evaluation Guides (EEGs) which were created to meet the Department of Homeland Security's Homeland Security Exercise and Evaluation Program (HSEEP) guidelines.

The FSE was coordinated by controllers located off-site who directed activities and provided injects to ensure the continuity and flow of the exercise. The evaluators were present at each participating laboratory, the Region 10 Incident Management Team (IMT), and the site for collection of drinking water samples. Their responsibility was to observe and document exercise activities and to provide updates to the controllers. The evaluators underwent training in exercise evaluation techniques and use of the MSEL and EEGs.

The FSE took place over an eight-day period starting on a Friday (Day 1) and ending on the following Friday (Day 8). Information on the background scenario for the exercise is provided in Section 2.1. As each participating group completed their exercise activities, they were given the opportunity to discuss their findings during a half-hour debriefing. Hot washes were conducted on Monday, August 30, 2010 for each exercise scenario to allow the participants to share their findings with the other participants.

For the CWA and TICs Environmental Scenario, the IMT, and Field Team were located at the Region 10 Laboratory in Manchester, WA. Laboratory participants in the CWA and TIC Environmental portion of the exercise were from Regions 9 and 10. Each regional laboratory coordinated the support of the laboratories from their regions. EPA Office of Water and Computer Sciences Corporation (CSC) staff provided injects to represent activities that might be undertaken by members of the media, public, etc., and provided additional exercise injects to mimic real life complications that may be encountered during such incidents.

EPA's OEM provided the samples (soil, water) and the Region 9 laboratory provided the air samples for the exercise. The samples containing CWA degradation products (water samples) and TIC samples (water, soil, and wipe samples) were prepared by the EPA Quality Assurance Technical Support (QATS) contractor and were shipped to the Region 10 Laboratory. Summa canister air samples were prepared and shipped to participant laboratories by the Region 9 Laboratory. The Region 10 Superfund Technical Assessment and Response Team (START) contractors developed the sample documentation and packed and shipped the samples to the various participating laboratories during the week of the exercise. This allowed testing of sample packing, shipping, and receipt.

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Section 2.0 CWA and TIC Environmental Regions 9 & 10 FSE Overview

Exercise Name: CWA and TIC Environmental EPA Region 9 and Region 10 FSE

Type of Exercise: Full-Scale Exercise with live samples

Exercise Start Date: Friday, August 20, 2010

Exercise End Date: Friday, August 27, 2010

Duration: Eight days with staggered sessions for different roles

Location: EPA Region 9 and Region 10

Sponsor: EPA and CDC

Mission: Regional and agency laboratory integration and coordination, with a focus on drinking water

Table 1. Participating Laboratories

Laboratory	Role	Participant Laboratory Contact	Evaluator(s)
EPA Region 10 Laboratory	Primary Responding Laboratory (PRL), CWA (notional)	Gerald Dodo	Kathy Parker
EPA Region 9 Laboratory	PRL for Region 9, TICs	Richard Bauer Jack Berges	Ken Hendrix
Arizona Department of Public Health Laboratory	Mutual Support Laboratory (MSL) TICs, CWA degradation products	Jason Mihalic Daniel Perez	Mahmoud Bidabad
CH2M Hill, Inc., Applied Sciences Laboratory	MSL TICs, CWA degradation products	Regan McMorris Doug Hardy	Mark Bos
City of Phoenix Water Services Laboratory	MSL TICs, CWA degradation products	Randy Gottler Jennifer Calles	Dipti Shah
City of Scottsdale Water Quality Laboratory	MSL TICs, CWA degradation products	Laura McCasland Suzanne Grendahl	Randy Gomez
Hawaii Department of Health Laboratory	MSL TICs, CWA degradation products	Wanda Chang Richard Saiki	Tam Nguyen
Idaho Bureau of Laboratories	MSL TICs, CWA degradation products	Christopher Ball Ernie Bader	Dave Eisentrager
Metropolitan Water District of Southern California	MSL TICs, CWA degradation products	Tiffany Lee	Jeffery Dennis/ Melissa Dale
Nevada State Laboratory	MSL TICs, CWA degradation products	Vernon Miller Stephanie Van Hooser	Don La Fara
Oregon Department of Environmental Quality	MSL TICs	RaeAnn Haynes Brian Boling	Shannon Swantek
Pima County Compliance Laboratory	MSL TICs, CWA degradation products	Nancy Powell Jeff Prevatt	Barbara Escobar
TestAmerica Laboratories, Inc. (Irvine, CA)	MSL TICs	Fred Haley Kathleen Robb	Adriana Schow
TestAmerica Laboratories, Inc. (Phoenix, AZ)	MSL TICs	Jimmy Dodsworth	Lisa Maycock
TestAmerica Laboratories, Inc. (Sacramento, CA)	MSL TICs, CWA degradation products	Charlie Carter Karla Buechler	Douglas Weir
Washington Department of Ecology	MSL TICs, CWA degradation products	Stuart Magoon John Weakland	Megan Pickett
Washington State Public Health Laboratories	MSL CWA degradation products	Blaine Rhodes Trace Warner	Stephanie Wang

2.1 CWA and TICs Environmental FSE Summary

Prior to the exercise, pre-exercise briefings were held for the participants to discuss exercise goals, logistics, safety, and address any issues or questions they might have. A training Web cast was provided to the evaluators. Evaluators and laboratory participants were provided with exercise documentation including forms that were used to capture feedback and corrective changes. The exercise was facilitated from a control center established and hosted by EPA Region 10 in Manchester, WA.

CWA and TIC Environmental Scenario

Days 1 (Friday) – 3 (Sunday); limited exercise play

Background Scenario

The scenario was initiated on Friday night (Day 1), when a light aircraft sprays a mixture of the blister agents Mustard and Lewisite (M-L), into a packed sports arena in a major metropolitan area during a sporting event attended by approximately 70,000 people. In total, 50,000 people have contact with the contaminant. The spray directly contaminates the stadium and immediate surrounding area, and generates a downwind vapor hazard. Over-spray of the stadium was carried by wind in the direction of a nearby shipping canal and lake. The contaminant is spread by affected people that carry the contaminant with them to nearby residences, dormitories, public transportation, and residences in other states.

The second part of the scenario involves the same plane crashing into a local yacht club where TICs are stored. The crash results in a large fire and heavy smoke. Runoff from the firefighting effort may also be contaminated with TICs.

Limited Exercise Play

During the first three days of the exercise most activities were notional with limited exercise play.

EPA Region 10 is notified of the incident and the Region contacts EPA Headquarters Emergency Operations Center (EOC). [Actual Activity]

Hazardous materials (HazMat) teams arrive at the stadium and identified the contaminant as a blister agent, and more specifically through additional field testing, a mustard- lewisite mixture (M-L). Soil and wipe samples are collected from the stadium site for CWA analyses to determine the extent of contamination. Initial testing conducted on samples from the shipping canal and lake indicate that the M-L has hydrolyzed, but CWA degradation products are detected. At the crash scene, air, water, soil, and wipe (notional) samples are collected for analysis. All sample collection and field testing activities were notional.

Days 4 (Monday) – 8 (Friday) – Exercise Play

Monday – Day 4

- To determine the extent of contamination, field teams collected wipe samples from locations inside and around the stadium and from emergency vehicles and medical facilities (notional). Soil samples were collected downwind of the stadium for M-L analysis (notional).
- The field team and utility collected surface water (lake and shipping canal) and decon water samples and shipped them to the support laboratories for total arsenic analysis. Field screening (notionalized) had already indicated that the M-L has hydrolyzed. Samples arrived at the laboratories on Monday or Tuesday.
- The field team collected summa canisters, run-off water, and soil samples from the fire/explosion site to monitor for TICs (notional). Actual samples were shipped to the laboratories for arrival on Monday or Tuesday [Note: Some samples were shipped ahead of time and arrived the Thursday or Friday before the exercise began. Laboratories held these samples until instructed.]

Tuesday – Day 5

- Water samples for the analysis of arsenic arrived at laboratories.
- Samples of run-off water, soil, and air for analyses of TICs arrived at laboratories. [Note: Samples were shipped to arrive prior to the start of the exercise and were held by the laboratories for “receipt” on Tuesday of the exercise.]

Wednesday – Friday – Day 6 - 8

- Analyses of samples continued.
- Debrief calls were conducted with exercise participants as each laboratory completed their analyses.

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Section 3.0 Summary of Comments and Recommendations

The following sections present a summary of the comments received from the exercise evaluators and participants. These comments were compiled from the debriefing meetings, Hot Wash conference calls, exercise evaluation forms, and feedback forms. Action items to address these comments are presented, as appropriate. A list of all comments collected from the laboratory participants and evaluators is included in Appendix C.

3.1 Roles and Responsibilities

Overall, the participants were able to successfully fulfill their roles during the FSE. The EPA Region 10 Laboratory served as the location of the IMT and served as the PRL for the CWA and TIC Environmental portion of the exercise. The EPA Region 9 Laboratory served as a secondary PRL and assisted Region 10 by coordinating support from laboratories in Region 9. Laboratory coordination support from Region 9 greatly reduced the workload of the Region 10 laboratory coordinator. The EPA Water Desk and the EPA Region 10 Water Program also participated in the exercise. These groups received initial updates on incident response, but their involvement in the exercise was limited.

Action Items for Consideration

- A coordinated team of analytical service requestors (ASRs) may be needed during a larger emergency response in order to quickly procure laboratory support and provide laboratories with the required information.
- A laboratory coordinator should be available after-hours to answer laboratory questions. Generally, during a real event, the IMT and Analytical Coordinator role would be staffed around the clock. This exercise had set hours in order to avoid the need for overtime.
- The roles of the EPA regions, EPA Headquarters, EPA Water Desk, and state agencies should be better defined, including how data will be shared between these organizations. Future exercises should include additional injects to test the specific roles and responsibilities of these organizations.

3.2 Communications and Logistics

Overall, communications between the participant laboratories and the Region 10 IMT were effective. Existing relationships between the laboratory participants helped facilitate communication and coordination; however, due to the large number of laboratories that were participating in this portion of the exercise, there were delays in contacting some laboratories. Laboratories also reported that they sometimes had difficulty getting in touch with the IMT to have questions answered. In general, the laboratories followed the chain of command outlined in the WLA-RP. Laboratories did not provide information to outside callers (media, government officials, etc.), but in some cases failed to report received calls to the IC. At least one evaluator reported that his laboratory failed to follow up with the laboratory coordinator to ask several questions related to sample analysis.

Laboratories used a combination of the forms provided in the WLA-RP and their own forms and logbooks to facilitate and track communications. The WLA-RP forms are discussed in detail below in Section 3.3.1. One laboratory that set up a command center during the exercise felt that this facilitated communication and recommended this approach.

Action Items for Consideration

- The ASR should hold conference calls and briefings with all laboratories providing support to an incident to facilitate information (e.g., preliminary screening information, sample preparation and analytical issues, etc.) exchange between laboratories.
- The ASR should provide a list containing the contact information for each of the participating laboratories in an email to all of the other laboratories.

- Recommend that cell phone or other alternate numbers for each laboratory POC should be provided to the ASR during an emergency response.
- Laboratory contacts should update their voicemails to inform callers when they will be out and provide alternate contacts for emergencies.
- During an emergency response, laboratories should establish a command center with a dedicated phone line.
- Multiple people should be available in the command center to answer calls and take notes to ensure critical information is not missed.
- Follow up verbal instructions and understandings between the ASR and laboratories with written instructions via email.
- Laboratories should be provided specific instructions regarding handling calls from outside organizations to their staff.
- Laboratories should be encouraged to ask any questions they may have regarding sample analyses, whether for an exercise or real incident from the ASR.
- Establish regular conference calls and face-to-face meetings for the public laboratories within a region to continue to encourage relationship building and increased familiarity with other laboratories' capabilities and operations.
- ERLN/WLA should develop guidance on sharing screening data, previous monitoring data, etc. with all support groups in order to maintain laboratory safety and facilitate sample analyses.

3.2.1 Use of WLA-RP Forms

The WLA-RP provides several forms to assist in communication and the tracking of information during a contamination incident. The primary forms to be used during an incident are the Help Sheet for Requesting Analytical Support during Water Emergency Response and the Incident Communications Tracking Form for Laboratories. Overall, the participants indicated that the forms helped facilitate communications between participants by ensuring that appropriate questions were asked and information recorded. Although many of the laboratories used the forms found in the WLA-RP, several laboratories used their own forms, logbooks, and LIMS to record and track information.

Action Items for Consideration

- Encourage laboratories to complete the electronic versions of the forms in the WLA-RP to facilitate and supplement phone conversations between laboratories. Forms should be emailed to reduce phone traffic and increase the accuracy and completeness of communications.
- Evaluate and revise the forms in the WLA-RP based on the feedback from the exercise participants. Specific areas that need to be addressed include:
 - Create a personal log form for managers to document directions.
 - Reorder questions in Appendix C.
 - Forms in response plan should be reorganized and include a description code for sites.
 - Appendix D should be modified to apply more to laboratories.
- Distribute WLA-RP forms as separate Word documents to the laboratories for their use.

3.3 Sample Collection and Sample Shipment

Sample collection was not directly tested as part of the exercise. The samples were prepared by the QATS contractor and sent to the Region 10 Laboratory. The Region 10 field team re-packaged and shipped these samples to the participant laboratories. In addition, Region 9 prepared, packaged, and shipped air samples to the participant laboratories. Overall, these samples successfully arrived at their destination laboratories. Some specific issues with sample shipment and receipt included:

- Some samples were not labeled.
- Some information was missing or incomplete on the chain-of-custody form and clarification was required from the IMT.
- Some samples were not within method-specific temperature requirements upon arrival.

- The laboratories questioned why in some instances sample labels were included on the sample bags but not on the sample containers.

Action Items for Consideration

- In conjunction with the ASR, the field team should discuss requirements for sample shipping (including sample packing and sample preservation) with the receiving laboratory prior to sample collection, if possible. Sample packing and shipping standards should be standardized across EPA regions and their contractors.

3.4 Criminal Investigation Samples

Guidance is provided in the WLA-RP on handling criminal investigation samples to maintain evidentiary integrity. Laboratories participating in the exercise were informed that samples should be handled to maintain evidentiary integrity. Several laboratories commented that additional guidance on requirements for handling criminal samples is needed. Normally the FBI will be involved in instances where criminal investigation samples are involved. FBI requirements may be difficult for some laboratories to maintain and may not be acceptable for law enforcement purposes. Some specific issues that were observed during the exercise included:

- Incomplete chain-of-custody forms provided with samples (e.g., missing collection date and times, missing signatures)
- No chain-of-custody forms provided with some samples.
- Custody seals were broken and appeared to have been resealed without proper documentation.

Action Items for Consideration

- Laboratories should review their procedures for handling criminal investigation samples against the guidelines provided in the WLA-RP.

3.5 Analysis

Overall, laboratory performance of the analytical portion of the exercise was successful and the laboratories are commended for their efforts. The laboratories were able to successfully analyze samples for TICs. The exercise was not conducted to test the analytical capabilities of the laboratories, but analyzing samples as part of the exercise allowed participants to identify areas for improving coordination of sample analysis. Field screening data was provided to the laboratories receiving samples. A few issues that did arise during sample analyses included:

- At least one laboratory analyzed samples for a matrix with which they were unfamiliar and had to spend time searching for appropriate sample preparation techniques.
- Although the laboratories were able to analyze the limited number of samples within the requested timeframe the capacity of these laboratories may be overwhelmed during a large incident.

Action Items for Consideration

- PRLs and field teams need to provide as much information as possible on field-screening, target analytes, expected concentrations, required methods, etc. in order to focus on analysis and decrease data turnaround times. Appendix F of the WLA-RP provides a mechanism to log field screening data.
- Laboratories should be clear about their capabilities when they communicate with the ASR, including their ability to perform analyses in different matrices.
- If sufficient information is available, laboratories should set up instruments and prepare standards ahead of time to reduce data turnaround times.
- Laboratories should develop standard operating procedures (SOPs) for in-house screening of samples.

3.6 Quality Assurance

At least one participating laboratory commented on how the required reporting limits were changed after laboratories had received initial instructions and analyses had begun.

Action Items for Consideration

- QA/QC (Quality Assurance/Quality Control) and reporting limits should be established before sample analyses begin.
- Develop a checklist for data review.
- Specific Measurement Quality Objectives for requested analytical methods should be provided to the laboratories.

3.7 Data Reporting - WebEDR

The laboratories were provided instructions and web-based training on the use of WebEDR. Most laboratories were able to successfully create a Type 1t EDD and upload their data into WebEDR after working with the WebEDR technical support staff. The Region 10 IMT then uploaded the electronically reviewed data into SCRIBE to develop GIS maps. The Region 10 IMT commented that they liked the embedded QA, that WebEDR saved them hours of data review that would have been necessary without the tool and it was easy to upload data from WebEDR to SCRIBE; however, several laboratories reported difficulty uploading their EDDs into WebEDR. Specific issues identified by the participating laboratories and IMT include the following:

- Many laboratories could not use their existing LIMS to generate the EDD.
- Names for the ASR and project name caused problems with WebEDR.
- Manual data entry was very time consuming and delayed data reporting in some cases.
- Overall, many of the laboratories found that the required EDD was not user-friendly.
- One laboratory did not have its instrument computers connected to the rest of their network, requiring additional work to transfer data and delays in reporting data.
- Laboratories may have limited IT resources to deal with LIMS and WebEDR related issues during an emergency response.
- Many laboratories indicated that at first they had difficulty uploading their data; however, after working with the WebEDR technical support staff things went well.
- WebEDR Contractor support did a great job and was essential for the laboratories to be able to successfully upload their data.

Action Items for Consideration

- Conduct a data reporting exercise to provide laboratories an additional opportunity to practice generating and uploading EDDs into WebEDR and identify further improvements to the process.
- Conduct additional training on the use of WebEDR for reporting environmental data.
- Develop a consistent format for the EDD that is published within the WLA-RP and WebEDR and define valid values for certain key data elements (e.g., reporting units, matrix, and analyte name) used for reporting environmental data.
- Develop relevant examples of completed EDDs for different sample types.
- Standardize use of WebEDR for uploading data across EPA regions.
- Any updates to the required EDD formats and WebEDR should be conveyed to the ERLN/WLA laboratories on a regular basis.
- Additional tweaks and fixes of WebEDR are needed to address issues that occurred during the exercise.
- Develop a plan for providing WebEDR support to incidents during off hours.

Section 4.0 Incident Management Team Comments and Recommendations

The incident management team (IMT) was involved with all three laboratory scenarios, but was most involved with the CWA and TIC Environmental Scenario. Therefore, the comments and recommendations related to the IMT have been placed in this AAR.

The IMT was mobilized via the Region 10 Emergency Operations Center on Friday August 20, 2010. The field elements of the exercise were notionalized, with the exception of sampling a Seattle Public Utilities reservoir using the EPA's portable ultrafiltration device. The laboratory coordination efforts began on Monday morning, August 23, 2010 at the EPA Region 10 Laboratory, where the IMT was mobilized.

The Regions 9 and 10 FSE was the first FSE where a full IMT was mobilized. The mission of the IMT was to coordinate laboratory activities, review and interpret the laboratory data, and deliver maps and results to upper management. The IMT set method quality objectives that were relayed to all of the laboratories during the first day the laboratories were contacted. The IMT checked these criteria as they reviewed the data, and then integrated the data from all of the laboratories into one set of data for decision making purposes.

Although there were some communication issues within the IMT, overall the IMT was very successful in achieving their goals. The IMT had a difficult time getting information on the samples and the site specific sampling plan was hard to draw up. The IMT was unclear regarding the roles and responsibilities of the Regional Water Security Team, and therefore engaged this resource late. Many of the communication issues encountered can be attributed to the artificial nature of the exercise.

The IMT set method quality objectives on the first day of mobilization, assisted laboratories with data uploads to have all of the laboratories report into one database, reviewed all of the data, and created maps with the sample locations and results. All of this was carried out by mid-day on Thursday; two and a half days after the laboratories received the samples on Tuesday morning.

4.1 Comments and Recommendations

A post exercise hot wash meeting was held on the afternoon of Thursday, August 26 to discuss the exercise with the IMT. Verbal comments were recorded from each participant of the IMT, and forms were also passed out for those that wanted to submit their comments in writing. These written and verbal comments are summarized in the sections below. Generally, most of the comments were positive with some suggestions as to how the exercise could be improved.

Data was the major bottleneck to exercise progress. The majority of issues were related to the use of WebEDR. However, once operational, WebEDR was very useful and it was acknowledged that without WebEDR, it would have taken much longer to enter data and resolve any problems. It was also discovered that the templates and additional instructions for using WebEDR were not attached to the initial email sent out by Region 10, adding to the confusion. Additional details regarding the issues related to WebEDR are provided in Section 3.7.

General positive comments follow:

- All felt the exercise was useful and helped point out areas to improve.
- Many new staff developed a better understanding of their roles and responsibilities.
- The exercise helped IMT participants understand the complexity of the required laboratory coordination and data reporting process that is necessary when many laboratories are involved.
- Practice in sharing workloads.
- Laboratories did a great job and had great attitudes.
- Good internal support from Region 10 and Region 9.

- Teamwork excellent all the way around.
- Had fun.
- Controllers were flexible and able to design injects on the fly.
- IC worked well on issues.
- Incorporating the QA office into the IMT was a great move.
- Good opportunities to work with the QA and Data Review staff.
- Data management went well once data was received and debugged.
- Data flow was better than expected.
- Learned new ways to work with data (GIS).
- Clarify roles and responsibilities of the Region 10 Water Security Team.

General areas of improvement follow:

- Provide more injects specifically for IMT, and more Controller interplay.
- Direction from controllers should be clearer, especially the first day of the exercise.
- Controllers should respond to request for resources.
- Situational updates should be smoother.
- Improve sample tracking and management to track which laboratories had which samples and when laboratories were supposed to report data.
- Provide the IMT the opportunity to ask more questions about exercise activities.
- Laboratories had unequal capability.
- Multiple POCs are needed for each MSL and PRL.
- Reorganize Appendix C questions; too much information upfront before you get to what you want to know.
- Back up support should be provided to the ASR.

The following are comments specific to IMT activities related to the Biological Select Agent Environmental Scenario.

- Laboratory participation was good.
- Did well with the process.
- Seattle Public Utilities did a great job.
- There was confusion regarding the roles of the ASR and Controller.
- Include better full role play in future exercises.
- Lab communications were difficult at times (time zones, etc.).

Section 5.0 Conclusion

The EPA Regions 9 and 10 FSE provided the opportunity to exercise and evaluate EPA's WLA-RP and ERLN emergency response procedures. The exercise scenario emphasized the complexity of integration, coordination, and communication across multiple agencies at the state, regional, and federal levels. The exercise was not designed to address all possible permutations and roles that might be involved in such a situation; for example, true field sampling and field operations were not included and were considered outside the scope of the exercise design. The FSE identified improvements to existing and draft plans as well as coordination and communication across regions and agencies. Moreover, the exercise provided the opportunity for the participating laboratories to practice and work together across regional settings. In addition to identifying improvements to plans and procedures, participants leveraged the exercise to practice and enhance their own internal operating procedures. Overall, the exercise was considered a great success due to the performance of the system and laboratories. All of the data were received in less than a 48 hour turn around time, and the data were uploaded to one database where the IMT could use the data without any data quality or reporting comparability issues.

5.1 Objectives

The following summary provides the findings for each of the objectives identified as goals of the exercise.

Objective 1: Test the procedures of the WLA-RP.

The Regions 9 and 10 FSE provided an opportunity to test the procedures of the WLA-RP through a scenario that required analyses of samples at multiple laboratories from two different EPA regions. The exercise participants were able to successfully deploy the WLA-RP procedures within the context of the scenarios. Laboratories received and analyzed samples and reported data according to the procedures in the WLA-RP. Communication within the laboratory and between the laboratories and the IMT was also tested. Routine laboratory procedures meshed very well with the plan's operations and procedures. Through the efforts of the laboratory participants and evaluators, areas of improvement within the WLA-RP were identified.

Objective 2: Practice ERLN/WLA environmental laboratory procedures integration, including the use of the Incident Management Team (IMT) according to the EPA Incident Management Handbook.

The Regions 9 and 10 FSE was the first FSE where a full IMT was mobilized and provided an opportunity to practice coordination of laboratory support as well as activities related to laboratory data evaluation such results mapping. Incident Command (IC) was established at the EPA Region 10 Laboratory with support from EPA Region 9 and the EPA headquarters EOC. The IMT was able to successfully coordinate laboratory analyses including identifying capable laboratories, communicating sample analyses, QA/QC and data report requirements, and coordinating data reporting. ERLN/WLA laboratories successfully analyzed samples from a variety of environmental matrices; however, there are some discrepancies between the procedures in the WLA-RP and the requirements for ERLN laboratories, such as data reporting, that need to be resolved. WLA-RP procedures integrated well with the use of the IMT.

Objective 3: Practice coordination between two national laboratory networks (EPA ERLN and CDC LRN) to respond to a combined public health and environmental emergency.

The EPA Region 9 and Region 10 FSE provided an opportunity to practice and improve coordination between the ERLN and LRN. Several laboratories that are part of the ERLN and LRN were able to participate in both the CWA and TIC Environmental and the CWA Clinical portion of the exercise. This opportunity allowed the laboratories to test their capability to utilize common staff and resources to support the analyses of environmental and clinical samples for the sample incident. Specific instructions were not provided to the laboratory regarding the prioritization of analyses of environmental and clinical samples. The laboratories that analyzed both types of samples did not report any issues with completing

both types of sample analyses at the same time. However, the environmental portion of the scenario did not test laboratory surge capacity, and it may be possible that there would have been more issues with competing priorities if the number of environmental samples had been larger. One laboratory's environmental section missed the opportunity to provide support to their clinical section when the clinical section's instrument broke down. Instead of seeking assistance from their environmental section, the clinical samples were sent to another laboratory. Greater emphasis in WLA-RP training and outreach needs to be placed on sharing resources and information between clinical and environmental personnel from the same laboratory.

There was limited communication between the Region 10 IMT and the IC for the clinical portion of the exercise. This may be in part due to the artificiality of the exercise because no Unified Command was established. Additional guidance on sharing information (e.g., sample location and modeling data) and analytical results between environmental and public health laboratories and organizations during an emergency response is needed.

Objective 4: Provide the EPA Regions and laboratories with an opportunity to practice multi-regional coordination during a large-scale contamination incident.

The exercise provided an opportunity to practice coordination between multiple EPA regions. Laboratories from EPA Regions 9 and 10 provided analytical support for the incident. The EPA Region 10 Laboratory took the lead for IC and served as the PRL for the CWA (notional) and TIC Environmental portion of the exercise. The EPA Region 9 Laboratory served as a secondary PRL and assisted Region 10 by coordinating support from laboratories in Region 9. Laboratory coordination support from Region 9 greatly reduced the workload of the Region 10 laboratory coordinator. Laboratory participants cited existing relationships between the laboratories as a key component of effective, coordinated laboratory response. Exercise participants recommended regular conference calls and face-to-face meetings to continue building relationships between laboratories.

Objective 5: Identify additional systems, operations, and mechanisms for the continued improvement of sample transport, data management, data transfer, and analytical support in response to a major contamination incident.

Opportunities for enhancement of data reporting, transfer, and compilation were explored as a key objective of the exercise. Many laboratories reported difficulties with generating the required EDD for data reporting using WebEDR. Many laboratories could not use their LIMS system to generate the required data deliverable and manual data entry was time consuming, which resulted in data reporting delays. One area for potential improvement identified by the participants was a need for additional standardization of data reporting to provide laboratories an easy to use format, consistent with the requirements for the WLA, ELRN, and WebEDR. Additional training on the use of WebEDR and exercises that specifically test data reporting and compilation could further reduce potential issues with data reporting during real emergencies. Overall, the laboratories were able to successfully analyze the exercise samples; however, several laboratories felt that the number of samples generated during a real incident, would likely overwhelm existing laboratory capacity.

5.2 Next Steps

The lessons learned and suggestions for improvement to the WLA-RP plans and procedures, including communication and coordination across multiple regions in response to a large scale incident, will be evaluated for inclusion in the next version of the WLA-RP. Additional multi-regional FSEs are being planned for 2011. Suggestions for improvements and enhancements to the exercise will be evaluated for implementation to the program. Suggestions and comments received from exercise participants and evaluators related to the coordination and conduct of the exercise are located in Appendices B and C of this report.

Appendix A List of Acronyms

AAR	After-Action Report
ASR	Analytical Services Requester
CDC	Centers for Disease Control and Prevention
COC	Chain of custody
CWA	Chemical warfare agent
EDD	Electronic Data Deliverable
ERLN	Environmental Response Laboratory Network
EEG	Exercise Evaluation Guide
EPA	U.S. Environmental Protection Agency
FBI	Federal Bureau of Investigation
FSE	Full-scale exercise
HazMat	Hazardous materials
HSEEP	Homeland Security Exercise and Evaluation Program
IC	Incident Command
IMT	Incident Management Team
IT	Information Technology
LIMS	Laboratory Information Management System
LRN	Laboratory Response Network
M-L	Mustard and lewisite
MSEL	Master Scenario Events List
MSL	Mutual Support Laboratory
OGWDW	EPA Office of Ground Water and Drinking Water
OEM	Office of Emergency Management
POC	Point of contact
PRL	Primary Response Laboratory
QATS	Quality Assurance Technical Support
QA/QC	Quality Assurance/Quality Control
SOP	Standard Operating Procedure
START	Superfund Technical Assessment and Response Team
TIC	Toxic industrial chemical
WLA	Water Laboratory Alliance
WLA-RP	Water Laboratory Alliance Response Plan

Appendix B Exercise Feedback

Feedback on the exercise was collected from the participants and evaluators to identify opportunities for improvement to the exercise and its implementation. Overall, the exercise was rated highly, with most participants and evaluators rating that they strongly agreed that the goals of the exercise were met as outlined in the feedback form. Additionally, the participants and evaluators provided excellent recommendations for changes to improve the exercise. The following summarizes the findings collected from the feedback forms, as well as the comments of the participants: Table 1 provides a summary of the ratings provided by the participants and evaluators, and Table 2 provides a summary of the responses from the feedback form questions.

Table 1. EPA Region 9 and Region 10 Full Scale Exercise Feedback Form

EXERCISE EVALUATION	(Strongly Disagree)----- (Strongly Agree)					
PARTICIPANT ROLES	1	2	3	4	5	N/A
1. There were sufficient introductory briefings and participant handouts to prepare for the exercise						
Evaluator	0	0	1	5	1	0
Participant	0	0	0	7	3	0
Total	0	0	1	12	4	0
2. The exercise controllers were knowledgeable, presented the materials effectively, and were helpful						
Evaluator	0	0	1	4	2	0
Participant	0	0	0	6	4	0
Total	0	0	1	10	6	0
3. The exercise was well-coordinated and organized						
Evaluator	0	0	1	4	2	1
Participant	0	0	3	5	2	0
Total	0	0	4	9	4	1
4. Within the constraints of not releasing information about the exercise scenario, all of my questions were answered						
Evaluator	0	0	0	4	2	1
Participant	0	2	3	3	2	0
Total	0	2	3	7	4	1
5. The exercise allowed an opportunity to practice and implement our process and plans						
Evaluator	0	0	0	3	4	0
Participant	0	0	0	3	7	0
Total	0	0	0	6	11	0
6. For lab leadership, the exercise allowed an opportunity to practice coordination and communication with other laboratories.						
Evaluator	0	0	0	2	5	0
Participant	1	0	0	0	6	3
Total	1	0	0	2	11	3

EXERCISE EVALUATION	(Strongly Disagree)----- (Strongly Agree)					
PARTICIPANT ROLES	1	2	3	4	5	N/A
7. The exercise provided the opportunity to consider potential issues and problems within the context of the scenario						
Evaluator	0	0	0	5	5	0
Participant	0	0	1	4	5	0
Total	0	0	1	9	10	0
8. Through the practice of our plans and procedures, I am more knowledgeable and confident in our operations.						
Evaluator	0	0	1	3	3	0
Participant	0	0	1	5	4	0
Total	0	0	2	8	7	0
9. I was given the opportunity to voice my observations either through documentation or through the "Hot Wash" debriefing.						
Evaluator	0	0	0	4	2	1
Participant	0	0	0	0	10	0
Total	0	0	0	4	12	1
10. The exercise allowed an opportunity to identify strengths and weaknesses of operations in response to the exercise scenario						
Evaluator	0	0	0	3	4	0
Participant	0	0	1	3	6	0
Total	0	0	1	6	10	0
11. Overall, I was satisfied with the functional exercise						
Evaluator	0	0	0	3	4	0
Participant	0	0	0	5	5	0
Total	0	0	0	8	9	0

Table 2. Response to Questions from the Participant Feedback Form

Role	Comment
1. What specifically did you find most valuable about the exercise?	
Participant	It presented an opportunity for our lab to become more aware of NELAC processing of data for an outside client
Participant	Using the Web-EDR
Participant	Pre-meeting/ discussions well planned scenario
Participant	In a previous exercise we were the PRL - so seeing the difference between the two responsibilities was an eye opener.
Participant	The EPA Primacy folks here at ADHS have not dealt with many (if any) exercises. As such, their involvement with this one was extremely valuable. HSEEP is here to stay.
Participant	Use of forms provided in the packet
Participant	The checklists provided in the handbook were very helpful when setting up the project at our lab.

Role	Comment
Participant	lab coordination & communication
Participant	Working with WebEDR using real field expectations, was able to
Evaluator	Multi agencies coordinate a response for an incident
Evaluator	The opportunity for our laboratory to go through the steps and see, in a controlled environment, what weaknesses were exposed. Having an understanding of what is expected –communication and technical exchange
Evaluator	Evaluation of the lab's capacity, capability, and preparedness
Evaluator	NA
Evaluator	Being involved in this- this was the first exercise participated in.
Evaluator	The ability to test our laboratory in an unknown situation - where the levels of analytes were unknown.
Evaluator	The most valuable thing about the exercise is that it gave everyone involved an opportunity to practice a response, evaluate their performance, and identify any areas that need improvement.
2. Least valuable?	
Participant	The extra paperwork.
Participant	Did not trust out surge capacity in Environmental Chemistry.
Participant	Not all information was received that should have been.
Participant	Not knowing exactly when it would start or out actual involvement hours. Basically we over prepared for limited involvement. Issues with WebEDR were frustrating, although educational.
Participant	The WEBEDR training occurred, in my opinion, too far away from exercise play to be truly beneficial. Especially since we don't use it on a day to day basis. It might be more beneficial to have pertinent training closer to the actual exercise play dates.
Participant	I found all the information I was given to be helpful
Participant	Actual analytical work was not particularly challenging, but a challenging scenario would probably need additional exercise time.
Evaluator	I have not found out yet
Evaluator	I think a better understanding of the whole picture and the roles of each player could have helped with overall communication and leadership.
Evaluator	Least valuable was the use of the forms in the response plan.
Evaluator	NA
Evaluator	NA
3. How many similar exercises have you participated in previously? a.) Total number of exercises?	
Participant	0
Participant	0
Participant	1

Role	Comment
Participant	0
Participant	3
Participant	4
Participant	3
Participant	0
Participant	3
Participant	3
Evaluator	3
Evaluator	0
Evaluator	0
Evaluator	0
Evaluator	0
Evaluator	0
Evaluator	2
3. How many similar exercises have you participated in previously? b.) Of the total number of exercises, how many used live samples?	
Participant	NA
Participant	NA
Participant	0
Participant	3
Participant	2
Participant	1
Participant	3
Participant	2
Evaluator	1
Evaluator	0
Evaluator	0
3. How many similar exercises have you participated in previously? c.) Of the total number of exercises, how many included multiple agencies or organizations?	
Participant	NA
Participant	NA

Role	Comment
Participant	0
Participant	3
Participant	2
Participant	1
Participant	3
Participant	2
Evaluator	2
Evaluator	0
Evaluator	2
4. What other agencies would have been useful to have involved in this full-scale exercise?	
Participant	Any local ERLN/WLA labs locally
Participant	FBI with COC evidence
Participant	For us as an MSL, none
Participant	Centralized law enforcement would have been welcome. The importance of COC (chain of custody) was, to a degree, minimized because of not having police involvement.
Participant	I don't know if local law enforcement or medical personnel took part, but their input would probably be needed in a real emergency.
Participant	I felt that all the proper agencies were involved in this full scale exercise.
Participant	FDA, more FBI involvement
Evaluator	EPA - NAREL and Arizona Radiation regulatory Agency
Evaluator	I think drawing on the knowledge and expertise of the private sector would be extremely beneficial.
Evaluator	Don't Know
Evaluator	Military and local police agencies
5 A. What would you change about the scenarios?	
Participant	Provide an email of what is known to the media/public and so we know the parameters of what we can tell our staff.
Participant	The distribution of information
Participant	Have the samples treated as evidence.
Participant	Nothing
Participant	More information up front - because of large area affected we probably would have heard about event through the media - prior to call from PRL

Role	Comment
Participant	It may have been helpful to promote the laboratory compendium more. For example, we (at ADHS) almost had to decline the xylene samples and send them to a different lab (which we would of found using lab compendium) because of an erroneous (on our part) inventory sheet. We were able to find the internal standard in time to complete the analysis but at the time I thought, "what a wonderful inject this would be". Unfortunately it was happening in real time to us – but all ended up working out nicely.
Participant	More or varied analysis might be useful
Participant	Nothing comes to mind
Evaluator	Scenarios are less important for evaluating the coordination or communication of any response.
Evaluator	They were realistic
Evaluator	An unannounced exercise may be beneficial - at least for the non- EPA regional labs
Evaluator	I thought the scenarios were good for a first run.
5. B) Is there a different scenario you believe would be useful?	
Participant	I think the scenario was good.
Participant	Maybe something to include radioactivity
Participant	No. Environmental samples are going to be submitted in the event of an act of chemical terrorism. The arsenic and Xylene worked out fine.
Participant	Break-in to a drinking water facility
Participant	Not that I can think of
Evaluator	No
Evaluator	Not Sure
Evaluator	Any scenario that requires a coordinated response would be useful.
6. How can the exercise be improved?	
Participant	Providing more of the essential information in a condensed packet
Participant	I would have preferred to not have been asked about our capabilities for the tests we ran before the exercise.
Participant	Quicker communication lines
Participant	Clearer communication about the available communication. For example, I did not realize until after the exercise was over that I could utilize email to send "fake" exercise related results notifications to the controllers. While communications was covered in the manual, the full extent of possibilities regarding uses thereof could of been made clearer.
Participant	Have samples delivered over a copy of days to ensure labs can provide continuous analytical service
Participant	Have a "dummy" project and data set that labs can use to make sure they have the EDD format set up ahead of time.
Participant	More communication between the environmental labs

Role	Comment
Evaluator	1. Really stress the systems and the laboratories. 2. Involve the private sector. 3. Have exercises more often As an evaluator I observed that the group that would be primarily responsible was uncomfortable with simple tasks (i.e. – receiving specimen) but extremely comfortable on the instrumentation/analysis
Evaluator	See Ernie's (ID-PHL) comments concerning a short exercise using the data transmission to test that system again.
Evaluator	Guidelines on analytical method, QA/QC requirements, sample storage and disposal should be provided to the lab in as much detail as possible at the start of the exercise. The supporting labs should be updated daily about the progress of the exercise.
Evaluator	Maybe providing less information - docs to read. It was a bit over whelming to go through and decipher what was vital.
Evaluator	This type of exercise should be conducted on a regular basis to develop preparedness.
7. Please provide other comments or suggestions:	
Participant	All of the people we've had contact with were professional and pleasant.
Participant	Idaho really benefitted from the exercise and is open to participating in future exercises.
Participant	The communication between controllers and our lab seemed virtually non-existent. We had the 1 st phone call and then a few emails. Perhaps the onus was on us but, if so, that part was not made clear in the pre-exercise meetings. Overall it was a very quiet 2 days (with the exception of WEBEDR).
Participant	It was a great opportunity to see how our lab would respond in a "real-life" situation.
Evaluator	Although I have not been an evaluator for an exercise like this before, I have been involved with a lot of process development. My biggest concern as an evaluator of this exercise was the communication (both internally and inter-agency). One recommendation I have (it may exist already) is a master list of laboratories that are proficient and certified in specific methods. In our case, we were not certified for the method requested; however we were able to perform a different method. I don't believe this was communicated back to the ASR.

Appendix C Comments and Recommendations from the Exercise Evaluation Guides (EEGs) and Laboratory Participant Evaluation Forms

Category	Role	Comment
Accomplishment	Participant	Accomplishment: This exercise provided an excellent opportunity to test out in house procedures. It also allowed us to evaluate out sops and QA manual.
Communication and Coordination	Participant	<p>Tried to reach Gerald on the phone. Got his voice mail. I paged him and got no response. So I went to his office and waited outside the door till he got off the phone. I needed to clarify with him regarding the TAT we could provide. At that time he also was revising the RL for Arsenic from 5 ppb to 1 ppb. I told him that was fine we could do that. Had it not been convenient to go find Gerald I would have left a VM.</p> <p>No substantive issue as a result. Just needed to communicate a revised TAT, which I figured for the exercise would be fine. Since our normal RL for Arsenic is 0.01 ppb this revision from 5 ppb to 1 ppb was not an issue.</p>
Communication and Coordination	Participant	<p>Monday (8/23); Call was received from EPA informing us that the exercise has started. The result turnaround time of 24 hours was given.</p> <p>The problem is that at 1130, most staff had gone to lunch so there was a delay informing analysts that the samples were to be logged in and analyzed. If this was a real emergency, MWD staff would have adjusted to the situation.</p>
Communication and Coordination	Participant	<p>Monday (8/23); An urgent staff meeting was called to brief laboratory staff and managers of the exercise. Any information pertinent to the exercise was discussed at this meeting.</p> <p>One issue that came up was that one of the managers who was briefed prior to and had knowledge of the exercise was out on sick leave. The next person in-charge had little knowledge of the exercise and what was expected. In a real emergency, this is all together a possibility. MWD has developed emergency response plans to accommodate such scenarios. There is a call list of contacts in the event of an emergency.</p>
Communication and Coordination	Participant	<p>Analysis: On Monday, Aug 23rd, at approximately 1130 a call was received to commence the EPA Regions 9 & 10 Full Scale Exercise (FSE). At which point the MWD contact was briefed of the event scenario. An urgent staff meeting was called and all participants involved with analyzing samples and reporting the results. All staff were brief on the scenario and the reporting requirements. MWD staff reacted in an appropriate manner and began the task of analyzing the samples that were provided. As MWD's Water Quality Lab (WQ Lab) has participated in other emergency response scenarios in the past, everyone knew what was expected of them. There was little unknown about what to do.</p> <p>Recommendation: None. WQ Lab staff acted accordingly to the established protocols set forth in the CERG.</p>
Communication and Coordination	Participant	<p>Accomplishment: Communication was very good Use of the Appendices helped with gathering information and helped the Chemists with dilutions and reporting.</p> <p>Appendix C was a very good tool and reference to ensure that the laboratory had all the necessary information.</p>

Category	Role	Comment
Communication and Coordination	Participant	We felt there was a lack of communication initially between state labs that was rectified with daily conference calls
Communication and Coordination	Participant	Issue: lack of communication between environmental labs and between ASR I was also involved in the clinical part of this exercise and felt that the conference calls between the clinical labs would be a benefit to the environmental labs communication throughout an exercise.
Communication and Coordination	Participant	Issue: although everybody knew who to contact (county health, state health etc.) only one person had easy access to all phone/contact information needed. It was decided that a new emergency contact sheet/flowchart would be developed and kept in a secure area that would be available to appropriate personnel.
Communication and Coordination	Participant	It has been an issue in the past. I believe this exercise strengthened the ties between the two labs. (SNPHL)
Communication and Coordination	Participant	Forms in WLA RP- Initially attempted to use one Appendix C form part 1 or 2 for each of the MSL labs, but found that the information was too duplicative. Wound up using just one form with the information from the IMT to relay information to the MSL labs. Appendix C form use should be evaluated
Communication and Coordination	Participant	Forms in WLA RP—Initially thought would use Appendix D form to document communications with labs, but form had too many fields that were not relevant to lab communication to MSLs. Wound up using a log book to record lab communications. Appendix D form not very useful for MSL communication. Suggest including general purpose ICS 213 General Message form in RP.
Communication and Coordination	Evaluator	Analysis: Upon receipt of the samples, the sample custodian immediately alerted affected analyst's as well as laboratory management via both email and face-to-face communication. This communication form lead to awareness of the gravity of the situation. Normal procedures would have only involved electronic communication.
Communication and Coordination	Evaluator	Analysis: The laboratory initially started coordinating efforts for this event a few weeks prior to the August 23 start date. At those briefings, data deliverables were discussed. However, upon initiation of the event, and during the three days of the event, the laboratory did not contact the ASR or IMT to confirm analytical approach including analysis, quality control, data reporting, and verification procedures. As previously mentioned the laboratory had received information of producing a "Level III" report using "in-house" QC, but these aspects were not verified with the ASR. Recommendation: Once again the laboratory did not fully utilize the material provided for guidance in the WLA-RP. Promote use of documentation material contained in the appendices of the WLA-RP.
Communication and Coordination	Evaluator	Analysis: There was no communication tracking form. The lab used in-house personal notes. All the information did not distributed within the staff. Initial hazard assessment did not get discussed. For any incident assessment and categorization is needed prior any testing. Recommendation: Review WLA – RP and develop an Incident Communications tracking form for the lab.
Communication and Coordination	Evaluator	Analysis: The Lab did not follow the WLA – RP 2.5.6 requirements. Recommendation: Review and practice WLA – RP guidelines within involved staff. Prepare forms such as Appendixes C and D.

Category	Role	Comment
Communication and Coordination	Evaluator	Analysis: The laboratory established a command center where the POC set up throughout the exercise and POC supported by data management and the participants knew here to locate them easily Recommendation: More exercises would benefit the lab as a whole.
Communication and Coordination	Evaluator	Analysis: During the labs inquires, the controllers, WedEDR contacts, etc. were very adaptable and used to help quickly and explained things clearly and concisely. Recommendation: Some initial contacts were difficult to connect - should forward land line phones to coordinator's cell phones.
Communication and Coordination	Evaluator	Analysis: There was difficulty in determining what information was going to be vital. During the debriefing the participants studied that they would have to define MQO's, but during exercise one word default MQO's. Data management had a 6/2010 version of the ERLN Type instruction sheet whereas the one the participants had one dated 9/2009. Recommendation: Become more familiar with the WLA- Response Plan. Appendix E and other worksheets. Participation in more exercises will help. A lot of information is provided- maybe highlighting what is specifically important with a more detailed example may help.
Communication and Coordination	Evaluator	Analysis: At the beginning of the exercise the POC tried contacting Mana Nozareu by phone and got an out of office (whole week of exercise) message. The email didn't get to use (anyone in the lab) due to a firewall. Recommendation: It would be a good idea to do a practice email communication first. The file may have been too big - blocked by the firewall so adding a large file to practice email would be good to make sure there are no blocked emails prior to the exercise.
Communication and Coordination	Evaluator	Analysis: The laboratory quickly organized and coordinated the analysis of the received samples. The laboratory activities were chronologically recorded in the laboratory email-based log which can be quickly distributed to the laboratory participants. Recommendation: Incident communication tracking methods should be standardized to include all possible media.
Communication and Coordination	Evaluator	Analysis: Communication between the controller and the laboratory was not uniform. In some instances, follow-up communications on analytical requirements did not include the primary POC. Recommendation: All members of the laboratory emergency response management team should receive all electronic communications.
Communication and Coordination	Evaluator	Analysis: Daily Briefings held at 8:30 AM with all affected areas represented. This kept everyone including the Bureau Chief in the info loop.
Communication and Coordination	Evaluator	Analysis: During the large conference calls it is imperative that participants identify themselves each time they enter the conversation so that then discussions make sense. Recommendation: Remind all conference call participants to identify themselves when they enter the conversation.
Communication and Coordination	Evaluator	Analysis: Lab employees communicated in a timely manner and provide the reports to lab manager with their observations.

Category	Role	Comment
Communication and Coordination	Evaluator	Analysis: All relevant information was communicated well and in a timely manner to the area managers and the analysts. Questions were quickly addressed. Recommendation: A brief “start up” meeting was held by the project manager when the samples came in. All parties who would be handling/analyzing the samples were present. This helped co-ordinate the process.
Communication and Coordination	Evaluator	Lab coordination required providing assistance to labs in entering data to WebEDR. Almost all labs seemed to have problems with entering data. A decision was made to submit pdf reports while issues with WebEDR were being resolved so that results were available if needed.
Communication and Coordination	Evaluator	The laboratory coordination aspect of the exercise seemed to go very well. Potential labs were identified using the EPA compendium of laboratories. Contacts were made initially via telephone. Some calls went to voicemail but responses were received within 30 minutes of the initial call. Appropriate questions were being asked and answered. Clarifications were done primarily by e-mail communications. The number of samples in the scenario were easily incorporated in the labs normal sample flow using their normal procedures.
Communication and Coordination	Evaluator	Centralization of the lab coordination function would be more efficient and help to ensure consistency of the information being disseminated. The ability to send out one message to multiple labs and grouping labs geographically and based on their capability would streamline this process.
Communication and Coordination	Evaluator	Comment: All aspects of lab testing, QA/QC, reporting and data transfer were not clear at this point. Initial contacts were about obtaining capability and availability but details were sketchy. The EPA compendium of labs was used for contact information.
Communication and Coordination	Evaluator	Analysis: The laboratory staff & the POC knew exactly what to do due to great communication between management and staff. References: The laboratory just had to follow their normal ICOC procedures. Everything ran perfect.
Communication and Coordination	Evaluator	Analysis: the lab recorded all the information/communication in a phone logbook. Recommendation: Review & Use appendix C & D from the Water Laboratory Alliance - Response Plan.
Data Entry	Evaluator	Analysis: Funky, needs refinement Recommendation: Work out the bugs

Category	Role	Comment
Data Reporting	Participant	<p>We completed all the analyses for Arsenic and the results had been reviewed and ready for release to the client at 10:00 am 8/24, It took me some time to get the EDD information correct and ready for submittal. However, I was going to wait for the VOA results and submit with the As results for a complete SDG delivery. I learned later that each lab batch was to be submitted as a separate file for the type1t submittal. The submittal worked pretty well for me. The mistakes I made were due to the manual manipulation of the Excel EDD. I introduced a couple of errors in the process of massaging the data into the correct format. We created a partial Type1t EDD from our LIMS, but elected to manually edit a few fields because it was less effort than getting a complete turnkey EDD developed for this one-time event. If type1t "as is" will be a file type used in the future then we may invest the programming time to have a ready output from our LIMS with all the data elements and all the formatting per requirements. If requirements are going to change or expand then we would look to that direction. We could have provided Results sooner if verbal's were desired or if an alternate EDD was acceptable for the initial report, Because the EDD took some manual adjustments data submittal did not occur until the morning of 8/25.</p> <p>I was not planning to use the WebEDR since I was absent during both training sessions and figured I had my hands full just getting the file into the correct format. I was asked on the morning of 8/25 to try the Web EDR, and with some assistance (on the spot training) I was able to upload the EDD rather easily. I did not realize that separate batches (As and VOA) required separate files for proper loading. This was explained to me during the upload process so it was easy to separate the file into two separate files. I was working from the set of instructions and examples I received in June – dated June 2010, but apparently those instructions were updated and I did not have the updates. I resubmitted my data files after correcting the date formats to the updated version when it was pointed out to me that the date fields are actually text not the custom field format used in the example data set provided.</p>
Data Reporting	Participant	<p>It was a bit difficult to get clarity form some of the details relating to the EDD (substance name and method identifier). I tried to get all the information from the ASR for all the fields that were to be provided by the ASR. For example the method was 200.8 for Arsenic but this was not the exact entry to be made in the EDD. The specific data entry information was available during the WebEDR process. I pull the substance name from the compendium website and it worked. I had only minor challenges with the EDD. Had I been available for one of the WebEDR training sessions I probably would have known to expect a specific method mapping during the upload process.</p>
Data Reporting	Participant	<p>Tuesday (8/24); There was confusion as to how to enter data into the WebEDR. There were two sets of tables describing the data elements that should be included in the upload file for the WebEDR. The descriptions were not clear on some of the elements. The Response Plan handbook had one table and subsequent emails had a different one. It was found at the end of one email message was some information regarding the data elements. It was decided to use the most recent table of data elements along with a template provided by EPA to input the results.</p> <p>The issue here was that too much time was taken to provide results.</p>

Category	Role	Comment
Data Reporting	Participant	<p>Tuesday (8/24); After some phone calls and email exchanges results were tabulated and sent via email because the WebEDR continued to give us error messages.</p> <p>There was conflicting information provided and when it was finally resolved, the system (WebEDR) still gave erroneous error messages. It took a number of phone calls and emails to resolve the issues. It wasn't until the following day that we could really use the WebEDR system to provide results.</p>
Data Reporting	Participant	<p>Wednesday (8/25); Data was uploaded using WebEDR with a table that provided by EPA.</p> <p>When the table MWD used for data upload was used (template provided by EPA) there were errors. When a second table was provided by EPA the errors disappeared. It's not clear if there were some formatting errors in the first table that we used or the data we</p>
Data Reporting	Participant	<p>Analysis: Everything went well until it was time to report the data. We noticed there were two versions of tables and data elements to reported using the WebEDR. What was not apparent was how to translate the tables in the handbook or a later email into the necessary format for data transfer. After contacting someone at EPA regarding this we received a template Excel file to use for data transfer along with descriptions of the data elements that were required. It still was not clear from the descriptions what information was necessary. After some discussion with MWD staff, and later EPA staff, we finally figured out what needed to be included in the table to be transferred to the WebEDR. Because of errors in the format of the Excel table or the data elements, numerous attempts were made to upload the data to no success. We then decided to email the table to EPA and have them determine what the problem was. EPA sent us another Excel file with the data and we used that to transfer the data with success. Some of the issues that may have caused the errors were due to differing nomenclature. The WebEDR system expected certain data elements in a certain format. For example Reporting Limit Type, we input MRL (minimum reporting limit) where it expected QL (quantitation limit). So clearly, there needs to be some standardized nomenclature developed in order for this to work properly. In our opinion, it took an inordinate amount of time and effort to transfer the data into the WebEDR.</p> <p>Recommendation: There needs to be some standardized nomenclature developed in order for the WebEDR to work properly. Also, instructions need to be clear and the data elements need to be more defined. Maybe a more simplified data input interface needs to be developed. A system that would be more user friendly may need to be developed. MWD staff are very capable in handling data analysis and utilizing a number of applications such as LIMS and others for inputting data as well as extracting data for reporting purposes.</p>
Data Reporting	Participant	<p>Regarding data reporting and transfer. There should be some mechanism established in the event that there is no access to the Internet for reporting data. There could exist a scenario where the WebEDR is not accessible by one or all of the labs responding to the contaminant threat.</p>

Category	Role	Comment
Data Reporting	Participant	<p>Issues (WebEDR):</p> <ol style="list-style-type: none"> 1. Confusion with WebEDR requirements. For example: it noted that preparation batch data was missing but on the same screen said that batching information may not be reportable in lower submission types. 2. Problem with entering "Valid Values". Used SEDD 5.2 Valid Values but was prompted to change terminology when performing self inspection. 3. After fixing error and completing self inspection with no problems, tried to upload final EDD and got a "Runtime Error" notice and WebEDR would not accept file. <p>Comment: 1. Simplify MQOs. Specify at beginning of document what should be present and how it will be evaluated. 2. Provide more detailed WebEDR training 3. Establish a WebEDR user's group</p>
Data Reporting	Participant	<p>Issue: Laboratories were directed to use WebEDR to report data electronically. Not all of the requirements for the ERLN 1T format were clearly defined. As a result spreadsheets were modified several times for submittal.</p> <p>Suggest that the valid values table be expanded and clarified.</p>
Data Reporting	Participant	<p>Analysis: We ran into trouble when it came time to upload the EDD. We did not have the necessary formatted EDD prepared and tested for air samples.</p> <p>Recommendation: In the end, only Jimmy learned every step to upload the EDD. Training should be done for all PM's. While it may be impossible to estimate what type of analysis will be requested, the lab should have a standard SEDD-2 EDD prepared for aqueous, solid and air matrices. Should we consider other matrices such as wipes?</p>
Data Reporting	Participant	<p>Accomplishment: WebEDR provided Environmental laboratories a mechanism to standardize data submission so that the data could be readily available to the ASR and provide that data in the most usable format</p> <p>Issue: WebEDR was a bit time consuming because we had formatting issue without EDDS</p> <p>Formatting was an issue having each lab have a correctly format excel file for data submission into webEDR would be helpful. We spoke/had a WebEDR expert available to help us through our issues & we were able to report out data and meet out tat.</p>
Data Reporting and Transfer	Participant	<p>For the toxic chemical scenario, labs were asked to report "Total Xylene", but their normal reporting would be for the isomers "o, p xylene" and "m xylene", which combined constitute the total xylene. This caused initial reporting problems when labs attempted entry into the WebEDR system, when labs reported their normal analytical suite.</p> <p>Recommendation: Better communication of requirements, more flexibility within WebEDR to accept sample results that can later be evaluated and combined</p>
Data Reporting	Participant	<p>Analysis: Our laboratory used a SEDD2A format, and the WebEDR checks were helpful in determining the areas of the electronic deliverable that needed editing to make it suitable for submission to WebEDR. However, because WebEDR only presents a summary of results after the final submission, we were not able to see all the results that were being reported. As a result, we think that some of the Quality Control data did not make it into the final database.</p> <p>Recommendation: Include a module in WebEDR that allows lab user to see what is being reported to the system before the submission is final.</p>

Category	Role	Comment
Data Reporting	Participant	<p>Analysis: Had a lot of questions from laboratories concerning their “lab Identifier” to put into the EDD. We did not have a specific code assigned to each lab, so they were instructed to make one up based on their lab name. In a large incident this could lead to delays in reporting and potential misassignment of results to a specific lab.</p> <p>Recommendation: Assign unique Lab Code in Lab Compendium records when lab information is entered. This would make the identification of labs consistent.</p>
Data Reporting	Evaluator	<p>Analysis: The Web-EDR format was confusing. The participants spent a great deal of time completing the submission of the results by WebEDR</p> <p>Recommendation: Detailed step-by-step instructions should be included in WebEDR.</p>
Data Reporting	Evaluator	<p>Analysis: This helped in quick and efficient result reporting. Recommendation: There were a few minor glitches (help was quick and effective). Someone suggested a more thorough “upload exercise” to help discover other glitches and that sounds like a good idea.</p> <p>Recommendation: There were a few minor glitches (help was quick and effective). Someone suggested a more thorough “upload exercise” to help discover other glitches and that sounds like a good idea.</p>
Data Reporting	Evaluator	<p>Analysis: While Air results are not normally reported via an EDD, EDDs should be available for all tests the laboratory performs. This would allow quick reporting in this format for clients when requested without having to incur delays while waiting for IT assistance.</p> <p>Recommendation: Identify and develop where possible EDD needs may be required.</p>
Data Reporting	Evaluator	<p>Analysis: THIS IS AN EXERCISE Good morning, Jack – When I upload the data for your samples (or lot G0H240449), I know that the .pdf report needs to be uploaded as well as supporting material. Our report would normally include both the metals and volatiles data in the same .pdf, but I know that the WebEDR uploads are specific to the analyte (one with metals and one with volatiles). There are several ways I can go about this. I can split the .pdf report (so there is one called G0H240449_Arsenic and one called G0H240449_Xylenes, for example). I can upload the same .pdf with both EDD's. I can upload the .pdf with one set of results and use the comments to note that the supporting .pdf is associated with the other EDD. Please let me know if any of these is the preferred way of dealing with this, or if there is a different way you want this handled. (I can contact the WebEDR helpdesk if you don't have the answers ready to hand.)</p> <p>Thank you, Laura A. Turpen Project Administrator EXERCISE</p> <p>Hello Maria and Jack – I have uploaded a file to the EDR website, and got errors involving reporting/detection limits for surrogate compounds. It is not our standard practice to report these values – do you have a suggestion on how to proceed? I have attached the self inspection to this email. Thank you, Laura A. Turpen Project Administrator</p> <p>Recommendation: A WebEDR only exercise might be useful to further identify minor issues.</p>

Category	Role	Comment
Data Reporting	Evaluator	<p>Analysis: Laboratories were not made aware of options to use rapid analysis procedures. They accepted samples based on the information provided and believed they could meet the required QC, turn-around times and data entry for the confirmatory methods. While there were some issues with reporting data, having a centralized data collection point is good.</p> <p>Recommendation: Labs are comfortable doing what they normally do so having some flexibility built in to WebEDR would be good. Labs should be able to report their normal QC with flags to alert data users to any problems.</p>
Data Reporting	Evaluator	<p>Clearly some labs were more familiar with WebEDR than others and familiarity with it did not ensure successful data entry.</p> <p>Recommendation: More training in the use of WebEDR is needed and WebEDR may need to be modified to build in more flexibility.</p>
Data Turnaround	Evaluator	<p>Analysis: The lab has the ability to handle high sample volume. As such there was no problem fitting the exercise samples in as a rush.</p> <p>Recommendation: In a real event there will probably be many more samples involved. In that event it would be useful if samples were prioritized so the lab could make sure that the most critical were analyzed first.</p>
Exercise Coordination	Evaluator	<p>Analysis: The laboratory stayed in good communication with the controllers, sending updates by email and follow-up emails to clarify phone conversations.</p>
Exercise Coordination	Evaluator	<p>Analysis: The exercise was well organized. The samples received as scheduled. The sample matrixes were as ordinary Proficiency Testing samples.</p> <p>The information and email received were sufficient and in a timely manner. The presented materials and guidelines received well prior exercise.</p> <p>The exercise revealed the weaknesses and showed the areas that need more awareness.</p> <p>Recommendation: To improve communications and coordination between public health laboratories these exercises are necessary at least every three years.</p>
Exercise Coordination	Participant	<p>Another thought for subsequent exercises, it would be good if only the lab coordinator and the evaluator are aware of the exercise ahead of time. Catch the analyst's off-guard.</p>
Forms	Evaluator	<p>Analysis: The WLA-RP has provided forms for a laboratory to use during an event. The laboratory did not use these forms but instead took hand-written notes on company stationery. As such, garnishment of all information relevant to the event may not have been divulged. The forms are detailed and somewhat overbearing, but this is a necessity in order obtain full disclosure of all pertinent information. Additionally, I'm assuming these forms have undergone some form of senior EPA review and would provide expert witness documentation if criminal proceedings were to occur.</p> <p>Recommendation: During the initial training sessions for both participant and evaluator, cover use of forms that ERLN would prefer labs to use.</p>

Category	Role	Comment
Forms	Evaluator	<p>Analysis: Upon communication from the ASR, the laboratory did ask a few pertinent questions pertaining to the nature of the incident and the potential hazards associated with sample analysis. However, it is the belief of this evaluator that the progression of questioning and type of information collection presented in these appendices would be most valuable in maintaining iron-clad documentation of the event scenario. Use of general note-taking may not be sufficient in cases such as this.</p> <p>Recommendation: Familiarize laboratories with the tools presented in the appendices of the WLA-RP.</p>
Forms	Evaluator	<p>Analysis: The communications form that was provided was not very helpful as it was designed for drinking water only. A more generalized form for tracking communications in the case that email is down would be helpful.</p>
Forms	Evaluator	<p>Analysis: In this exercise the analytical request was fairly routine and straightforward. Our standard initial communication protocol worked out fine. I did note that the conversation jumped a bit as certain items came to mind. There is a possibility that important questions could be forgotten and thus information not transferred. The lab would probably help communication and documentation in a real event by using the help forms like Appendix C.</p> <p>Recommendation: It would be good on initial contact if both parties were using these forms. However I can foresee a "scramble" at the lab trying to find the forms when a real call came in. The lab should have a set location (on computer server) where everyone knows this information can be found.</p>
Forms	Evaluator	<p>Analysis: All existing lab systems were robust enough to accommodate the test request for an emergency situation. This allowed the laboratory to analyze and report samples in a very short time frame.</p> <p>Recommendations: Recommend including forms from WLA-RP into lab system.</p>
Forms	Evaluator	<p>Analysis: The forms were used but not on a real time basis and seemed to not be very user friendly.</p> <p>Recommendation: The forms need to be modified for ease of use. Maybe an initial incident report form could be supplied to the necessary parties upon which they could record their actions and subsequent information received.</p>
General	Evaluator	<p>Analysis: The laboratory personnel showed competence and confidence during the exercise. The QA officer Jason Rivera and the Lab Supervisor, Vernon Miller were on top of the situation and everything (with the exception of the EDR) went very smoothly.</p> <p>Recommendation: Congratulations are in order.</p>
General	Evaluator	<p>Analysis: This was the first trial run of the lab response plan; outlining details and responsibilities with a detailed organizational structure. See attached structure sheet.</p>
General	Evaluator	<p>Analysis: The staff were able to take the circumstances (sample types; handling methods) of the exercise and adapt their "normal and usual" methods to fit the situation at hand</p> <p>Recommendation: Make sure that all personal (from shipping and receiving to IT (result and data entry) realize that the real work does not present itself in perfect and acceptable formats.</p>
General	Evaluator	<p>Analysis: City of Phoenix water services lab employees are prepared to handle emergency.</p>

Category	Role	Comment
Laboratory Capabilities	Participant	Issue: Environmental Labs were assigned specific analysis to perform on the samples submitted but we were unaware of the capabilities tests being done by other laboratories. A list of region and capabilities would be helpful to have for our region along with neighboring regions.
Laboratory Capability	Evaluator	Analysis: After the samples had been logged-in for analysis, analysts were informed of the expedited nature of the samples. In the air analysis section in particular, current samples in progress were “bumped” from the sequence as so the laboratory could began analysis of the FSE samples immediately. In addition, the VOC laboratory also interjected the samples into the sequence of that day. Recommendation: ERLN should establish a “Laboratory Capacity Scale” which ranks laboratories on how effective they can be with regards to emergency analysis. This scale would take into account such things as operating capacity, staff numbers, management structure, and instrumental capabilities.
Lab Compendium	Participant	Use Lab Compendium to identify labs who could accomplish the requested analyses in Region 9. Initially locked out due to old password. Was able to quickly reset. Identification of labs was straightforward when using single search criteria. When using “or” operator, labs from multiple regions were extracted. Compendium was effective in indentifying labs to contact.
Lab Compendium	Participant	Analysis: As a test of the utility of the EPA Laboratory Compendium, I logged into and searched the Compendium for labs that could perform the analyses required by the chemical scenario. I was able to easily identify a number of labs in Region 9 and obtain contact information using the compendium. Recommendation: Include a Lab Code for each lab in Compendium to improve deliverable consistency.
Personnel	Evaluator	Comment: A Region 9 lab called during the initial briefing to report that their evaluator was out sick. They were instructed to notify the controller. This may illustrate the need for back-up personnel to be identified and trained in the event of a real emergency response.
QA/QC	Evaluator	Analysis: The data generated was validated with quality control Recommendation: Give those folks a pay raise
QA/QC	Evaluator	Analysis: One of the major setbacks for the lab was properly reporting the relevant QC with the analysis because the lab big non-commercial government but used to reporting any QC. Recommendation: The lab is working as a top priority to set up its current LIMs system to easily report QC.
QA/QC	Evaluator	Analysis: The lab asked for specifications on the QA level of the requested analysis. The controller did not follow up on this request. That left the lab to arbitrarily determine the necessary level based on the circumstances. Recommendation: A guideline for minimum QA requirements should be provided when the lab is requested to assist in an emergency response. A written guideline would be very helpful to insure that the lab successfully completes the requested tasks.
Sample Analyses	Participant	The sample containers for the arsenic in water were labeled with “CVAA via Total Arsenic”. We are familiar with the acronym CVAA to mean Cold Vapor Atomic Adsorption. Had we not had the clear communication that the analysis was for Arsenic we would have called to clarify the analysis was only for arsenic and not mercury.

Category	Role	Comment
Sample Analyses	Participant	Initially expected 9 ppm Xylene levels. Told later that afternoon around 3:15 to report down to 250 ppb. This did not present an issue since we had not started the analysis and these were different criteria. One being a warning to expect high levels and the other a request to obtain an RL of 250 ppb. If high levels are reported the RL is typically not an issue. We screened the samples at a high dilution prior to analyzing at the dilution necessary to either report to the RL or quantify the analytes of interest.
Sample Analyses	Participant	Samples arrived with no information on the COC regarding the VOA soil amounts or MeOH amount/weight or the dry weight –so we assumed we would report wet weight because we had no actual soil sample to perform a dry weight correction. I Asked Amy, who delivered the samples, if she had the information about the amount of soil and MeOH in the vial. She said she would get back to me with that information. Our Analyst later told me it said 5g/5mL on the VOA vials, and I also received an e-mail from Steve Reimer at 3:22 clarifying the amount of sample and MeOH and to report on a Wet Weight basis. If this information was on the COC in a comments section it would help the lab at sample receipt to know we have all the information we need to proceed with the analysis. It was a minor issue as it did not stop us from proceeding with the work (initial screening). We were concerned about handling the actual VOA vial in sample receiving area since it was an MeOH extract and we did not want to throw off the weight of the sample from inappropriate handling. This is why we missed seeing the notation 5g/5mL on each VOA vial.
Sample Analyses	Participant	PSR (Gerald) wanted 24 hour TAT from initial call and I expected to receive samples at 800 am on 8/24/10. I checked with our lab staff who would be performing the work, and revised the TAT expectation from 24 to 32 hours with Gerald based on a received time of 8:00 am on 8/24. Quick turnarounds(<48 hours) require tight coordination and clear direction in this case since overtime was not necessary we chose to revise our TAT estimate rather than work overtime to meet the initial request of 24 hours. The PRL contact (Gerald) was fine with the revised time line.
Sample Analyses	Participant	Our samples were hand delivered by Amy around 1:00 p.m. on 8/24. I expressed that I thought we were to receive them at 8:00 the next morning. I was not sure if they were staging them for us to receive at 8:00 am 8/24 or if it was the real deal to be getting the samples so we would work on them. Allen (EPA controller) called as I was heading to sample receiving and said we could go ahead and start processing the samples. The earlier arrival time allowed us to get started that day instead of the next morning which actually helped us achieve the TAT needs for the PRL.
Sample Analyses	Participant	Monday (8/23); Analyses were well underway. Results should be ready by the following morning. The only comment here would be if this was a real emergency, results would have been ready by the late evening.
Sample Analyses	Participant	Issue: Due to limitations of and problems with the Chromera / Perkin Elmer software, it was necessary for the analyst (and one other individual, for safety purposes) to stay all night and monitor the ICP-MS. Comment: The Chromera software needs to be improved to allow unattended operation, with confidence, or it should be replaced.

Category	Role	Comment
Sample Analyses	Evaluator	<p>Analysis: Laboratory personnel were very knowledgeable with regards to analysis of the sample. Analysis of the air samples showed the presence of several other compounds besides xylenes. Laboratory had intended to report these as tentatively identified compounds (TICs) until instructed to do otherwise by the IMT. The analysis of the water samples revealed a very clean spectrum of o-xylene only. The analysts for the air samples immediately conferred with the analysts of the water samples to compare results and to see if any correlation could be made. Analysts eventually concluded no comparison was valid as preparation of samples was most likely performed by separate entities.</p> <p>Recommendation: ERLN may want evaluate laboratory PE results prior to directing samples to network laboratories.</p>
Sample Analyses	Evaluator	<p>Analysis: The laboratory has strong procedures in place for handling unknown samples. There was good communication between the participants in the study and the other people in the laboratory that were involved in analysis and reporting of these samples.</p>
Sample Analyses	Evaluator	<p>Analysis: The Lab staff demonstrated the capability to follow given procedures. They demonstrated the capability to communicate with EPA Region 9.</p> <p>The lab processed and analyzed the samples as required. The staff analyzed the samples and reported the results within a suitable time.</p> <p>Recommendation: The Laboratory operations need to be discussed and analyzed for any emergency response plans internally. To improve emergency preparedness these exercises should be participated.</p> <p>The emergency preparedness procedure may get improve from learning the mistakes from each exercises.</p>
Sample Analyses	Evaluator	<p>Analysis: The lab staffs are knowledgeable about EPA methods. Most of scientists at the lab have many years of experience in analyzing environmental samples.</p> <p>There are many automated advance instruments for analyzing environmental samples.</p> <p>Recommendation: Review the WLA – RP and participate the exercise for more effective response to water emergency incidents.</p>
Sample Analyses	Evaluator	<p>Analysis: The lab demonstrated ability to quickly assemble an effective response team to handle the unexpected obstacles which could jeopardize the completion of the analysis of the received samples. For example, there was an immediate shortage of liquid Argon to run the ICP-MS instrument in the first day of the exercise; the team managed to obtain the gas from another provider just in time for the analysis. In another incidence, the software of the GC/MS used for the xylene analysis did not function properly. The whole analysis was wasted. Other chemists became involved and the problem was corrected; a second analysis was successfully completed.</p> <p>Recommendation: Laboratory should constantly monitor the lab capacity, capability and preparedness for unexpected emergency.</p>
Sample Analyses	Evaluator	<p>Analysis: In this exercise, the lab stepped out of its comfort zone to complete the tasks. The lab used a Purge & Trap GC/MS method to analyze the xylene samples. This method was validated but it was not used for regular testing. The chemist in-charge was able to complete the xylene analysis employing an unfamiliar method.</p> <p>Recommendation: Laboratory should consider all possible analytical methods (certified or uncertified).</p>

Category	Role	Comment
Sample Handling	Participant	Sample numbers on vials submitted for analysis were not easily identified. Number located below bar code in small print. Larger print for sample numbers or highlighted in some manner. Labs not familiar with bar code numbering would not zone in on numbers quickly. If a large number of samples were submitted it would be much easier to prepare if numbers were easily visible without having to pick up each vial and read the small label.
Sample Handling	Participant	Overall this project went pretty smoothly for us. There were no impediments to progressing with the analysis. Recommend the COC have a comments column.
Sample Handling	Participant	Analysis: The lab was well prepared to receive the samples and able to handle the requested analysis and turnaround time. The process went smoothly from a delivery and sample analysis stand point. Recommendation: The detail regarding the field names for the EDD were not correct
Sample Handling	Participant	Analysis: The laboratory performed well within the exercise to log in and direct the sample analyses.
Sample Handling	Evaluator	Analysis: Legally defensible Recommendation: None- They have a very good system.
Sample Handling	Evaluator	Analysis: In the shipping of the environmental chemistry samples there was no signed Chain of Custody (COC) papers. Also one set of specimen were identified on the outside of the containment bag, but not on the sample bottles themselves. Recommendation: Even if there is no overt need for COC, documentation should be kept anyway.
Training	Evaluator	Analysis: There was no training at the lab for WebEDR before the exercise. Recommendation: Lab may practice Proficiency Testing and similar exercise annually.
Training	Evaluator	Analysis: If the laboratory is planning on remaining a participant in the WLA-RP system, then training needs to occur so that all personnel buy into the plan, know what it contains and what forms are available for use should they be needed. Recommendations: Train laboratory personnel to be able to utilize the plan of the laboratory were called on to serve clients in a national emergency.
WebEDR	Evaluator	WebEDR: Couldn't upload a .csv-file, only .xls-file. The type 1t format is supposed to be compatible with both. May have been a problem with delimiting within the .csv-file; however, the WebEDR didn't indicate what was wrong with the format.

Category	Role	Comment
Data Reporting	Participant	<p>Analysis: Environmental Analysis - reporting of samples using Web-EDR took 3.5 hours after samples were peer reviewed. The EDD had formatting issues with date formats and text formats. The Idaho LIMS Excel report was not accepted by the EDR program. All the column headers were correctly set up and some additional columns were inserted that were required but not an option with our LIMS. It took about 1 hour to add information that our LIMS is not set up to generate. Help from the technical specialist determined that the whole spreadsheet needed to be copied onto a new sheet. Once this was accomplished the spreadsheet was able to be uploaded onto the Web-EDR site. I took about 30 minutes reviewing the spreadsheet to find a typo error or some type of noticeable format error but could not find any on my own. Billie was able to view and diagnose my electronic data issues through e-mail. This was extremely helpful however not practical during an event.</p> <p>Recommendation: Offer data reporting exercises and maybe coordinate technical help to set up a deliverable reports for LIMS systems. We use Horizon 10.2 and it would be great if there are other labs in the network that use the same LIMS to have database administrators communicate on how to improve their reporting.</p>
WebEDR	Evaluator	<p>Analysis: The laboratory found the tutorials and the ease in navigation highly beneficial when trying to upload information.</p> <p>Recommendation: Only that error messages when uploading data be more specific.</p>