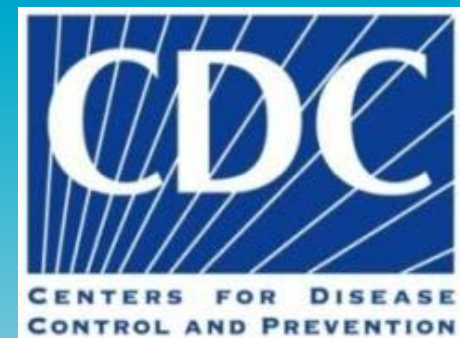


# Region 7 and 8 Laboratory Full-Scale Exercise



EPA Region 7 Laboratory



EPA Region 8 Laboratory



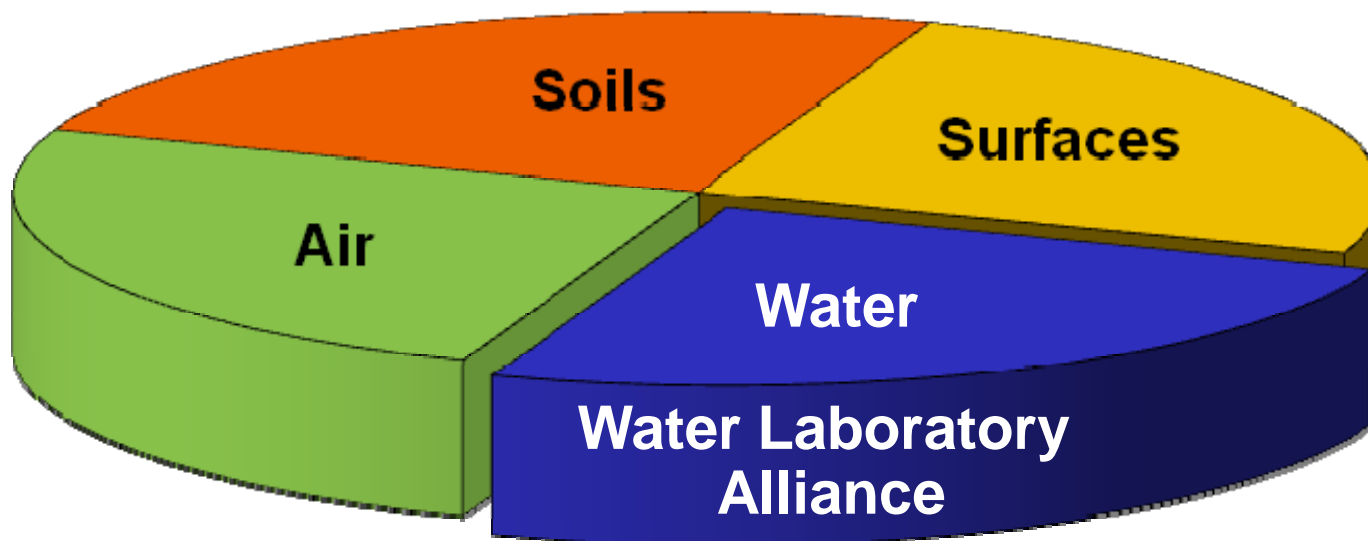
EPA Headquarters

October 14-21, 2011

# Components of the ERLN

The WLA focuses solely on water and is an integral part of EPA's ERLN

## Environmental Response Laboratory Network (ERLN)



## Exercise Focus

- **Laboratory Coordination and Communication**
  - Environmental: Water Laboratory Alliance Response Plan (WLA-RP)
- **Uniform Data Reporting**
  - Intra-Network Reporting
  - Inter-Network Reporting – Integrated Consortium of Laboratory Networks (ICLN) Data Portal
- **Response Coordination and Communication**
  - Federal Government: EPA, CDC, FDA, FBI
  - State Government: MO Department of Health and Senior Services; MO Public Health Laboratory; MO Department of Natural Resources; MO National Guard (MO NG) 7th Civil Support Team
  - Local Government: Kansas City, MO (KCMO) Health Department, KCMO Water Services Department



# Unique Exercise Characteristics

- Limited up-front information
  - Laboratories and EPA Environmental Unit
- Rapid laboratory response
- Multiple EPA Regions
- Multiple Laboratory Networks
  - EPA's WLA and ERLN, CDC's LRN, HHS/FDA and USDA/FSIS' FERN
- Injects to Laboratories
  - Press
  - State government
  - Other laboratories



# Exercise Logistics

- October 14-21, 2011
- Scenarios Occurred in Kansas City, Missouri
- 3 Drinking Water Scenarios (2 Including Food), 1 Clinical Scenario
- EPA Region 7 was the lead and Region 8 provided support for the environmental response
- LRN led the clinical response, FERN led the food response
- Followed Homeland Security Exercise and Evaluation Program (HSEEP) guidelines

# Regions 7 and 8 (FSE) Planning Group

- EPA Office of Water
- EPA Office of Solid Waste and Emergency Response
- EPA Region 7
- EPA Region 8
- EPA Region 10
- CDC (LRN)
- FDA/USDA (FERN)
- FBI – Kansas City Field Office
- Missouri Dept. of Health and Senior Services
- Kansas City MO Health Dept. and Water Services Dept.



# Chemical Environmental and Clinical Scenario

- Break in and entry at a remote underground water tank with a sump pump truck full of contaminant dissolved in water
- Environmental samples: Determined effectiveness of flushing efforts
  - Food Samples: Soft drink manufacturer
- Clinical samples: Determined patient's level of exposure
- Initial notification
  - KCMO Health Department – symptoms monitoring
  - KCMO Water Services – evidence of tampering



# Biological Select Agent Scenario



- The water supply to an elementary school was intentionally contaminated with a select agent
- Sample collection used the EPA portable ultrafiltration device
- Water samples were analyzed using the select agent screening protocol
- Initial notification
  - FBI – Phone Threat
  - KCMO Health Department – symptoms monitoring



# Biological *Salmonella* Scenario

- Similar to the 2008 Alamosa, CO *Salmonella* outbreak
- Flooding occurred on the Missouri River
- An underground storage tank near the Missouri River was compromised
- Water samples were analyzed using the analytical protocol for Non-Typhoidal *Salmonella* in Drinking Water and Surface Water developed by WSD
- Food samples were be analyzed for *Salmonella*
- Initial notification
  - KCMO Health Department – symptoms monitoring



# Participants

## Chemical Environmental Laboratories (24)

### – Federal Laboratories (4)

- USEPA Region 7 Science and Technology Center
- USEPA Region 8 Laboratory
- USEPA National Enforcement Investigations Center (NEIC ) Laboratory
- USFDA Kansas City District (Food)



## Participants, cont

### Chemical Environmental Laboratories (cont.)

#### – State Laboratories (11)

- Colorado Dept of Public Health and Environment State Laboratory
- Kansas Health & Environmental Laboratories
- Missouri Dept of Natural Resources, Environmental Services Program
- Missouri State Public Health Laboratory
- Montana Department of Public Health and Human Services Environmental Laboratory
- Nebraska Public Health Environmental Laboratory, Lincoln
- North Dakota Dept of Health Division of Laboratory Services
- South Dakota Dept of Health Laboratory Services
- Iowa State Hygienic Laboratory, Ankeny
- Utah Department of Health, Unified State Laboratory: Public Health
- Wyoming Dept of Agriculture Analytical Services Laboratory

## Chemical Environmental Laboratories (cont.)

- **Commercial Laboratories (4)**

- ALS Laboratory Group
- Test America - Cedar Rapids
- Test America - Denver
- Test America - St. Louis

- **Utility Laboratories (4)**

- KCMO Water Services Department, Laboratory Division
- City of Olathe Municipal Water/ Wastewater Laboratory
- Johnson County Environmental Water Quality Laboratory
- WaterOne Laboratory



# Participants, cont

## Clinical Laboratories (9)

- Colorado Dept. of Health State Laboratory
- Kansas Health and Environmental Laboratories
- Missouri State Public Health Laboratory
- Nebraska Public Health Laboratory, Omaha
- Iowa State Hygienic Laboratory, Ankeny
- State of South Dakota Department of Health Laboratory
- Montana Department of Public Health and Human Services Laboratory
- Utah Department of Health, Unified State Laboratory
- Wyoming Department of Health Laboratory



## Select Agent Laboratories (7)



- Indiana State Department of Health Laboratories
- Massachusetts Department of Public Health, Hinton State Laboratory Institute
- Missouri Department of Health and Human Services, State Public Health Laboratory
- Montana Public Health Laboratory
- New England Regional Center for Excellence (NERCE)
- Pennsylvania Department of Health, Bureau of Laboratories, State Public Health Laboratory
- South Dakota Public Health Laboratory

# Participants

## ***Salmonella* Laboratories (6)**

- County Sanitation Districts of L.A. County, Joint Water Pollution Control Plant (JWPCP)
- Kansas Health & Environment Laboratory (Food)
- Montana Public Health Laboratory
- Nebraska Public Health Environmental Laboratory
- North Dakota Dept of Health Division of Laboratory Services (Food)
- Iowa State Hygienic Laboratory, Iowa City (Water and Food)



## **Mobile Laboratory Screening**

- MO NG 7th Civil Support Team (WMD Mobile Laboratory)



**32 Laboratories, 47 Laboratory Roles!**



## Food Emergency Response Network

FERN





# Mission of FERN



- Integrate the nation's multilevel food-testing laboratories to detect, identify, respond to and recover from a bioterrorism or public health emergency involving the food supply
  - Response and recovery
- FERN mission incorporates:
  - Food Defense
  - Food Safety
- Member of Integrated Consortium of Laboratory Networks
  - DHS

# FERN Organization



- Jointly managed by FDA & FSIS
  - National Program Offices
  - 5 Regional Coordination Centers
  - 169 Laboratories
  
- Implementation of Support Programs
  - Proficiency Testing/Readiness Program
  - Method Development & Validation
  - Training Program
  - Surveillance Programs
  - Electronic Communications & collaboration

# FERN Laboratory Response



## Large-scale food events

- *E. coli* O157:H7 in spinach, 2006
- *Salmonella* in peppers, Summer 2008
- *Salmonella* in peanut butter, 2009
- Melamine Outbreak response activities.
  - 2007 and 2008-09
- Deepwater Horizon Oil Spill, 2010
- Japanese nuclear reactor event, 2011
- Arsenic Assignments, 2012

# FERN Involvement

First ERLN/WLA Laboratory FSE with FERN involvement!

- Recruit FERN Laboratories
- Coordinate FERN Lab response during the exercise
- Analyze food samples
  - Biological non-select agents
  - Chemical samples
- Receive electronic data for food samples
- Compile electronic data into the ICLN data portal

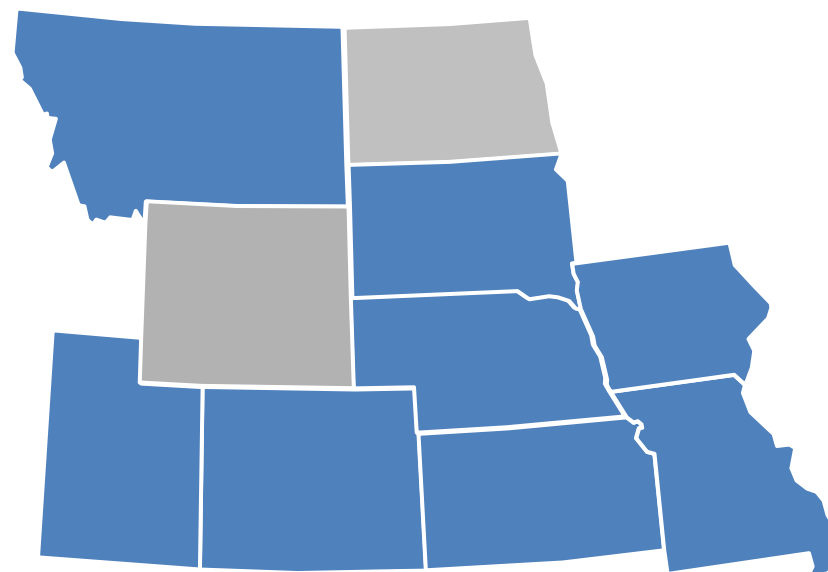


LCDR Ernest McGahee  
National Environmental Monitoring  
Conference, 2012  
August 9, 2012



# Clinical Component Participants

- St Luke's Hospital, Kansas City, MO
- Kansas City Health Department
- LRN-C Labs
  - Missouri – Level 2 – Incident Lead
  - Iowa – Level 2
  - Colorado – Level 2
  - Utah – Level 2
  - Kansas – Level 2
  - Nebraska – Level 2
  - South Dakota – Level 2
  - Montana – Level 2
  - Wyoming – Level 3

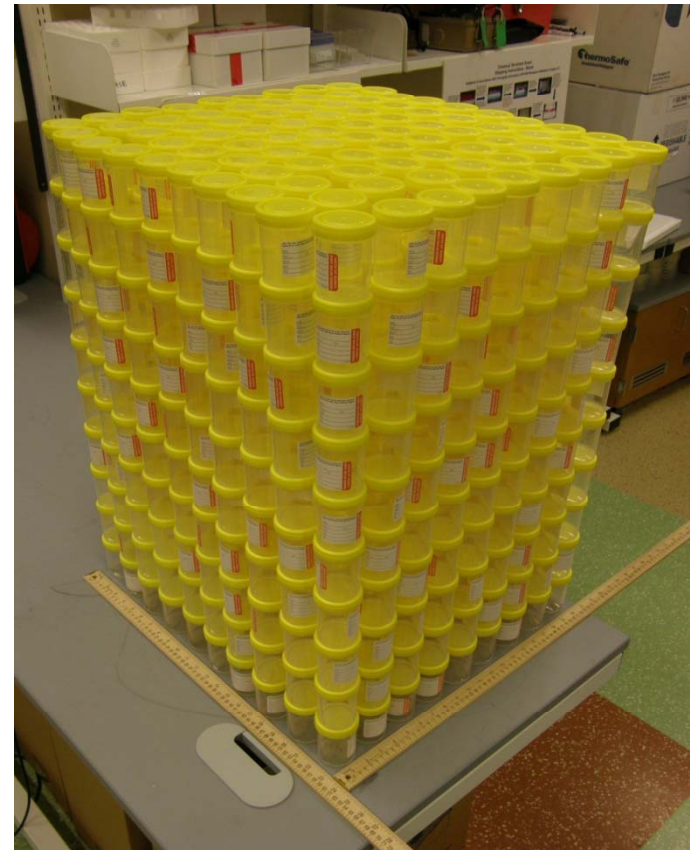


## Exercise Plan

- Incident occurs
- Patients present at St Luke's
- Samples collected and couriered to Kansas City Health Department
- MO PHL requests CDC assistance
- CERT deploys to collect samples (notional)
- RTS identifies agent (notional)
- MO LRN-C lab requests surge assistance from regional LRN-C labs
- MO LRN-C lab ships patient samples to assisting labs
- Results reported to CDC and MO via Results Messenger

# Exercise Implementation - CDC

- Collect urine pool
- Prepare & ship 40 patient sample sets for RTS
- Prepare 3 spike levels, 75 urine cups/level
- Prepare 100 urine cups for each participant, 900 total cups





# Exercise Implementation - CDC

- Ship 900 blank and spiked urine cups
- Receive request for RTS support
- Sit back and wait for results
- Receive data reported via Results Messenger

**LRN Results Viewer** Search

Welcome Veronica Wilson-McElprang [LRN Administrator] [logout](#) Wednesday, April 25

**Batch Information**

**Batch ID:** ExerciseToxic Elements Screen20111020#708      **Activity Type:** Exercise  
**Agent Category:** Toxic Elements Screen      **QC Material Lot:** TEP  
**Instrument Type:** ICP/MS      **Instrument ID:** A  
**Sample Matrix:** Urine      **EventID:** EPA Region 7 and 8 Exercise  
**Batch Description:** Analyze 100 samples sent on 10-17-2011 for Arsenic. Run and report QC Low and QC High at beginning, every 20 samples, and at the end. Report your labs calculated LOD after first QC low and QC High.  
**Invalid Batch Comments**  
**Placer ID:** MO.JeffersonCity.SPHL

**Batch Results**

Run ID	Sample ID	Analyte	Sample Result	Run Date
KS10182011A	QL1532	As	15.8	10/18/2011 01:00 AM
KS10182011A	QH1550	As	167.0	10/18/2011 01:00 AM
KS10182011A	QH1534	As	167.0	10/18/2011 01:00 AM
KS10182011A	QH1427	As	152.0	10/18/2011 01:00 AM
KS10182011A	LOD	As	0.7056	10/18/2011 01:00 AM
KS10182011A	7620	As	PLC	10/18/2011 01:00 AM
KS10182011A	7397	As	PLC	10/18/2011 01:00 AM
KS10182011A	6499	As	PLC	10/18/2011 01:00 AM

# Exercise Implementation - CDC

- **Missouri**
  - Request RTS assistance from CDC
  - Receive 800 samples from CDC
  - Request surge assistance from regional LRN-C labs
  - Ship 100 samples to each of 7 labs
  - Conduct regular conference calls tracking progress and addressing challenges
  - Analyze 100 patient samples
  - Report and receive reported results

# Exercise Implementation - CDC



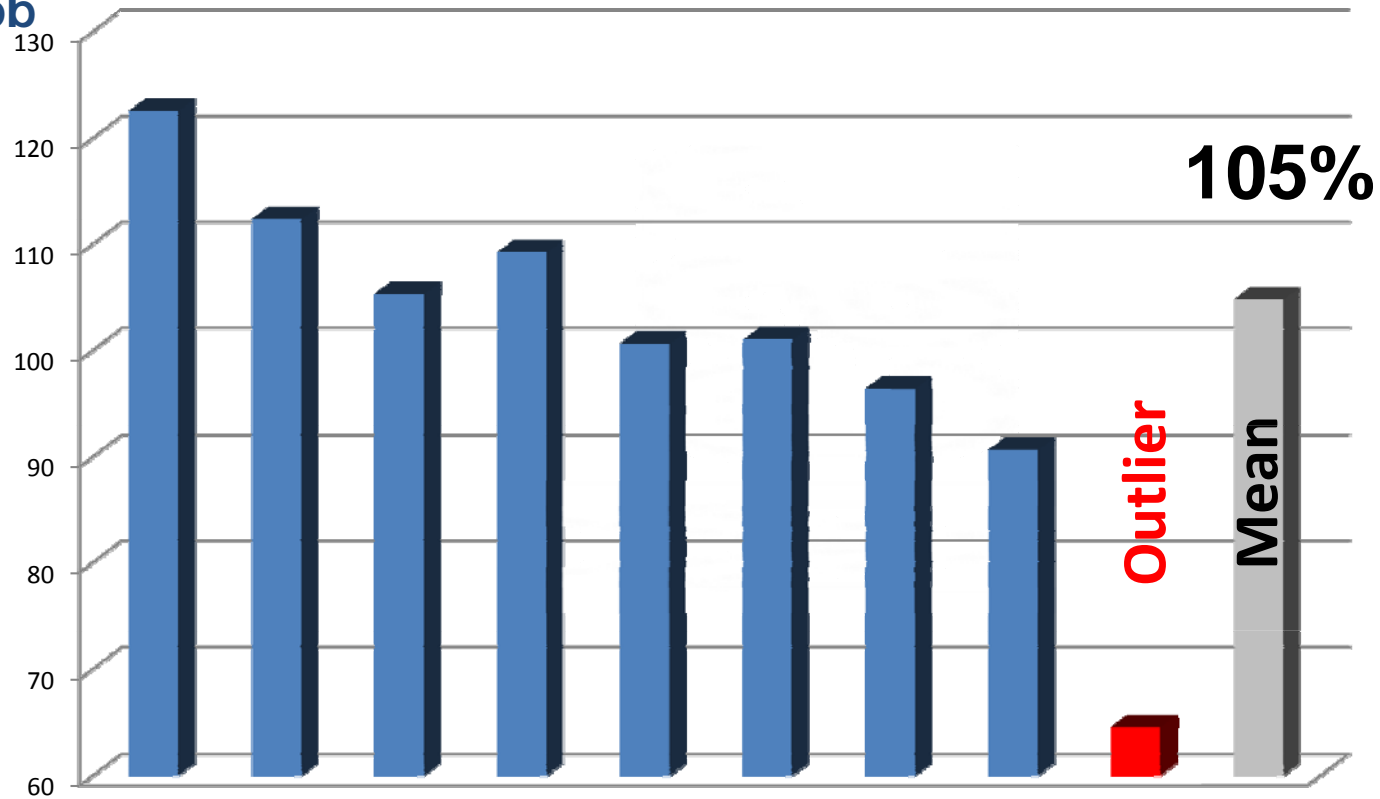
- **Wyoming**
  - Receive 100 Patient samples from CDC
  - Package and trans-ship samples to Colorado and Utah
- **Colorado**
  - Receive analyze and report results for 100 samples from MO
  - Receive analyze and report results for 50 samples from WY
- **Utah**
  - Receive analyze and report results for 100 samples from MO
  - Receive analyze and report results for 50 samples from WY
- **Iowa, Kansas, Nebraska, South Dakota, and Montana**
  - Receive analyze and report results for 100 samples from MO

# Clinical Analysis

- Activities coordinated by Steve Hynes, MO PHL
- Total arsenic in urine
- DRC ICP-MS
- Report results to CDC and MO PHL via LRN Results Messenger

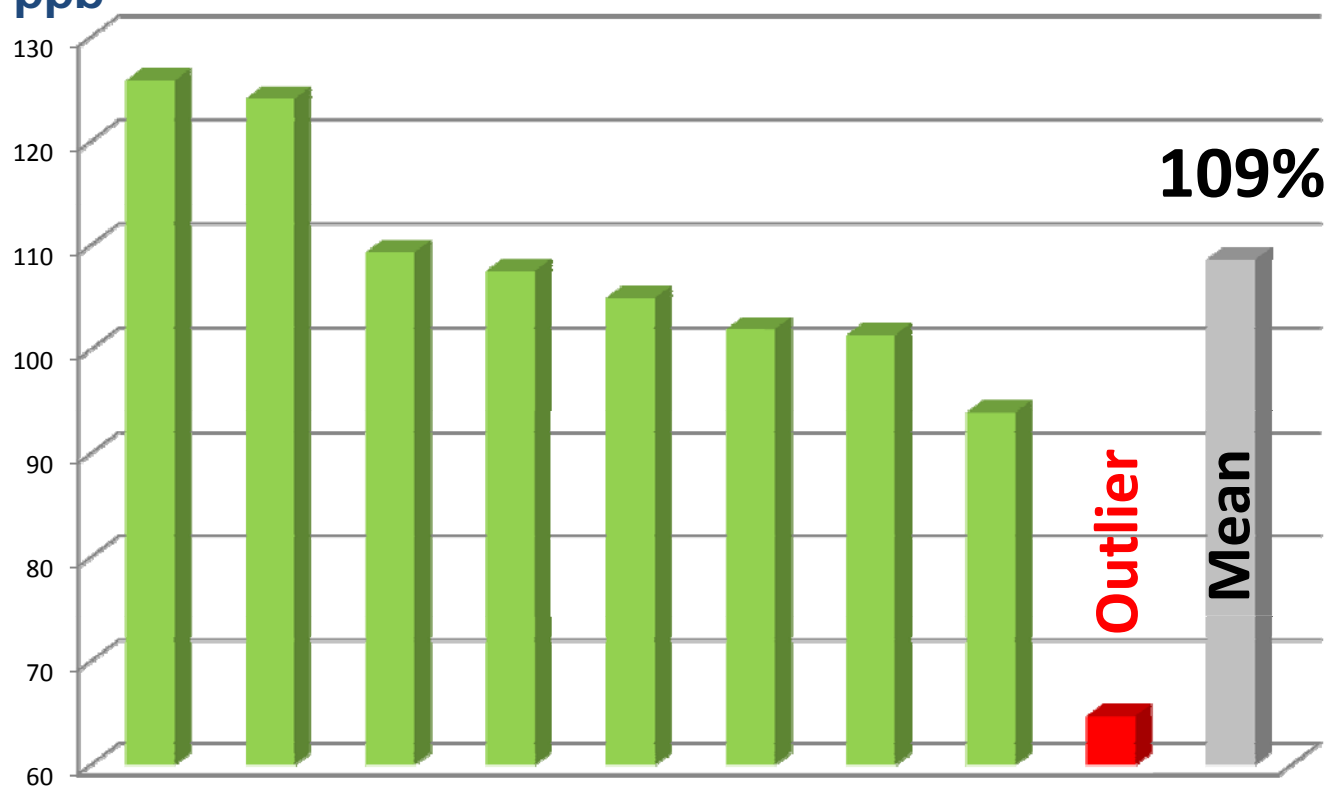
# Clinical Analysis

Accuracy  
High Spike  
320 ppb



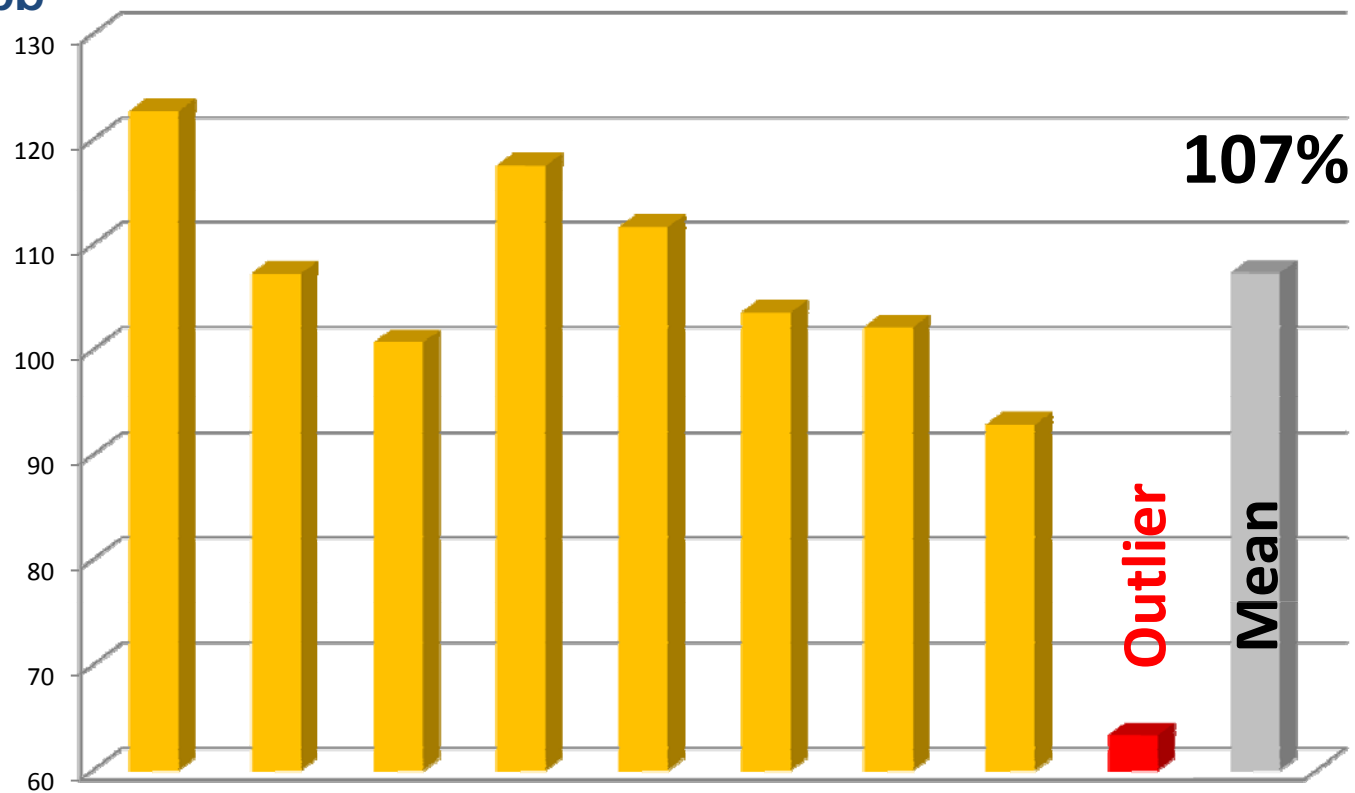
# Clinical Analysis

Accuracy  
Medium Spike  
174 ppb



# Clinical Analysis

Accuracy  
Low Spike  
29 ppb



## Lessons Learned...

- Never enough communication
- Results reporting issues
- Surfing is a lot of work
- Opportunity to make contacts



## Acknowledgments

- Robert Kobelski
- Rudy Johnson
- Phil Holt
- Mark Davis and the CERT
- David Ashley
- Chariety Sapp
- Ahmed Ali
- Steve Hynes

# Laboratory Coordination

## Chemical Environmental Scenario

- Region 7 Environmental Unit
- Support from the Region 8 Laboratory

## Chemical Clinical Scenario

- Missouri State Public Health Laboratory

## Biological Environmental Scenarios

- Region 7 Environmental Unit

## Food Analysis

- Food Emergency Response Network



# Benefits of Exercise Participation



- Increase laboratories' familiarity with WLA-RP and other ICLN, EPA, CDC, and FERN response procedures
- Helps build laboratory relationships essential for effective laboratory emergency response
- Helps laboratories identify improvements to their internal standard operating procedures
- Allows laboratories to practice their analytical and data reporting capabilities with real samples
- Allows laboratories to practice their interactions with the ICS Environmental Unit (EU)

# Feedback

## Positive Feedback Summary

- Exercise set-up, pre-briefings, documents (binders), controller & WebEDR Hotline availability
- Initial chaos and uncertainty and injects added to realism
- Rarely have an opportunity to participate in an exercise of this scale
- EU responsive to inquiries, coordination efforts by MO-PHL, and daily calls
- Quick turnaround, analysts took the exercise very seriously

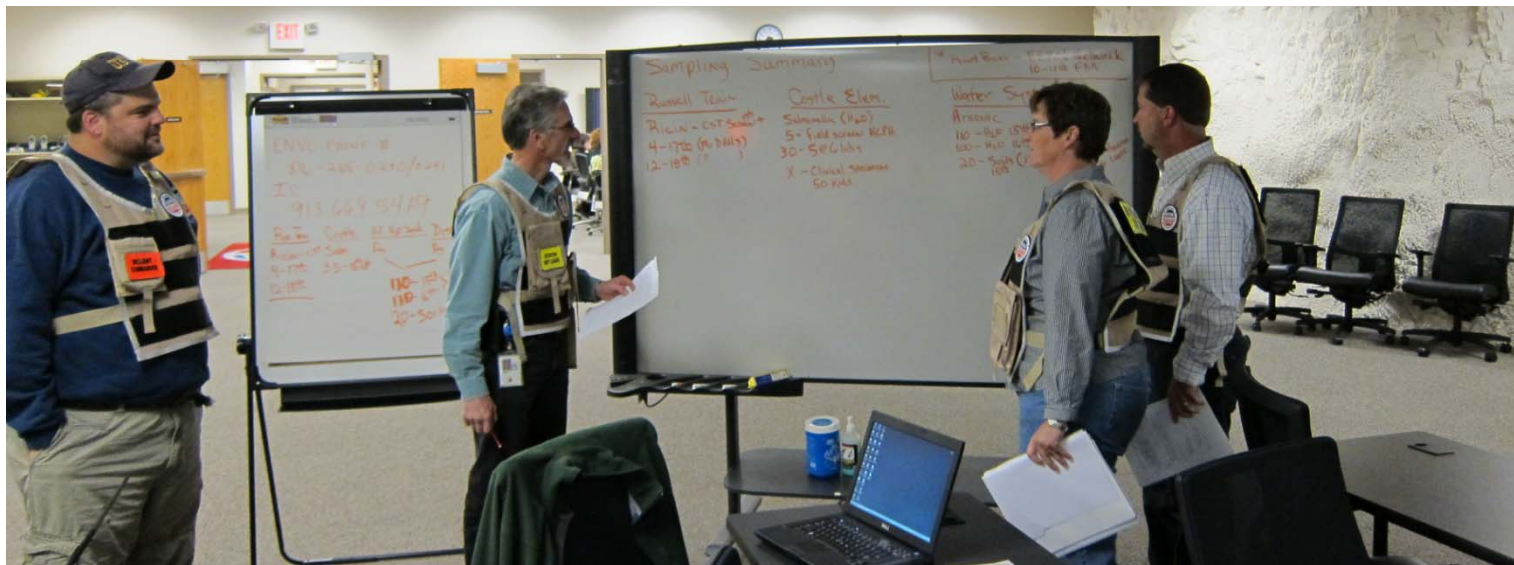
## Feedback (cont.)

### Areas of Improvement Summary

- Electronic data deliverables a challenge; wanted more training and examples/templates during the exercise
- More communication opportunities with the Incident Management Team
- Desire field data with samples
- More situational updates and press releases

# Overall Impressions

- Participants were pleased to have opportunity
- Exercise went well
- Communication will always be a challenge
- More practice is needed among all agencies and laboratory networks for Electronic Data Deliverables



## Questions?

### Contacts:

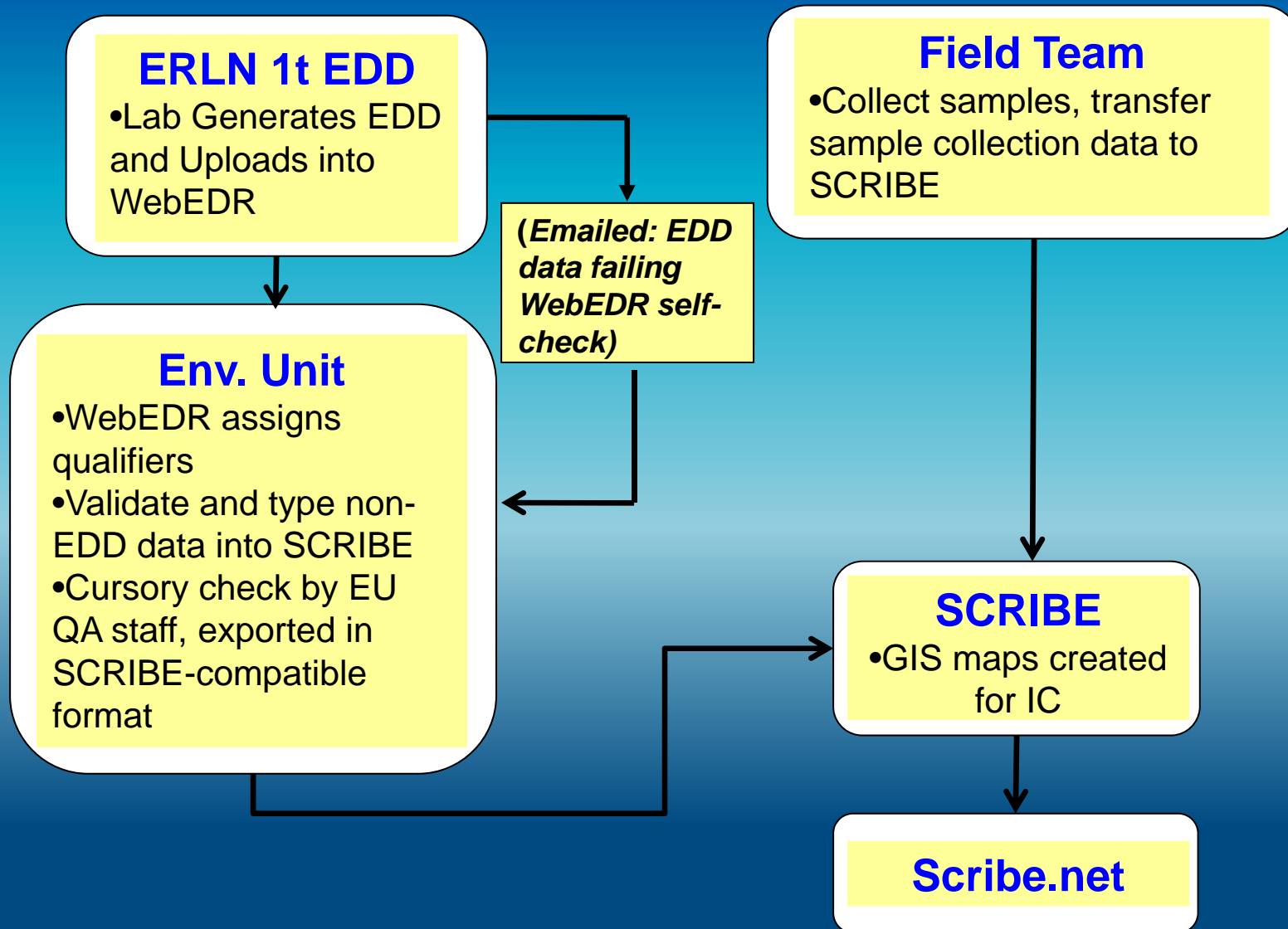
Adrian Hanley, USEPA, Water Security Division  
(202) 564-1564, [hanley.adrian@epa.gov](mailto:hanley.adrian@epa.gov)

LCDR Ernest McGahee, CDC, LRN-C  
(770) 488-7579, [esm7@cdc.gov](mailto:esm7@cdc.gov)

Don Burr, USFDA, Food Emergency Response Network  
(608) 224-4743, [donald.burr@fda.hhs.gov](mailto:donald.burr@fda.hhs.gov)

Lauren Yeung, USFDA, Office of Regulatory Affairs  
(301) 796-6623, [lauren.yeung@fda.hhs.gov](mailto:lauren.yeung@fda.hhs.gov)

# Environmental Data Flow





# Example GIS Data

