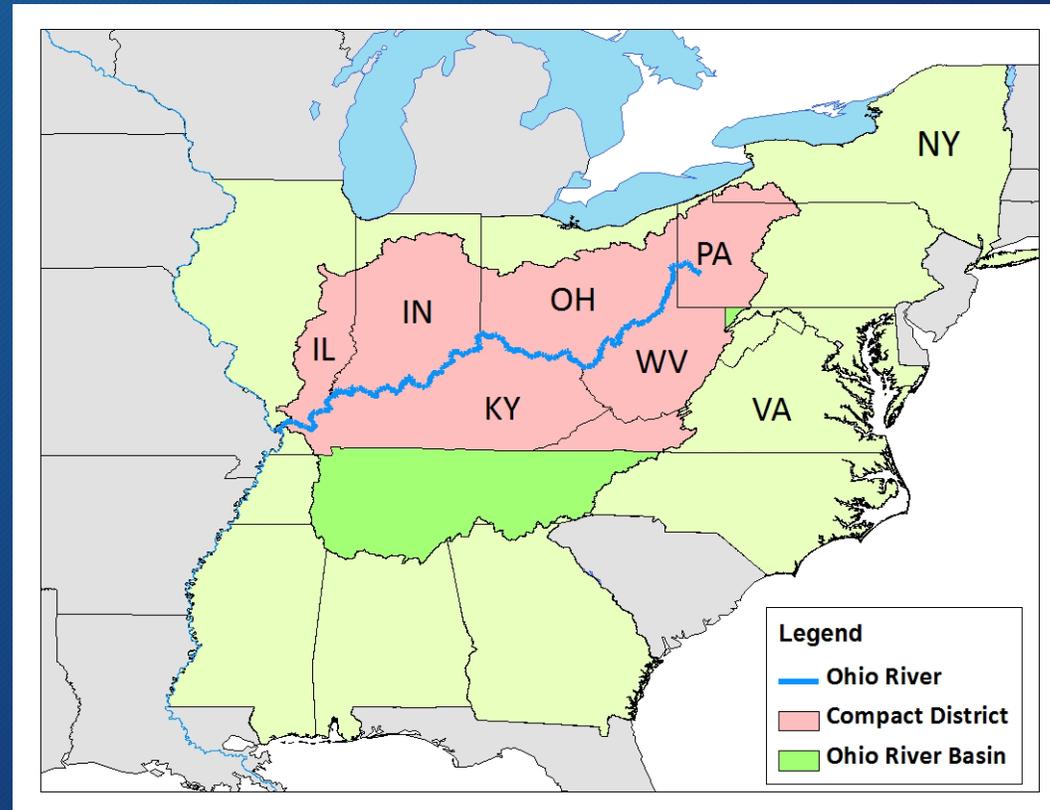


# ORSANCO Spill Response

Regional Response Team 5 Meeting  
October 17-18, 2023

# Ohio River Valley Water Sanitation Commission

- Established by Compact (1948)
- Ratified by Congress
- Eight signatory states
  - IL, IN, NY, KY, OH, PA, VA, WV



# What We Do

- Our mission is to protect the uses of the Ohio River.
- We monitor the river to assess if it is:
  1. Safe for drinking water
  2. Safe to recreate
  3. Safe to eat the fish
  4. Safe for aquatic life



# Role in Spill Response

- Communications
- Time-of-Travel Modeling
- Water Quality Monitoring
- Analytical Support



# Facilitating Emergency Response Preparedness

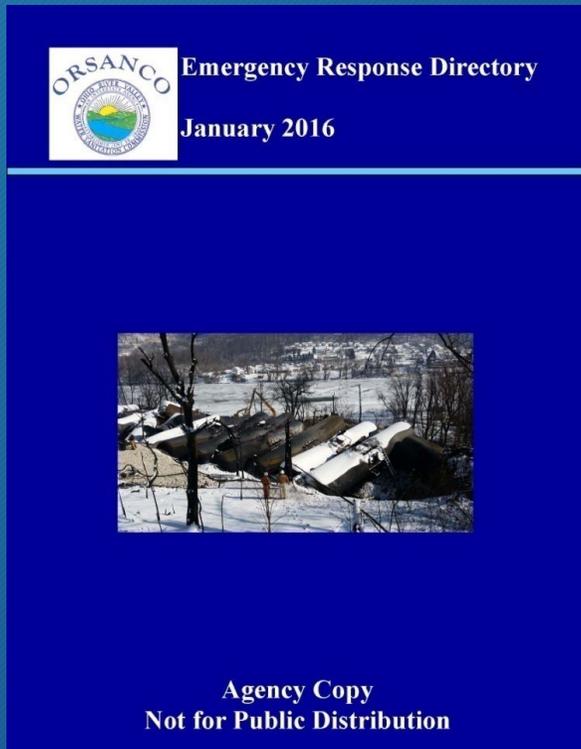
- Emergency Response Focus Groups
  - Engage federal/state/local ER personnel
  - Upper Ohio (Marietta)
  - Greater Cincinnati (Markland pool)
  - Kentuckiana (Louisville to Evansville)
  - Great Rivers Coordination Group (Paducah)
- Water Users Advisory Committee
  - Drinking water utilities

# Communications

- Rotating 24/7 spill duty
  - Receive spill reports via National Response Center (NRC) or direct calls
- Facilitate interstate communication
  - State and Federal Agencies
  - Drinking Water Intakes
  - Industrial Intakes
  - Media



# Spill Notification



- Emergency Response Directory
  - State/Federal contacts
  - Water utilities
  - Key river features
- Spills Email Distribution List
- Phone Notifications
  - Water utilities and ER agencies
- Coordinate Conference Calls
  - Available to coordinate calls when necessary

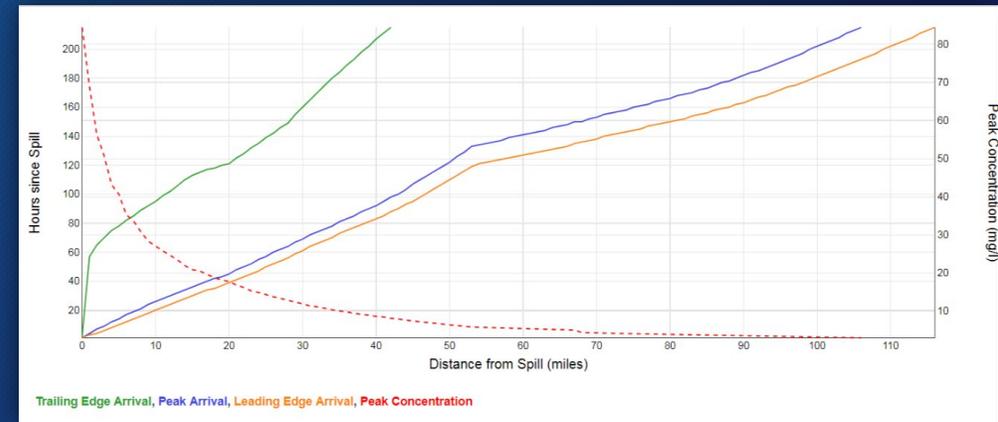
# Key Questions?

- What?
- Where?
- How much?
- Actions taken?
- Concentration?
- When will it arrive at downstream intakes?
- How long is the plume?



# Time-of-Travel Modeling

- Ohio River Spill Modeling System
  - Input date, time, amount, duration, decay
  - Uses daily HEC-RAS flow file from NWS
- Predicts plume time-of-travel
  - Leading edge; peak; trailing edge
- Estimates pollutant concentration
- Utilized to:
  - Inform water utilities and others of spill location
  - Inform sampling crews where to monitor



# On-River Spill Tracking

- Water quality sampling to track plume
  - Shore-based (access points, locks & dams)
  - Boat-based (safety limitations)
- Provide coordination of multi-agency sampling efforts
- Available Resources
  - Boats - flow-through monitoring
  - Multi-parameter datasondes
  - Water and sediment samplers
  - Fluorimeters
  - Biological sampling



# Spill Detection Monitoring Network

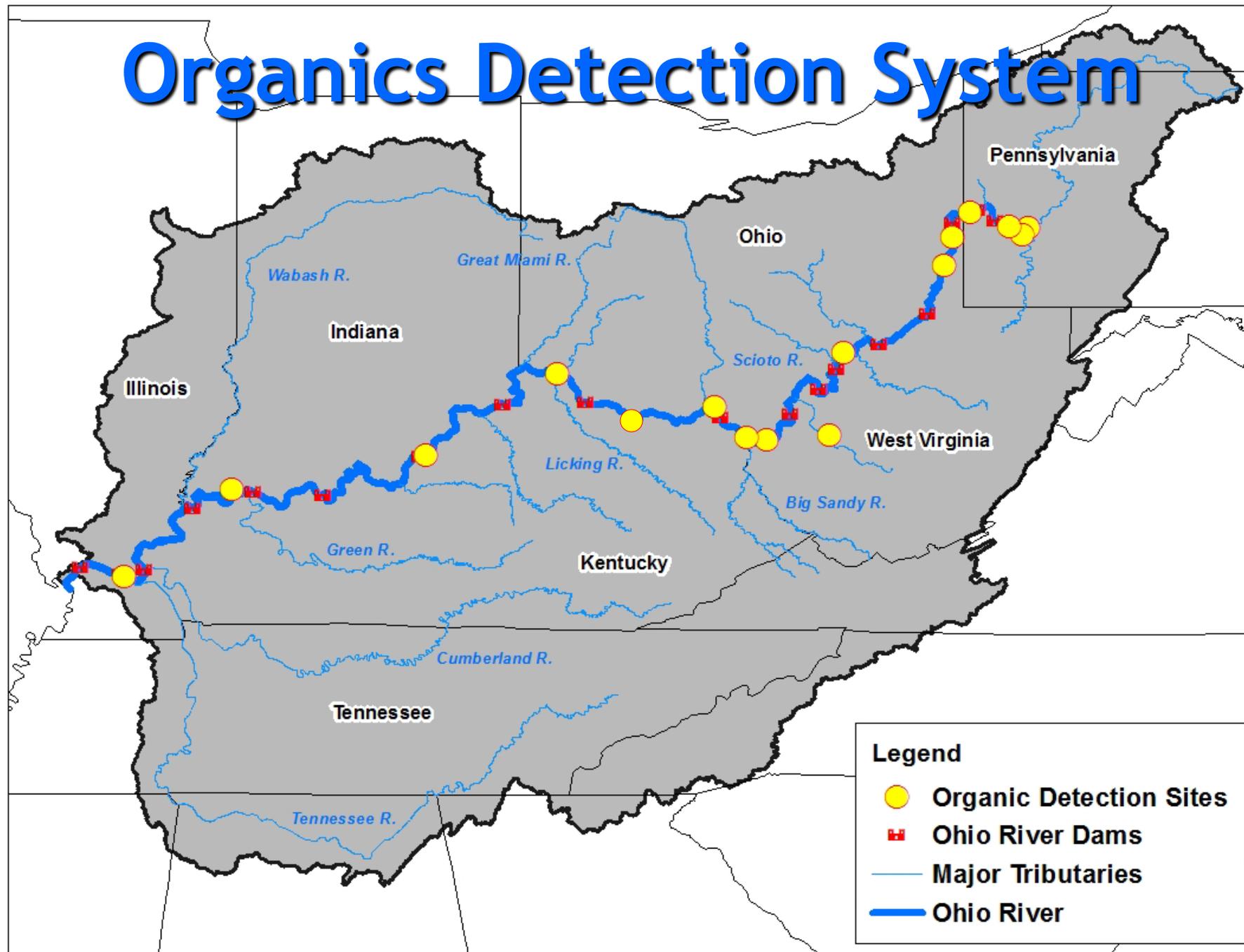
- Organics Detection System (ODS)
  - Daily analysis of water samples for volatile organic compounds for spill detection
  - 16 stations (13 mainstem + 4 tribs)
  - Detect thousands of compounds
  - Calibrated for 30 VOCs
- Provide coordination of laboratory services
  - Within ODS network
  - Contract laboratories



Gas Chromatograph Mass Spectrometer

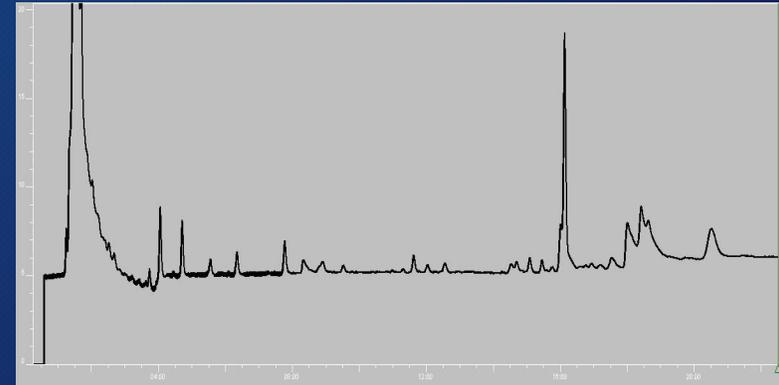


# Organics Detection System



# ODS Network Functions

- Routine screening and ambient monitoring at intakes
  - Alert operators of events that may impact treatment
- Enhanced monitoring capabilities during spill events
  - Increase sampling frequency
  - Perform confirmation analyses
  - Provide analysis to assist plume tracking
  - Develop methods for contaminant analysis
- Foster improved communications and information sharing among water utilities



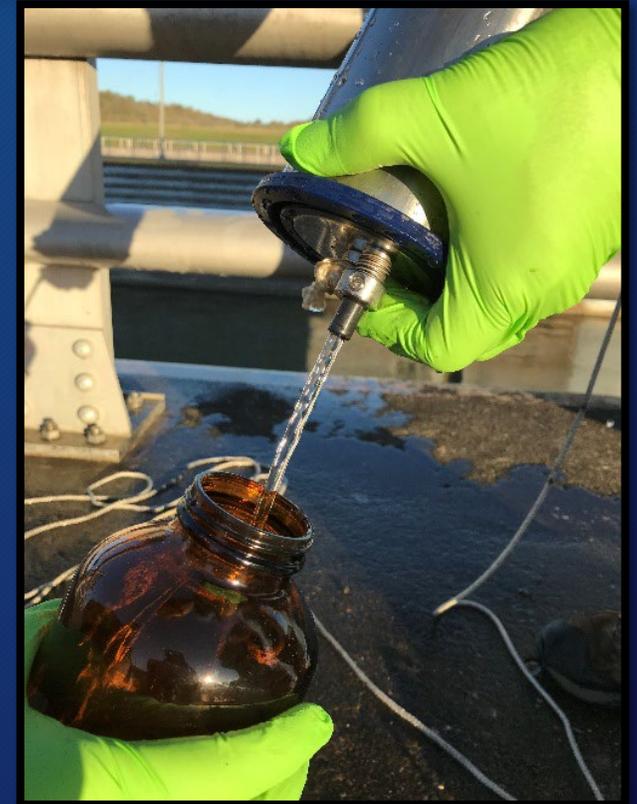
# Routine Monitoring

- Samples collected and screened daily
  - Not all plants have ODS operators on weekends
- Samples typically from raw water line
  - Represents water drawn into plant at intake depth
- ODS operators notify ORSANCO if detection  $>2$  ppb or distinct observable pattern of low level detections
- Approximately 2,000 samples screened monthly from all sites in ODS network



# Points of Emphasis

- Reinforce need for quick initial WQ assessment
  - Decisions will be made regardless of data availability
  - Get screening-level data quickly to decision-makers
- Impacts can extend well beyond point of release
- Organics Detection System Partners
  - Can be great resource for quick screening results
    - Caution: Use to fill critical need, not long-term solution



# ORSANCO Role in East Palestine, Ohio Train Derailment (February 3, 2023)



Ohio River Valley Water Sanitation Commission  
(ORSANCO)



# Initial Report

Feb 3, 2023 - Train derails in East Palestine, OH at 20:55

- 50 cars derailed (10 haz mat tankers)
- NRC report received 23:12 indicating derailed cars on fire
  - Potential release of unknown materials



# Initial Details

Feb 4, 2023 -

- Fire ongoing, but reduced
  - 5 vinyl chloride tankers derailed (at least 2 engulfed)
  - Other hazmat railcars also burned
  - Unknown materials/quantities released
  - Sulphur Run to Leslie Run impacted by runoff
  - Fish kill observed
  - Incident location is 19 stream miles to the Ohio River
  - Enters Ohio River at ORM 39.6
- ORSANCO notified water utilities from East Liverpool, OH to Weirton, WV
    - Spill report emailed to distribution list



Melissa Smith via AP

# Many Unknowns

Feb 5, 2023 -

- Pressure buildup noted in vinyl chloride railcar
- Water quality sampling of nearby creeks underway

Feb 6, 2023

- Products being transported reported to include:
  - Vinyl chloride
  - Butyl acrylate
  - Benzene residue
  - Combustible liquids
- Volumes released unknown
- Unknown if materials will reach the Ohio River
- Weirton, WV ODS station running samples every 2 hours



Gene J. Puskar / AP

# First Detection in Ohio River

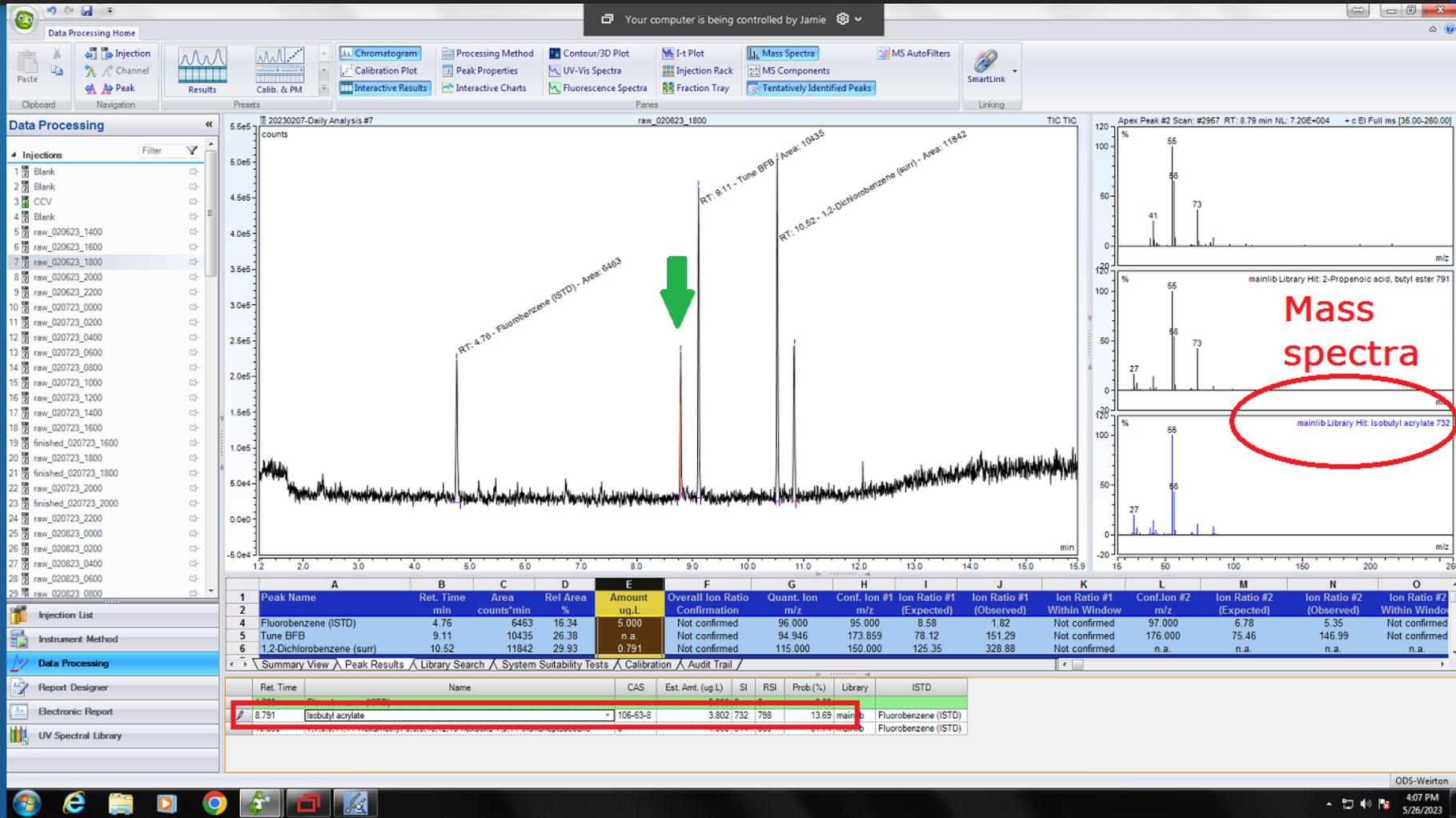
Feb 7, 2023 -

- ORSANCO briefs Technical Committee
  - No detections at that time
  - Shortly thereafter first detection observed
- Butyl acrylate detected at Weirton in sample collected at 1600 on Feb 6
- All surface water utilities from East Liverpool, OH to Wheeling, WV notified by phone of detections
- ORSANCO water quality field crew mobilized



EPA Feb 7, 2023

# Initial Detection in Ohio River Weirton, WV Feb 6, 2023 at 1600



# First ORSANCO Crews Deployed

Feb 8, 2023 -

- ORSANCO crew sampled Little Beaver Creek to Bellaire, OH
- Samples collected in triplicate
  - 1 for local ODS
  - 1 for GCWW
  - 1 for ORSANCO
- Second crew deployed to Incident Command
- Received train manifest
- Ordered butyl acrylate standard



# Continued Monitoring

Feb 9-10, 2023 -

- ORSANCO met with response agencies & RP at Command Center
- Repeated similar sampling approach as done on Feb 8
  - Little Beaver Creek to Wheeling+
  - Samples run at Wheeling Water
- WV water intakes shut down
  - Needed 2 non-detects in finished to reopen

Feb 11 - ATSDR releases Health Guidance Values

- n-Butyl acrylate: 560 ug/L
- 2-ethylhexyl acrylate: 500 ug/L



# East Palestine, Ohio Train Derailment

## February 2023

### ORSANCO Emergency Response

### Water Quality Sampling Sites

Spills journey to Ohio River  
(approximately 19 miles)

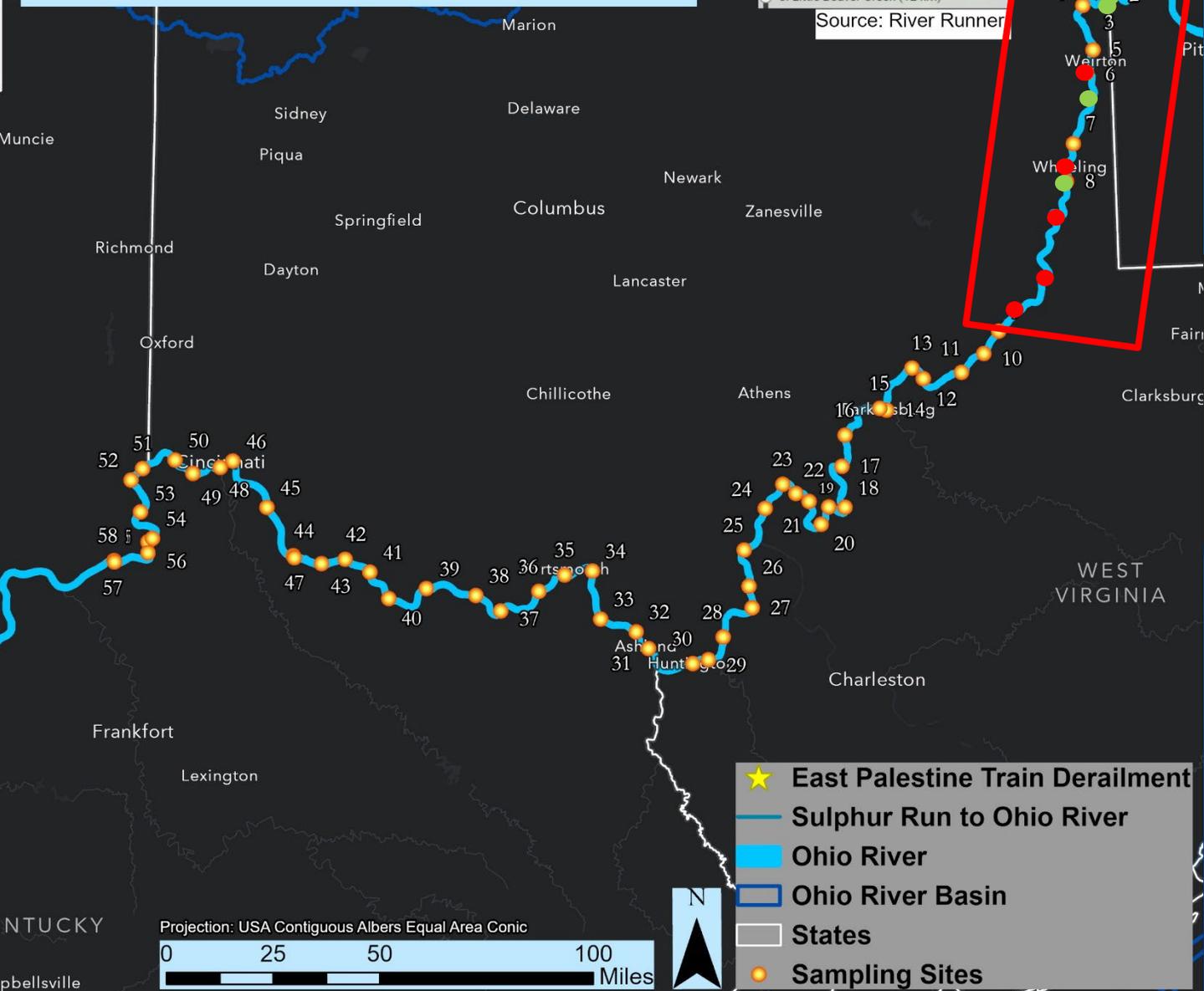
- East Palestine, Ohio
- 1. Sulphur Run (4 km)
- 2. Leslie Run (3 km)
- 3. Bull Creek (1 km)
- 4. North Fork Little Beaver Creek (10 km)
- 5. Little Beaver Creek (12 km)

Source: River Runner

# 2/10/23

- Detection
- Non-Detect

Surface Grab Samples analyzed at  
Wheeling ODS; presence/absence



Ref	City	Mile Point	State	Date	Time	n-Butyl Acrylate (p/a)
1	Grimms Bridge	3.0	OH	2/10/2023	1350	present
2	Lock 57 Park	0.2	PA	2/10/2023	1300	present
3	East Liverpool	40.2	OH	2/10/2023	1420	absent
	Chester	43.0	OH	2/10/2023	1125	absent
6	Steubenville	65.3	PA	2/10/2023	1605	present
	Follansbee	70.8	OH	2/10/2023	1300	absent
	Wheeling River Grab	86.0	WV	2/10/2023	1600	present
8	Bellaire	93.9	WV	2/10/2023	1715	absent
	Moundsville	101.7	WV	2/10/2023	1750	present
	New Martinsville	126.0	WV	2/10/2023	1900	present
	Sisterville	137.2	OH	2/10/2023	1945	present

# Tracking Leading Edge

Feb 11-19, 2023 -

- Transitioned sampling to tracking leading edge
  - Sampled 50 to 120 miles per day
  - Early on plume traveled ~25 miles/day
  - Later, velocities increased to ~100 miles/day
- Daily routine:
  - Daytime - Collect samples
  - Evening - Drop samples off at ODS lab for analysis
  - Evening - Get set of samples to GCWW
  - Late night - Receive results from ODS lab
  - Late night - Run Time-of-Travel Model
  - Repeat cycle



# Downstream Tracking Concludes

Feb 19-20, 2023 -

- Fixed station sampling at Markland Locks & Dam
  - Sampled every two hours from lockwall
  - Samples analyzed by Louisville Water

Feb 21-22, 2023:

- Fixed station sampling at Cannelton Locks & Dam
  - Sampled every two hours from lockwall
  - Samples analyzed by Evansville Water

All samples from Markland & Cannelton non-detect



# Extended WQ Monitoring

Feb 22-23, 2023 -

- Partial loss of containment reported near derailment site
- ORSANCO crew sampled morning of Feb 23
- Low-level hits on Little Beaver Cr. and Leslie Run
  - Butyl acrylate
  - 2-ethyl hexanol
  - 2 ethylhexyl acrylate

March-April

- Coordinated water quality sampling and analysis with several water utilities along length of river
- All results non-detect



# ORSANCO Spill Response Recap

- ORSANCO is a unique Interstate Compact Commission
- Not typically a first responder
  - Notifications are automatic; Field response upon consultation
- Provides coordination among response agencies and water utilities
- Extensive WQ monitoring, modeling & analytical capabilities
- Can provide rapid turnaround of WQ results
- Working to improve integrated data sharing



# Questions or Comments?

