



Assessing the Risk of Spills into Drinking Water Sources

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U.S. EPA

**Office of Ground Water and Drinking Water
Water Security Division**

ASDWA State Webinar Series
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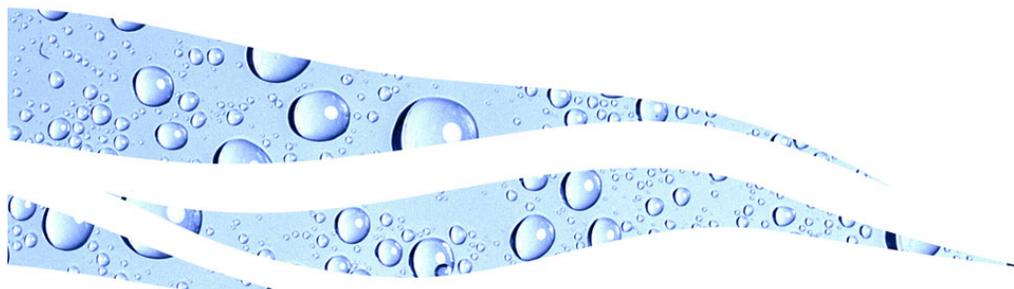
Presentation Overview

- **Risk of Acute Source Water Contamination**
- **America's Water Infrastructure Act: Section 2018, Source Water**
- **Comprehensive Source Water Contamination Threat Inventories**
- **Example of a State-level Source Water Contamination Threat Inventory**
- **Summary**





Risk of Acute Source Water Contamination





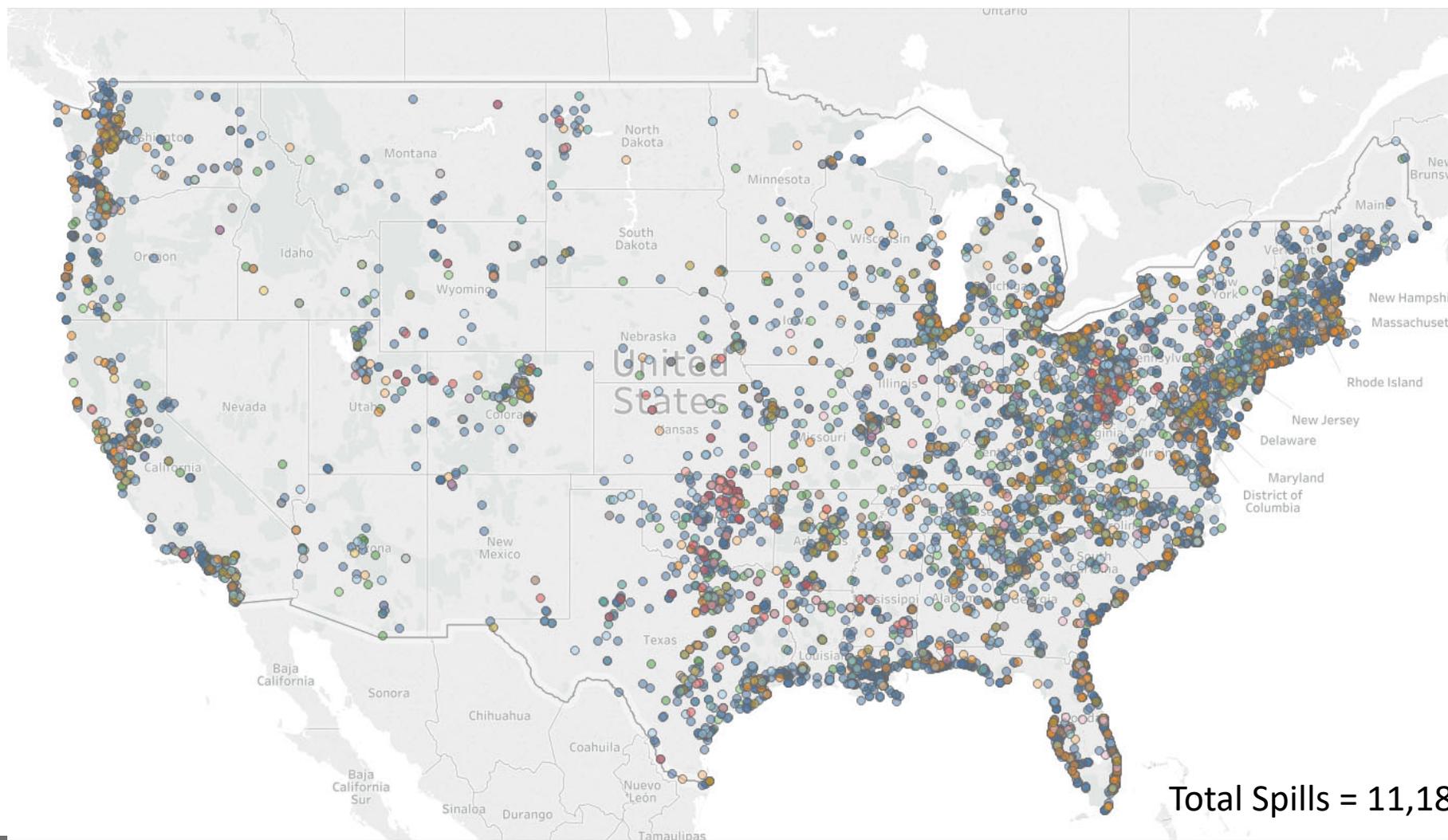
How Common are Spills into Source Waters?

- Analyze National Response Center spill reports
- Analysis period: 2010 through 2018
- Data standardization:
 - Standardize names of material spilled
 - Standardize names of bodies of water
 - Standardize units for amount of material spilled
- Removed spills with amount spilled < 100 gallons
- Geospatial analysis to identify spills that could have impacted sources of drinking water
 - Identify spills that occurred within 0.25 miles of an NHD flowline

Caveat: NRC spill reports are preliminary and often don't capture the precise details of a spill



Occurrence of Spills Potentially Impacting Surface Water Sources (2010-2018)



Total Spills = 11,184



Materials Spilled (2010-2018)

Material Category	Number of Spills	Cumulative Amount Spilled (gallons)	Cumulative Amount in Water (gallons)
Petroleum Products	19,891	5,107,372	2,286,649
Other	1,763	4,557,132	2,247,715
Unknown	1,590	88,670	63,491
Gasoline	1,427	5,621,991	382,663
Wastewater	1,306	375,532,498	157,515,774
PCBs	742	33,844	4,266
Antifreeze	391	27,763	16,454
Paint	262	7,205	1,236
Drilling Fluid	200	8,486,235	6,139,365
Acids	196	136,894	35,609

Total Spills = 29,024



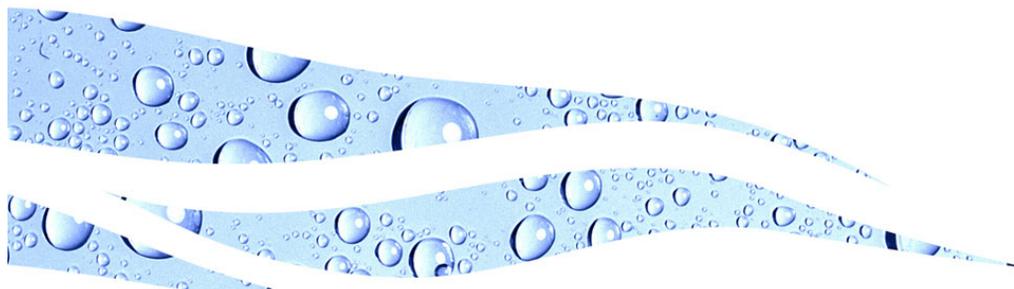
Incident Causes and Responsible Party

- Incident Cause:
 - Equipment failure
 - Dumping
 - Natural phenomenon, hurricane, flooding
 - Transportation accident
- Responsible Party:
 - Private enterprise
 - Private citizen
 - Public utility
 - Local government
 - Military





America's Water Infrastructure Act Section 2018: Source Water





Overview of America's Water Infrastructure Act

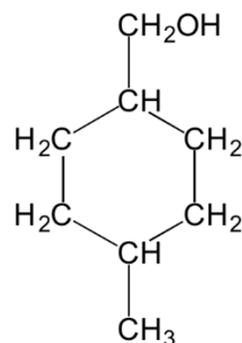
- Sec 2005: Drinking water resilience and sustainability grant program
- Sec 2007: Innovative water technology grant program
- Sec 2008: Improved consumer confidence reports
- Sec 2012: Asset management
- Sec 2013: Community water system risk and resilience
- Sec 2014: Authorization for grants for State programs
- Sec 2015: State revolving loan funds
- Sec 2018: Source water
- Sec 2020: Assistance for areas affected by natural disasters





AWIA Section 2018: Source Water

- Amends the Emergency Planning and Community Right to Know Act (EPCRA)
- Intended to mitigate risk of source water contamination
- Motivated by several recent source water contamination incidents, such as the MCHM spill into the Elk River in Charleston, WV in 2014
 - “Do Not Use” order in place for 10 days
 - 369 individuals sought medical care at hospital EDs
 - Financial cost of incident was more than \$72M





Overview of EPCRA

- EPCRA was created to help communities plan for chemical emergencies
- EPCRA regulates facilities that store or handle hazardous chemicals above threshold planning quantities
- EPCRA administration and oversight:
 - U.S. EPA Office of Emergency Management
 - State Emergency Response Commissions (SERCs)
 - Local Emergency Planning Committees (LEPCs)

Emergency Planning and Community Right-to-Know Act (EPCRA)

The [Emergency Planning and Community Right-to-Know Act \(EPCRA\)](#) of 1986 was created to help communities plan for chemical emergencies. It also requires industry to report on the storage, use and releases of hazardous substances to federal, state, and local governments. EPCRA requires state and local governments, and Indian tribes to use this information to prepare their community from potential risks.

Learn about EPCRA

- [What is EPCRA?](#)
- [EPCRA \(Non-Section 313\) Amendments and Guidance](#)
- [Frequent Questions and EPCRA Call Center](#)
- [Continuous Release Reporting](#)
- [Toxics Release Inventory \(TRI\)](#)

Tier I and II Reporting Forms and Instructions

- [Tier2 Submit™ Software](#)
- [Tier II Forms and Instructions](#)
- [Physical and Health Hazards Cross-Walk](#)
- [Tier I Forms and Instructions](#)
- [State Tier II Reporting Requirements and Procedures](#)

Emergency Planning in My Area

- [Local Emergency Planning Committees](#)
- [State Emergency Response Commissions](#)
- [How to Better Prepare Your Community for a Chemical Emergency: A Guide for State, Tribal and Local Agencies](#)
- [Chemical Emergency Preparedness and Prevention on Tribal Lands](#)

Trade Secret under EPCRA

- [Trade Secret Forms and Instructions](#)

EMERGENCIES

Report oil or chemical spills at: 800-424-8802

CERCLA and EPCRA Reporting Requirements

On November 14, 2018, EPA published a proposed rule to amend the emergency release notification regulations under EPCRA. The comment period closed on December 14, 2018. For more information, please see: [CERCLA and EPCRA Reporting Requirements for Air Releases of Hazardous Substances from Animal Waste at Farms](#).

Most Requested Documents

- [Consolidated List of Lists](#)
- [EPCRA Tier II Form Instructions](#)
- [EPCRA Tier II Form](#)
- [EPCRA Fact Sheet](#)
- [EPCRA Guide for Oil and Gas Operations](#)
- [Hazardous Chemical Reporting Adaptor Facilities Operating in the Plastics Industry](#)



Key Provisions of EPCRA

- Sec 301-303: Emergency Planning
- **Sec 304: Emergency Notification**
- **Sec 311- 312: Chemical Inventories**
- Sec 313: Toxic Release Inventory
- Sec 322: Trade Secrets

▲ CERCLA and EPCRA Reporting Requirements

EPA-Form-No.-8700-30 OMB-Control-No.-2050-0072 Page-----of--> 1

Chemical-Description ^a	Physical-Hazards ^a	Health-Hazards ^a	Inventory ^a	Type-of-Storage	Storage-Conditions-(Pressure,-Temperature) ^a	Storage-Locations ^a	Additional-Reporting-Information-(Optional) ^a
<input type="checkbox"/> Check if information below is identical to the information submitted last year. Chemical-Name: CAS-No. # EHS: Yes <input type="checkbox"/> No <input type="checkbox"/> <input type="checkbox"/> Solid <input type="checkbox"/> Liquid <input type="checkbox"/> Gas <input type="checkbox"/> Trade Secret	<input type="checkbox"/> Explosive <input type="checkbox"/> Flammable (gases, aerosols, liquids, or solids) <input type="checkbox"/> Oxidizer (liquid, solid or gas) <input type="checkbox"/> Self-reactive <input type="checkbox"/> Pyrophoric (liquid or solid) <input type="checkbox"/> Pyrophoric-Gas <input type="checkbox"/> Self-heating <input type="checkbox"/> Organic peroxide <input type="checkbox"/> Corrosive to metal <input type="checkbox"/> Gas under pressure (compressed gas) <input type="checkbox"/> In contact with water emits flammable gas <input type="checkbox"/> Combustible Dust <input type="checkbox"/> Hazard Not Otherwise Classified	<input type="checkbox"/> Acute toxicity (any route of exposure) <input type="checkbox"/> Skin corrosion or irritation <input type="checkbox"/> Serious eye damage or eye irritation <input type="checkbox"/> Respiratory or skin sensitization <input type="checkbox"/> Germ cell mutagenicity <input type="checkbox"/> Carcinogenicity <input type="checkbox"/> Reproductive toxicity <input type="checkbox"/> Specific target organ toxicity (single or repeated exposure) <input type="checkbox"/> Aspiration hazard <input type="checkbox"/> Simple Asphyxiant <input type="checkbox"/> Hazard Not Otherwise Classified	Maximum Amount Range-Code: Average Daily Amount Range-Code: No. of days on site:			Confidential: Yes <input type="checkbox"/> No <input type="checkbox"/>	<input type="checkbox"/> Below-Reporting-Thresholds (optional) <input type="checkbox"/> State or Local Requirements
<input type="checkbox"/> Check if information below is identical to the information submitted last year. Mixture-or-Product-Name: CAS-No. # <input type="checkbox"/> Not-Available <input type="checkbox"/> Solid <input type="checkbox"/> Liquid <input type="checkbox"/> Gas <input type="checkbox"/> Trade Secret EHS: Yes <input type="checkbox"/> No <input type="checkbox"/> EHS(s) Name (if applicable): CAS-No. # Non-EHS(s) Name (optional):	<input type="checkbox"/> Explosive <input type="checkbox"/> Flammable (gases, aerosols, liquids, or solids) <input type="checkbox"/> Oxidizer (liquid, solid or gas) <input type="checkbox"/> Self-reactive <input type="checkbox"/> Pyrophoric (liquid or solid) <input type="checkbox"/> Pyrophoric-Gas <input type="checkbox"/> Self-heating <input type="checkbox"/> Organic peroxide <input type="checkbox"/> Corrosive to metal <input type="checkbox"/> Gas under pressure (compressed gas) <input type="checkbox"/> In contact with water emits flammable gas <input type="checkbox"/> Combustible Dust <input type="checkbox"/> Hazard Not Otherwise Classified	<input type="checkbox"/> Acute toxicity (any route of exposure) <input type="checkbox"/> Skin corrosion or irritation <input type="checkbox"/> Serious eye damage or eye irritation <input type="checkbox"/> Respiratory or skin sensitization <input type="checkbox"/> Germ cell mutagenicity <input type="checkbox"/> Carcinogenicity <input type="checkbox"/> Reproductive toxicity <input type="checkbox"/> Specific target organ toxicity (single or repeated exposure) <input type="checkbox"/> Aspiration hazard <input type="checkbox"/> Simple Asphyxiant <input type="checkbox"/> Hazard Not Otherwise Classified	Maximum Amount (Total Mixture) Range-Code: Average Daily Amount (Total Mixture) Range-Code: No. of days on site: Maximum Amount of each EHS in the Mixture Range-Code:			Confidential: Yes <input type="checkbox"/> No <input type="checkbox"/>	<input type="checkbox"/> Below-Reporting-Thresholds (optional) <input type="checkbox"/> State or Local Requirements

Optional Attachments: I have attached a site plan I have attached a list of site coordinate abbreviations I have attached a description of dikes and other safeguards



Emergency Notification

Amends EPCRA Section 304 to add (e)(1)
Applicable State Agency Notification





SERC (or TERC) Notification Requirements

- The state or tribal emergency response commission (SERC or TERC) shall:
 - Promptly notify the applicable State agency (i.e., the drinking water primacy agency) of any reportable release of an EPCRA extremely hazardous substance ([Appendices A](#) and [B](#) of 40 CFR Part 355) or a CERCLA hazardous substance (40 CFR Part [302.4\(a\)](#))
 - Reportable release: releases that exceed established reportable quantities within a 24-hour period.



SERC (or TERC) Notification Requirements

- The SERC or TERC will provide the drinking water primacy agency with the following information:
 - The chemical name or identity of any substance involved .
 - An indication of whether the substance is on the EHS list.
 - An estimate of the quantity of any such substance that was released into the environment.
 - The time and duration of the release.
 - The medium or media into which the release occurred.
 - Any known or anticipated acute or chronic health risks associated with the emergency and advice regarding medical attention necessary for exposed individuals.
 - Proper precautions to take, including evacuation.
 - The name and telephone number of the person or persons to be contacted for further information.



SERC (or TERC) Notification Requirements

- The SERC (or TERC) shall provide the drinking water primacy agency a written follow-up notice:
 - As soon as practicable after the release, the written notice shall provide updates to the information provided in the original notification, as well as additional information with respect to:
 - Actions taken to respond to and contain the release;
 - Any known or anticipated acute or chronic health risks; and
 - Where appropriate, advice regarding medical attention necessary for exposed individuals.





Primacy Agency Notification Requirements

Notice to Community Water Systems

- The drinking water primacy agency receiving notice from a SERC (or TERC) shall:
 - Promptly forward the initial notice, and all information provided, to any community water systems whose source waters are affected by the release.
 - Forward the written follow-up emergency notice provided to the affected community water systems.





Direct Notification Notice to Community Water Systems

- If a state does not have a drinking water primacy agency:
 - The SERC (or TERC) shall provide the required notices and information to the community water systems affected by the release.





SERCs and TERCs:

- Promptly notify drinking water primacy agency of any reportable release,
- Provide all the information collected under section 304(b)(2) from the initial notification, and
- Provide the follow-up written report received under section 304(c).



Drinking Water Primacy Agency:

Provides notification of reportable release and all information received from SERCs and TERCs to community water systems potentially affected by the release





If there is no drinking water
primacy agency



SERCs and TERCs:

- Promptly notify the potentially affected community water systems of any reportable release
- Provide all the information collected under section 304(b)(2) from the initial notification, and
- Provide the follow-up written report received under section 304(c).



Chemical Inventory Data Availability

Amends EPCRA Section 312(e) to add
Community Water Systems





Chemical Inventory Data Availability

- AWIA Sec 2018(b) amends EPCRA Sec 312
 - Requires SERCs (or TERCs) and LEPCs (or TEPCs) to provide affected* community water systems with chemical inventory data submitted under Tier 2 of EPCRA for their source water area, upon request from the system.

* One or more community water systems (as defined in SDWA Section 1401(15)) that receives supplies of drinking water from a source water protection area delineated under SDWA Section 1453, in which a facility that is required to prepare and submit an inventory form under EPCRA Section 312 is located.



Tier 2 Reporting Requirements

- Chemical inventory reported annually on March 1
- Reporting thresholds:
 - Hazardous Substances (10,000 pounds)
 - Extremely Hazardous Substances (\leq 500 pounds)
- Reported information:
 - Facility information
 - Chemical information
- Inventory must be submitted to the SERC, LEPC, and fire chief(s) in the local jurisdiction(s)



State Management of Tier 2 Data

- Most states use custom systems to manage Tier 2 chemical inventories
- States using e-Plan (AL, FL, GA, MS, MT, NY, NC, SC, TN)
- States using Tier II Manager (DE, DC, IL, IN, MA, MI, MN, WV)

E-Plan Provides

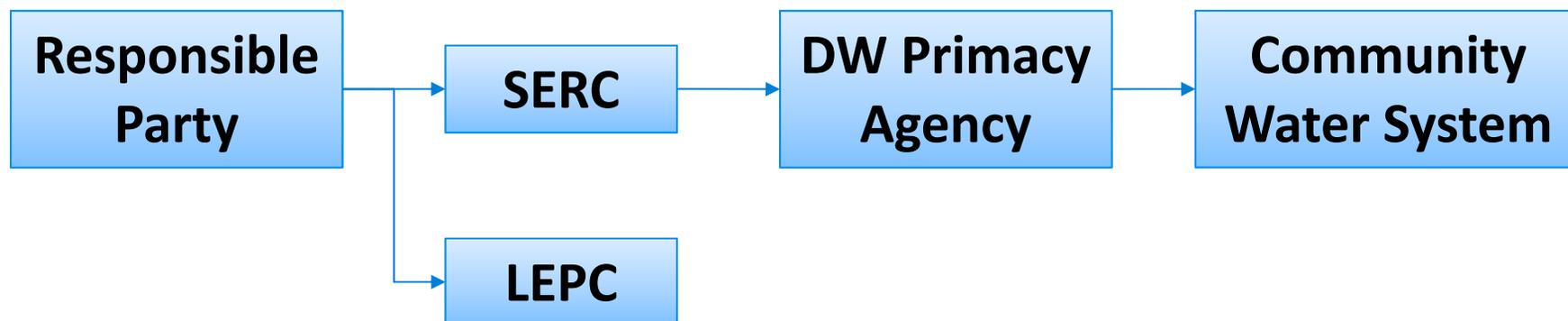
- ❑ Material Safety Data Sheets (MSDS)
- ❑ Chemical profiles
- ❑ Emergency Response Guidebook (ERG) pages
- ❑ CHRIS Manual Data Sheets
- ❑ National Fire Protection Association (NFPA) codes
- ❑ Facility Risk Management Plans (RMPs)

The screenshot shows a web browser window displaying the 'Facility Search' page. The page has a blue header with the text 'Facility Search' and a sub-header 'Search for Facility by providing search parameters'. Below this, there are several input fields and dropdown menus for searching facilities. The fields include: Facility Name, Company Name, Street Address, Select State (dropdown menu), Select County/Parish (dropdown menu), City Name, Zip Code, Filing Type (dropdown menu), and Filing Year (dropdown menu). At the bottom of the search area, there are two buttons: 'Search' and 'Reset'. The browser's address bar shows 'http://www.epa.gov/eplan/'.



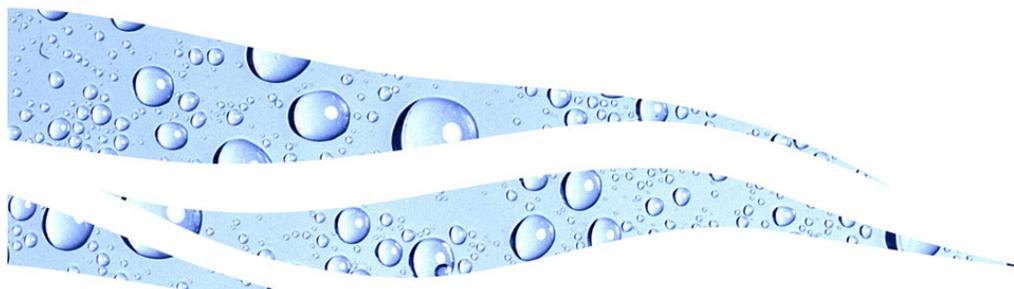
Role for State Drinking Water Agencies

- Receive notifications of releases from SERCs
- Forward notifications to community water systems whose source water may be impacted by the release
- *Opportunity* to facilitate access to state-level chemical inventory data
- *Opportunity* to facilitate interpretation of chemical inventory data in the context of source water protection



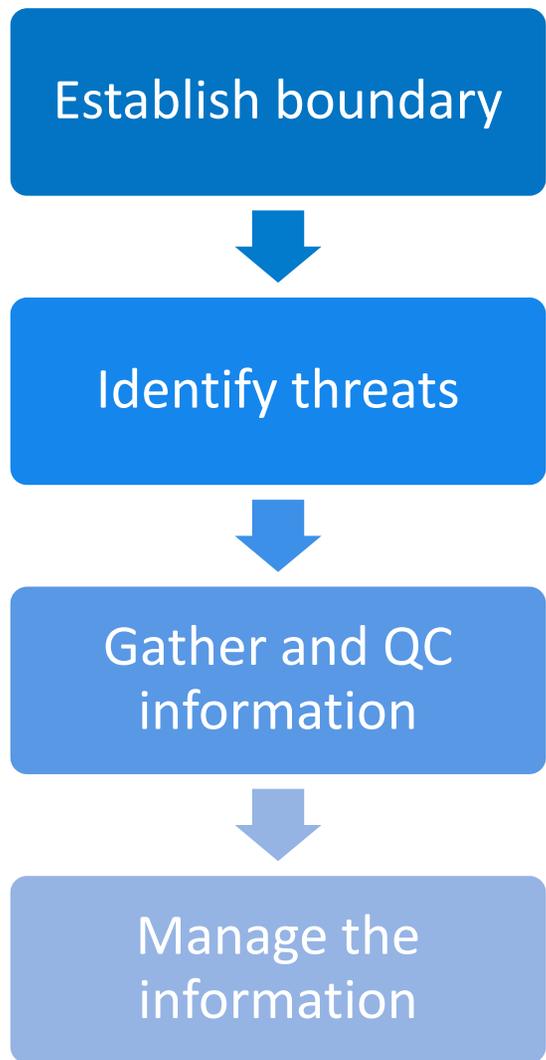


Comprehensive Source Water Contamination Threat Inventories





Contamination Threat Inventory





Contamination Threat Inventory Boundary

- Previously conducted source water assessments
- Distance upstream: 10 to 25 miles with $\frac{1}{4}$ mile buffer
- Travel time: 5 hours
- Establish multiple zones:
 - Critical: near the intake
 - Extended: further upstream or deeper into watershed





Threat Types

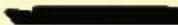
- Above ground storage tanks
- Chemical handling facilities
- Power generation facilities
- Pipelines
- Outfalls and dischargers
- Barge traffic
- Rail traffic, hazmat routes, bridges
- Resource extraction
- Landfills
- Hazardous waste sites
- Confined animal feeding operations



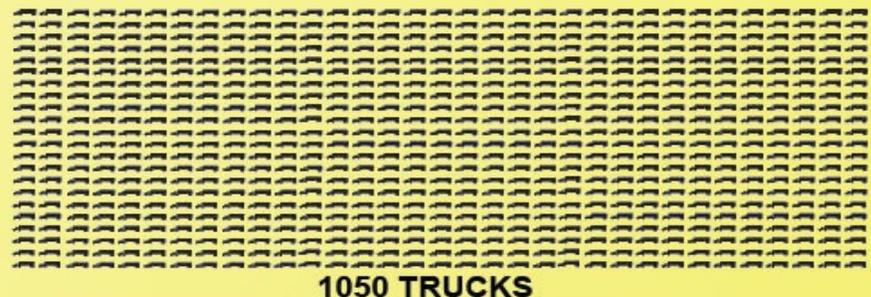
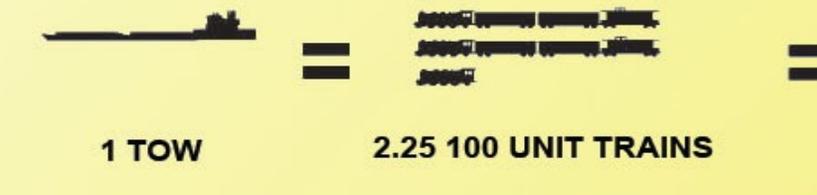
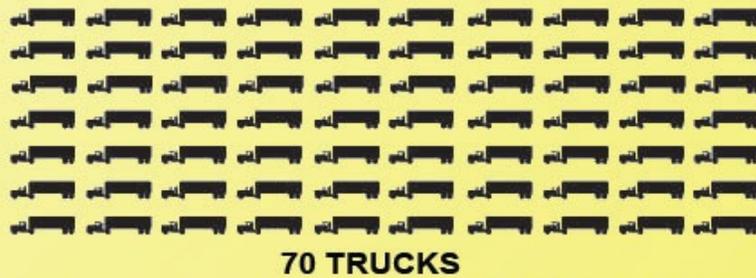


Potential Magnitude of a Spill

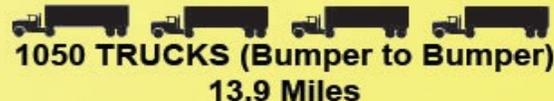
CARGO CAPACITY

				
BARGE 1750 TON	15 BARGE TOW 26,250 TON	JUMBO HOPPER CAR 110 TON	100 UNIT TRAIN 10,000 TON	LARGE SEMI TRUCK 25 TON
61,250 BUSHELS	918,750 BUSHELS	3,850 BUSHELS	350,000 BUSHELS	779 BUSHELS
1,375,000 GALLONS	20,625,000 GALLONS	30,240 GALLONS	3,024,000 GALLONS	7,885 GALLONS

EQUIVALENT UNITS



EQUIVALENT LENGTHS





Threat Attributes

- ✓ Facility name
- ✓ Facility owner/operator and contact information
- ✓ Location (GPS coordinates, address)
- ✓ Distance (or travel time) from intake
- ✓ Status (active/inactive)
- ✓ Chemicals stored, used, or transported
- ✓ Volume, mass, or discharge rate (average and maximum)
- ✓ Spill mitigation measures
- ✓ Emergency response capabilities





Resources for Identifying Threats

- Federal Data
 - Federal Registry Service
 - Data.gov
 - Envirofacts
 - Toxic Release Inventory System
 - Pipeline routes
 - Hazardous material routes
- State Data
 - State-level Tier II chemical inventories
 - NPDES permits
- Local Data
 - County-level Tier II data
 - Commodity flow studies

Facility Registry Service (FRS)

The Facility Registry Service provides quality facility data to support EPA's mission of protecting human health and the environment. Learn more about facilities, sites, or places of environmental interest that are subject to regulation.

Search Data

- [FRS Query](#)
- [EZ Query](#)
- [FRS BEST Services](#)
- [Geospatial Data Download Service](#)
- [MyProximity](#)

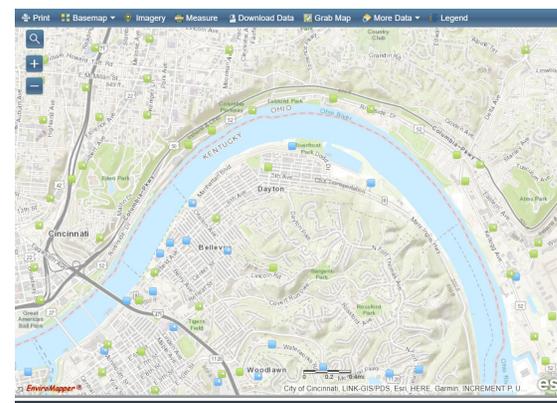
Technical Resources

- [Data Model](#)
- [Data Sources](#)
- [Documentation](#)
- [Geospatial Overview](#)
- [System of Registries](#)
- [Web Services and Downloads](#)

Enter your ZIP to view facilities in your neighborhood:

FRS Contacts

[FRS Support](#)
FRS_Support@epa.gov





Contaminant Attributes

- Chemical identity (CAS #, IUPAC name)
- Physiochemical properties
- Chemical state (liquid, solid, emulsion, mixture)
- Fate and transport (solubility, volatility, hydrophobicity, reactivity)
- Toxicity / health effects
- Sampling and analysis methods
- Regulations / standards
- Treatability

Periodic Table of the Elements

1 11A H Hydrogen 1.00794	2 IIA He Helium 4.002602	3 IIIB Na Sodium 22.98976928	4 IVB Mg Magnesium 24.304	5 VB Al Aluminum 26.9815386	6 VIB Si Silicon 28.08558	7 VIIB P Phosphorus 30.973761998	8 VIII S Sulfur 32.06	9 VIII Cl Chlorine 35.45	10 VIII Ar Argon 39.948	11 IB K Potassium 39.0983	12 IIB Ca Calcium 40.078	13 IIIB Sc Scandium 44.955912	14 IVB Ti Titanium 47.88	15 VB V Vanadium 50.9415	16 VIB Cr Chromium 51.9961	17 VIIB Mn Manganese 54.938044	18 VIII Fe Iron 55.845	19 VIII Co Cobalt 58.933194	20 VIII Ni Nickel 58.6934	21 IB Cu Copper 63.546	22 IIB Zn Zinc 65.38	23 IIIB Ga Gallium 69.723	24 IVB Ge Germanium 72.630	25 VB As Arsenic 74.9216	26 VIB Se Selenium 78.96	27 VIIB Br Bromine 79.904	28 VIII Kr Krypton 83.798	29 VIII Rb Rubidium 85.4678	30 VIII Sr Strontium 87.62	31 VIII Y Yttrium 88.90584	32 VIII Zr Zirconium 91.224	33 VIII Nb Niobium 92.90638	34 VIII Mo Molybdenum 95.94	35 VIII Tc Technetium 98.9062	36 VIII Ru Ruthenium 101.07	37 VIII Rh Rhodium 101.07	38 VIII Pd Palladium 106.3675	39 VIII Ag Silver 107.8682	40 VIII Cd Cadmium 112.411	41 IB In Indium 114.818	42 IIB Sn Tin 118.710	43 IIB Sb Antimony 121.757	44 IIB Te Tellurium 127.6	45 IIB I Iodine 126.905	46 IIB Xe Xenon 131.29	47 IIB Cs Cesium 132.90545196	48 IIB Ba Barium 137.327	49 IIB Hf Hafnium 178.49	50 IIB Ta Tantalum 180.94788	51 IIB W Tungsten 183.84	52 IIB Re Rhenium 186.207	53 IIB Os Osmium 190.23	54 IIB Ir Iridium 192.222	55 IIB Pt Platinum 195.084	56 IIB Au Gold 196.966569	57 IIB Hg Mercury 200.59	58 IIB Tl Thallium 204.3833	59 IIB Pb Lead 207.2	60 IIB Bi Bismuth 208.9804	61 IIB Po Polonium 209	62 IIB At Astatine 210	63 IIB Rn Radon 222.01758	64 Lanthanide Series 57 La Lanthanum 138.90547	65 Lanthanide Series 59 Ce Cerium 140.12	66 Lanthanide Series 61 Pr Praseodymium 140.90766	67 Lanthanide Series 63 Nd Neodymium 144.242	68 Lanthanide Series 65 Pm Promethium 144.9126	69 Lanthanide Series 67 Sm Samarium 150.36	70 Lanthanide Series 69 Eu Europium 151.964	71 Lanthanide Series 71 Gd Gadolinium 157.25	72 Lanthanide Series 73 Tb Terbium 158.92532	73 Lanthanide Series 75 Dy Dysprosium 162.50014	74 Lanthanide Series 77 Ho Holmium 164.93032	75 Lanthanide Series 79 Er Erbium 167.259	76 Lanthanide Series 81 Tm Thulium 168.93032	77 Lanthanide Series 83 Yb Ytterbium 173.054	78 Lanthanide Series 85 Lu Lutetium 174.967	79 Actinide Series 89 Ac Actinium 227	81 Actinide Series 91 Th Thorium 232.0377	83 Actinide Series 93 Pa Protactinium 231.03688	85 Actinide Series 95 U Uranium 238.02891	87 Actinide Series 97 Np Neptunium 237.048173	89 Actinide Series 99 Pu Plutonium 244.06422	91 Actinide Series 101 Am Americium 243.06136	93 Actinide Series 103 Cm Curium 247.070353	95 Actinide Series 105 Bk Berkelium 247.070353	97 Actinide Series 107 Cf Californium 251.0832	99 Actinide Series 109 Es Einsteinium 252.0832	101 Actinide Series 111 Fm Fermium 257.1037	103 Actinide Series 113 Md Mendelevium 258.1037	105 Actinide Series 115 No Nobelium 259.1037	107 Actinide Series 117 Lr Lawrencium 260.1037
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Resources for Contaminant Properties

- Water Contaminant Information Tool (WCIT)
 - <https://www.epa.gov/waterlabnetwork/access-water-contaminant-information-tool>
- WaterISAC, UK Water Industry Research
 - <https://www.waterisac.org/>
- EPA's Treatability Database
 - <https://iaspub.epa.gov/tdb/pages/general/home.do>
- TOXNET
 - <https://toxnet.nlm.nih.gov/>
- Agency for Toxic Substances and Disease Registry
 - <https://www.atsdr.cdc.gov/>



QC Information

Consistency

Consolidate duplicate records

Conformity

Standardize formats

Accuracy

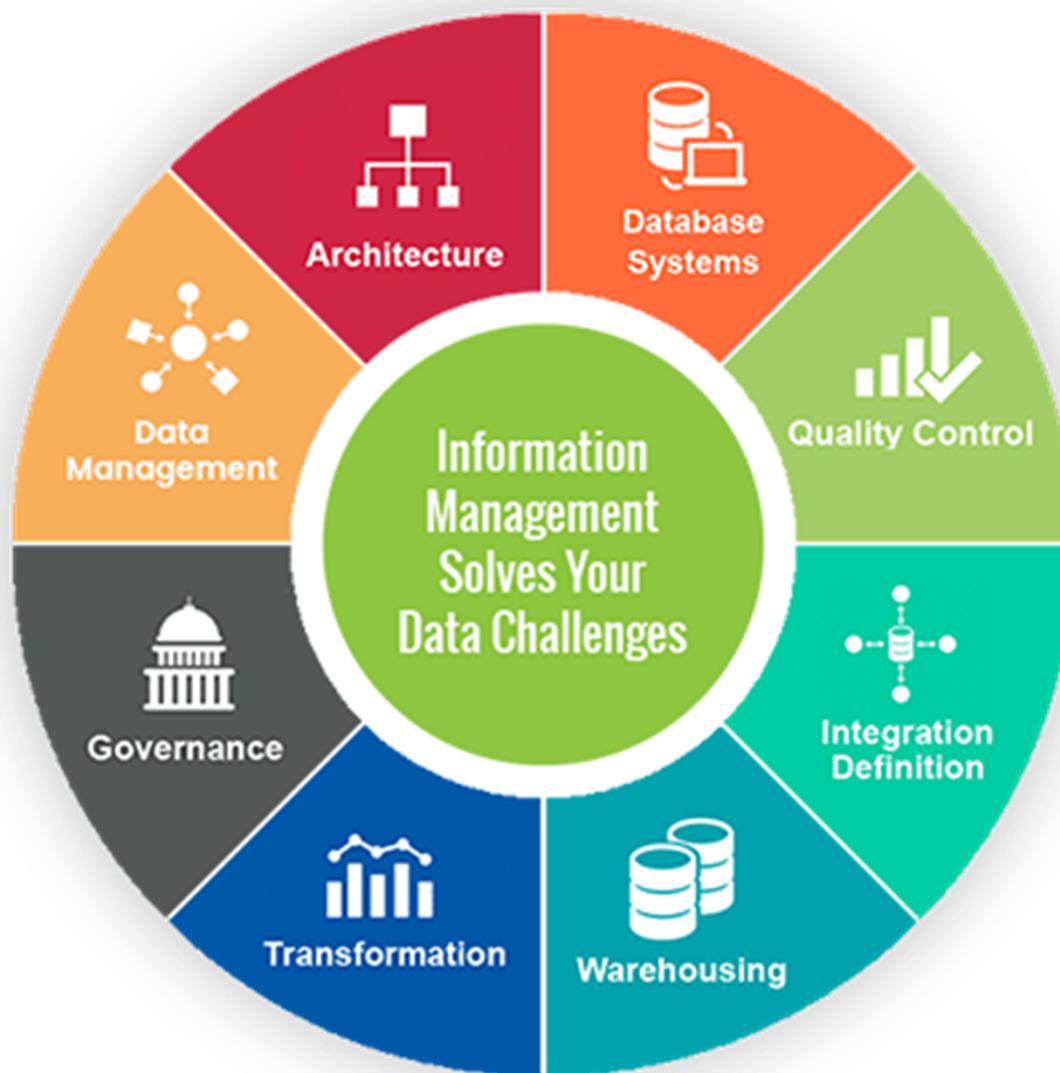
Verify record details

Completeness

Identify missing or unusable information

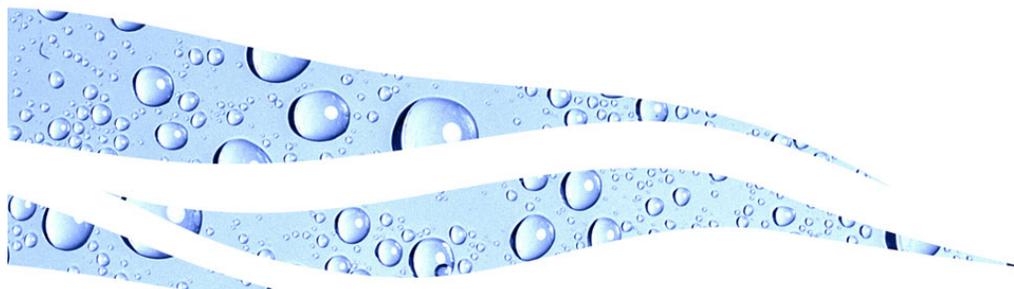


Information Management





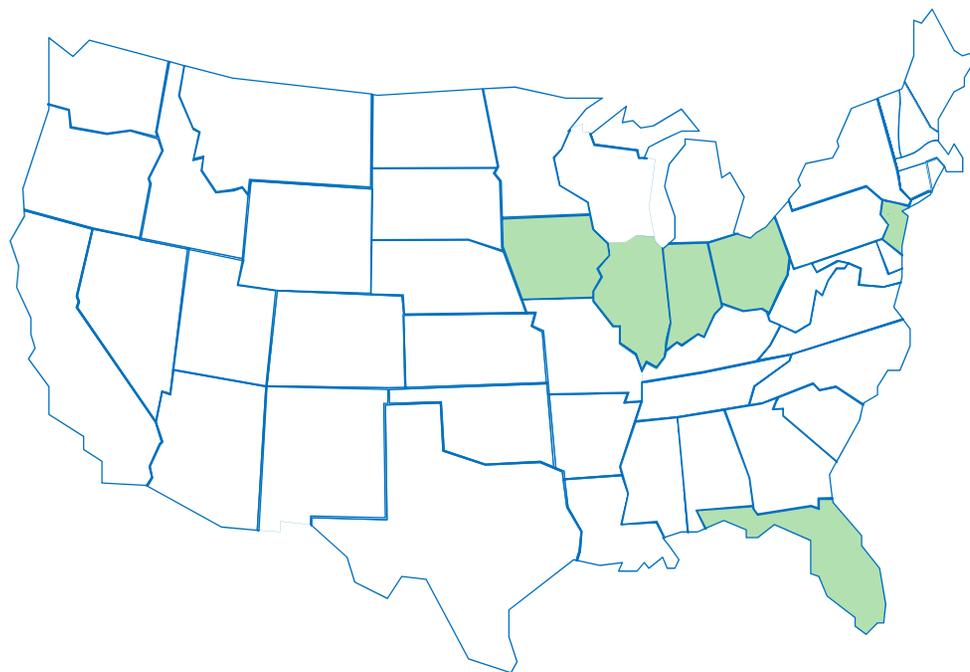
Example of State-wide Inventory





Six State Pilot Study

- Objective: develop a state-level inventory of acute contamination threats to drinking water sources
- Approach: collect relevant state and federal datasets, curate the information, and upload to WaterSuite for analysis
- Status: project initiated in August 2018





Threat Categories

Threat Categories	Data Layers
Resource Extraction	Coal Mines (OH); Oil & Gas Wells (OH); Hydraulic Fracturing (US); Pipelines (US)
Discharges	NPDES Individual Permits (OH); NPDES (US)
Energy Infrastructure	Power Plants (US); Ethylene Crackers (US)
Chemical Storage	Tier 2 (OH); Above Ground Storage Tanks (OH); Toxic Release Inventory System (US); Anhydrous Ammonia (US)
Environmental Interests	RCRA (US)
CAFOs	Active Permits for Concentrated Animal Feeding Ops (OH)
Mobile Threats	Railways (US); Hazmat Routes (US)





Threat Occurrence in Ohio Zones of Concern

Total Fixed-Location Threats in Ohio Zones of Concern	
Resource Extraction	3,668
Discharges	588
Energy Infrastructure	28
Chemical Storage	1,416
Environmental Interests	2,904
Concentrated Animal Feeding Operations	1
TOTAL	8,605



Total Threat Count for each Zone of Concern

0	0	1	1	4	5	7	13	19	28	53	76	139	178	324
0	0	1	1	4	5	7	14	22	28	53	77	139	181	326
0	0	1	2	4	5	8	15	22	29	54	84	139	181	360
0	0	1	2	4	6	8	15	23	31	54	87	141	184	363
0	0	1	2	4	6	8	15	23	32	55	98	147	185	369
0	0	1	2	4	6	8	15	23	32	55	98	148	187	370
0	0	1	2	4	6	9	16	23	40	55	100	150	189	370
0	0	1	3	4	6	9	16	23	41	61	101	150	213	386
0	0	1	3	4	6	10	17	24	41	62	115	150	219	387
0	0	1	3	4	7	10	17	24	42	64	115	154	242	571
0	0	1	3	4	7	11	17	27	44	65	117	154	280	603
0	0	1	3	4	7	12	18	27	45	65	121	168	281	714
0	0	1	3	5	7	12	18	28	45	66	138	168	295	714
0	0	1	3	5	7	12	19	28	48	72	139	178	320	
0	1	1	3	5	7	13	19	28	49	76	139	178	321	

223 zones of concern



State-wide Zonal Statistics

Statewide Zonal Statistics	
Average Threat Count per Zone	70.25
Threat Count Minimum in a Zone	0 (29 times)
Threat Count Maximum in a Zone	714 (2 times)
Standard Deviation	+/- 121.1
First Quartile	3
Third Quartile	82.25
Average Area of Zones (sq mi)	30.08
Smallest Area of Zone (sq mi)	0.19
Largest Area of Zone (sq mi)	137.82

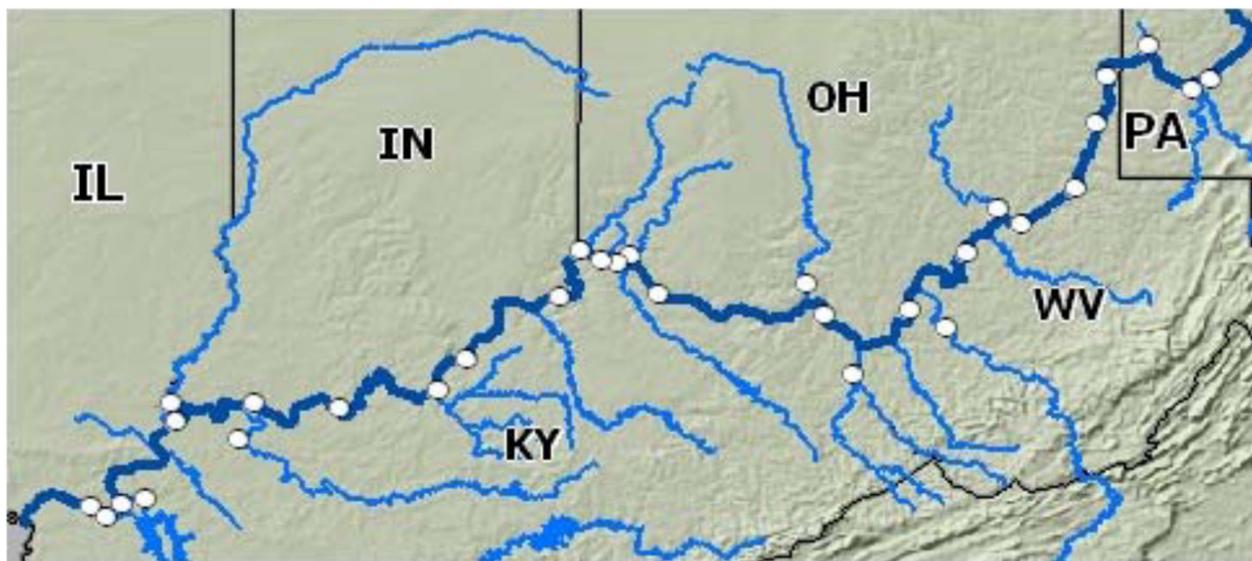
Box and Whisker Zonal Count





ORSANCO, Regional SW Risk Assessment

- Objective: develop a regional contamination threat inventory for 33 utilities along the Ohio River
- Approach: use WaterSuite for the inventory and risk assessment
- Status: inventory has been completed for three utilities





Summary - Key Points

- Managing the risk of acute source water contamination incidents begins with threat awareness
- A comprehensive threat inventory is an effective way to develop this awareness
- Revisions to EPCRA under AWIA should make it easier for community water systems to conduct a threat inventory
- Watershed alliances can spread the cost of developing a comprehensive inventory





How State Drinking Water Programs can Help

- Establish protocols for prompt receipt and dissemination of spill notifications
- Facilitate access to EPCRA Tier 2 data
- Identify additional state resources useful for conducting source water contamination threat inventories
- Incorporate contamination threat inventories into future source water assessments





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EPA is looking for partners to conduct additional state-wide contamination threat inventories.

Contact Steve if you want to learn more.