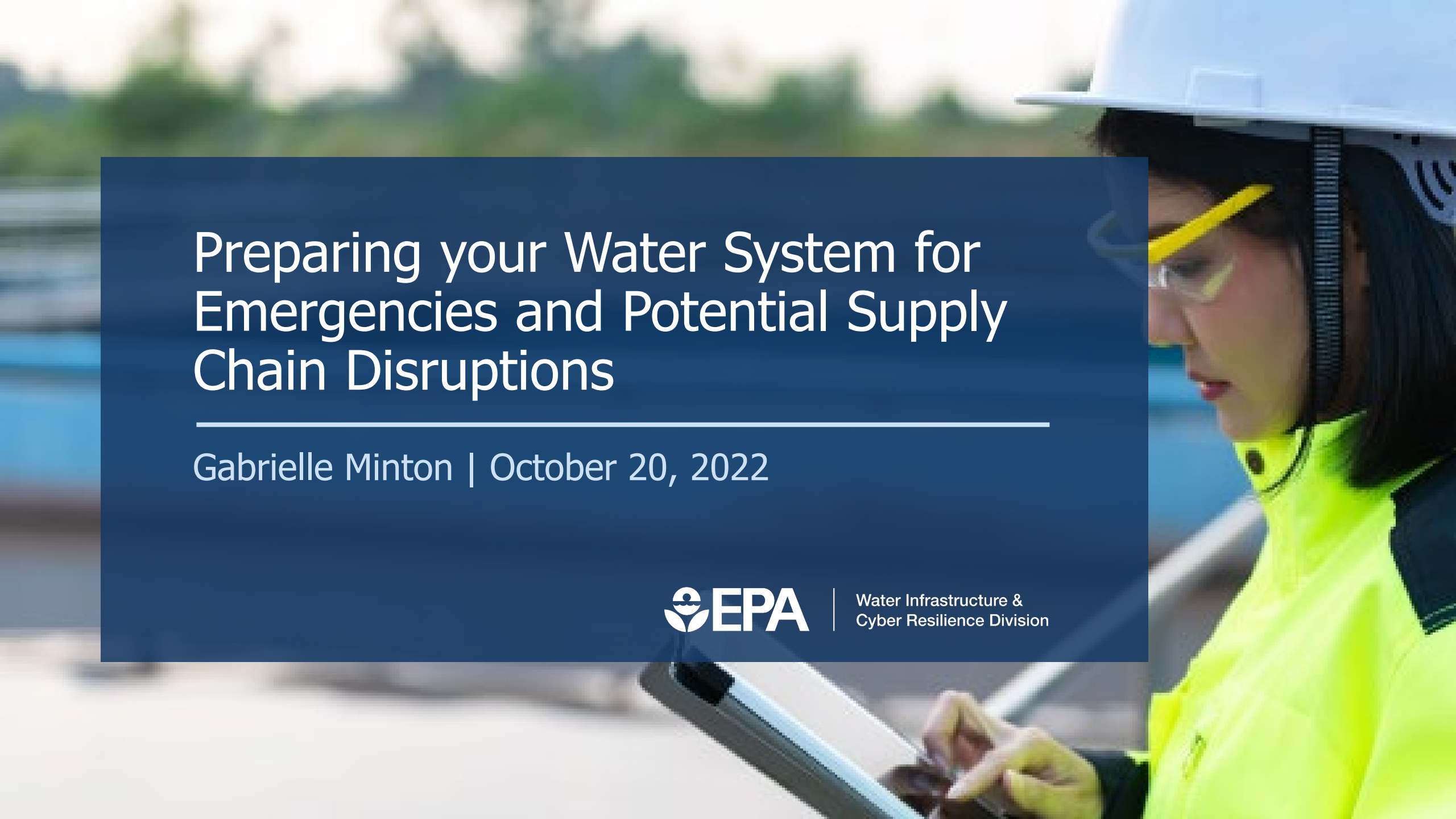

Preparing your Water System for Emergencies and Potential Supply Chain Disruptions

Gabrielle Minton | October 20, 2022

EPA | Water Infrastructure & Cyber Resilience Division

What hazards are of most concern for your water system?

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AGENDA

1) Water Infrastructure and Cyber Resilience Division (WICRD) Mission and the Route to Resilience
2) Community-Wide Resilience
3) The Critical Role of Resilience Planning/Hazard Mitigation
4) Reducing Risk and Increasing Resilience
5) Wrap Up / Q&A

Water Infrastructure and Cyber Resilience Division (WICRD) Mission and the Route to Resilience

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New Name, Same Mission

EPA

Water Security Division

DROUGHT

FLOODING

WILD FIRES

CYBER THREATS

CLIMATE CHANGE

SUPPLY CHAIN

OPERATIONS AND MAINTENANCE

AGING INFRASTRUCTURE

EPA | Water Infrastructure & Cyber Resilience Division

Our Mission

- **Background:** The Water Infrastructure and Cyber Resilience Division (WICRD) has been working to help utilities protect drinking water and wastewater infrastructure since the passage of the Bioterrorism Act of 2002 and has developed over many resources and tools to help utilities handle all hazards.

- **Responsibility:** WICRD is responsible for carrying out EPA's role as the Sector Risk Management Agency for drinking water and wastewater systems.

EPA WICRD: Route to Resilience

WICRD has created a framework for building water resilience and mitigating hazards.

Community-Wide Resilience

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Community Preparation & Mitigation

- All emergencies are local, all responses are local.
- Threats and vulnerabilities vary by community.
- Utilities play a critical role in public health and safety during water emergencies.
- Communities need to:
  - Understand their unique interdependencies
  - Be prepared to work together during a crisis
  - Access tools and resources that speak to their roles and responsibilities in advance of a crisis
- Utilities need:
  - Regular coordination with law enforcement personnel, community leaders, business leaders, and the general public
  - Collaboration with interdependent sectors

Community Preparation & Mitigation

Forge partnerships between water utilities and their community.

Clarify roles and responsibilities of individuals and organizations during a response to a water emergency.

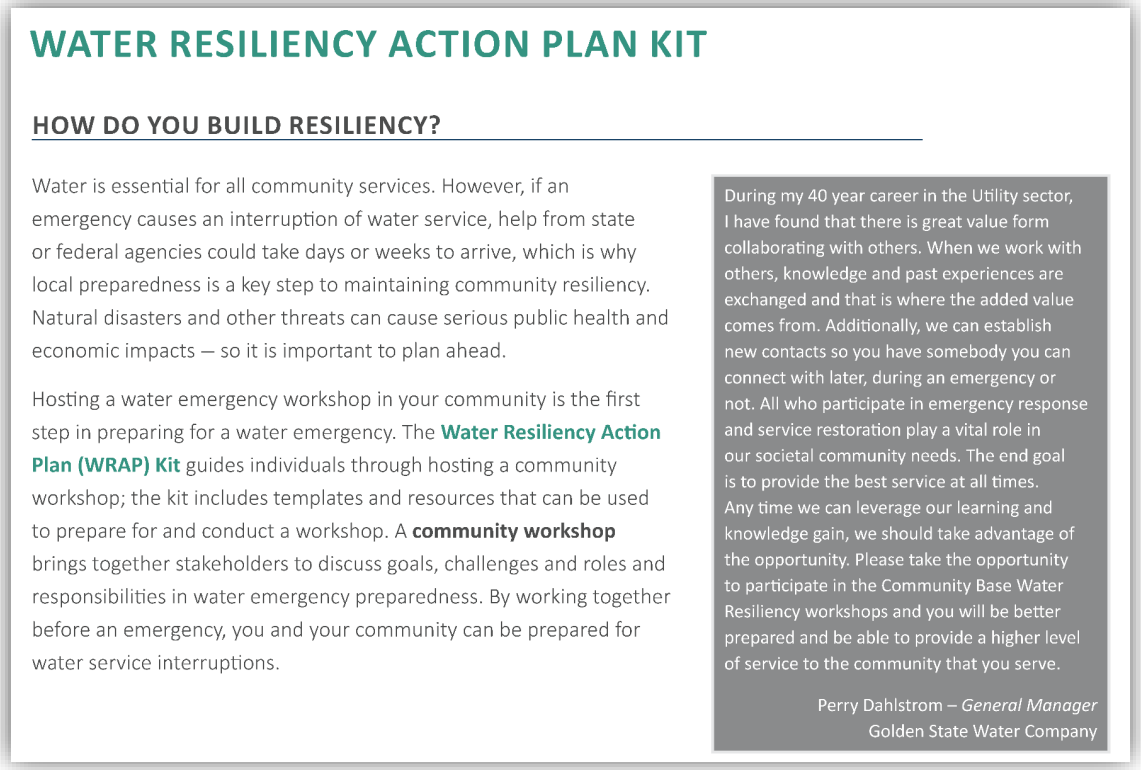
Reduce the impacts of water service interruptions.

Recognize the importance of water and how communities and businesses rely on it for everyday services.

Increase community preparedness for water emergencies.

Effective Resilience

- Plan in advance for all hazards.
- Collaborate with your community and train staff on emergency response measures.
- Local preparedness can help with quick response.
- Take advantage of EPA resources such as:
  - WRAP Kit
  - WARN
  - Training Resources



WATER RESILIENCY ACTION PLAN KIT

HOW DO YOU BUILD RESILIENCY?

Water is essential for all community services. However, if an emergency causes an interruption of water service, help from state or federal agencies could take days or weeks to arrive, which is why local preparedness is a key step to maintaining community resiliency. Natural disasters and other threats can cause serious public health and economic impacts – so it is important to plan ahead.

Hosting a water emergency workshop in your community is the first step in preparing for a water emergency. The **Water Resiliency Action Plan (WRAP) Kit** guides individuals through hosting a community workshop; the kit includes templates and resources that can be used to prepare for and conduct a workshop. A **community workshop** brings together stakeholders to discuss goals, challenges and roles and responsibilities in water emergency preparedness. By working together before an emergency, you and your community can be prepared for water service interruptions.

During my 40 year career in the Utility sector, I have found that there is great value form collaborating with others. When we work with others, knowledge and past experiences are exchanged and that is where the added value comes from. Additionally, we can establish new contacts so you have somebody you can connect with later, during an emergency or not. All who participate in emergency response and service restoration play a vital role in our societal community needs. The end goal is to provide the best service at all times. Any time we can leverage our learning and knowledge gain, we should take advantage of the opportunity. Please take the opportunity to participate in the Community Base Water Resiliency workshops and you will be better prepared and be able to provide a higher level of service to the community that you serve.

Perry Dahlstrom – *General Manager*
Golden State Water Company

https://www.epa.gov/communitywaterresilience/community-based-water-resilience-guide

The Critical Role of Resilience Planning

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Stay Active and Proactive

- Risk and Resilience Assessments (RRAs) and Emergency Response Plans (ERPs).
  - You have already identified risks in these documents as part of AWIA.
  - The next step is to use what you learned from AWIA to inform short- and long-term hazard mitigation planning.
- Assessing risk should be ongoing, not just once every five years.
- EPA has tools and resources to support you.

What Is Hazard Mitigation?

- Reduce the loss of life and property by breaking the cycle of damage and reconstruction.
  - Reduce the impacts from disasters (FEMA).
  - Lessen the impacts of disasters to people, community, infrastructure, and environment (EPA Order 2074).
- Use AWIA Section 2013 documents to inform future planning (RRA and ERP).
- Utilize EPA trainings and tools to prepare for all hazards.

FEMA

EPA

All-Hazards Identification

Risk = Consequences x Vulnerability x Threat Likelihood

Natural Hazards

- Drought
- Flooding
- Hurricanes
- Earthquakes
- Wildfires
- Winter storms

Malevolent Acts

- Cybersecurity attacks
- Contamination (intentional or unintentional)
- Physical threats to facilities or infrastructure

Planning for the Unexpected

- WICRD has heard from utilities which hazards are highest priority in their communities, like drought, flooding, and earthquakes.
- Your planning may not have considered the unexpected.
- Utilities are now experiencing new risks.
  - Tornadoes in the Northeast.
  - Wildfires in Colorado.
  - Winter Storms in Texas.
- Hazards are becoming more severe.
- Hazards are now impacting the supply chain as well, and chemicals and essential equipment parts are becoming more difficult to obtain.

Reducing Risk and Increasing Resilience

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Utility-Level Supply Chain Resilience

- Hazards affect not only water systems, but their supply chain networks as well.
- Resilient supply chains are important for maintaining water system resilience when developing hazard mitigation strategy.
- Utilities should be prepared to respond to a supply chain emergency with alternative ways to access treatment chemicals.

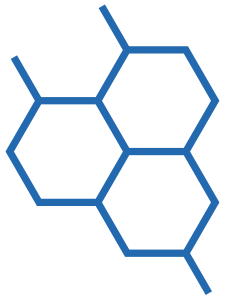
Interdependency between Water Sector & Chemical Sector

Water Sector

- Basic chemicals
- Specialty chemicals
- Agricultural chemicals
- Pharmaceuticals
- Consumer products

Chemical Sector

- Heating or cooling products and equipment
- Vacuum creation
- Steam production
- Preparing solvents and reaction media
- Extractive and adsorptive reagents
- Product rinsing
- Distillation
- Operating heating, ventilation, and air



Supply Chain Resilience

- The water sector needs treatment chemicals.
- Recent supply chain challenges created the need for top-down and bottom-up resilience measures.
- SDWA Section 1441 can help with emergency supply chain solutions.

What best practices have you implemented to prepare for supply chain challenges?

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Suggested Actions to Prepare for Supply Chain Challenges

- Establish contracts with suppliers.
  - *Develop delivery schedules and be flexible*
- Identify back up suppliers.
  - *Utilize EPA's Water Treatment Chemical Suppliers and Manufacturers Locator Tool*
- Employ mutual aid and assistance
- Coordinate with interdependent and/or private sectors
- Work with your existing supplier and drinking water primacy agency to evaluate potential alternate chemicals.
- Increase on-site storage, as possible
- **Utilize EPA Resources at: https://www.epa.gov/waterutilityresponse/water-and-wastewater-sector-supply-chain-resilience**

Case Study: Ferric Chloride Supply Challenges

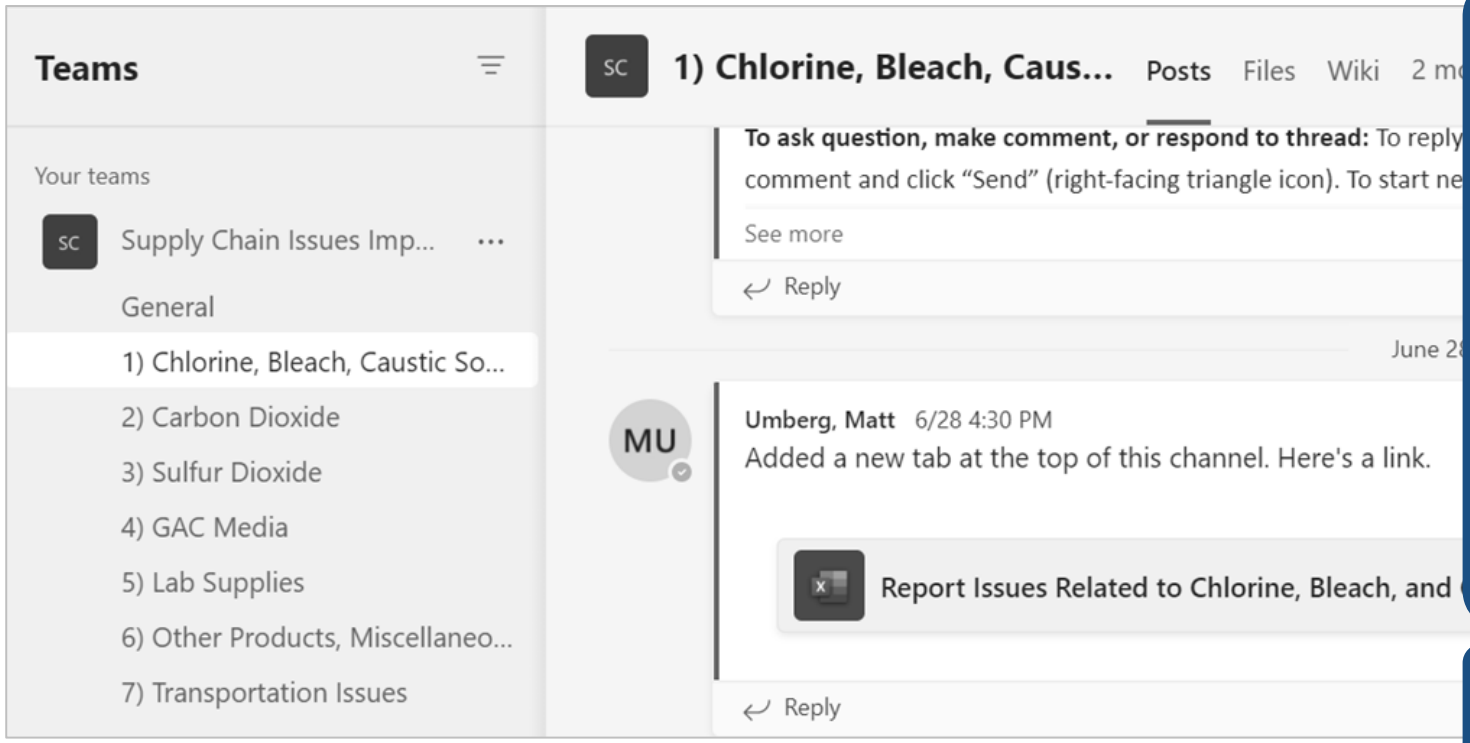
- Water systems, primarily from western states, reported difficulty in obtaining ferric chloride.
- The supply disruption was due to limited supplies of precursors needed to produce ferric chloride, like chlorine or hydrochloric acid.
  - Some ferric chloride manufacturers also reported challenges obtaining an iron source, typically spent steel pickling liquors, needed to produce ferric chloride.
  - Spent steel pickling liquor is a byproduct of steel production, and when the demand for steel dipped due to the slowdown in automobile production due to the COVID-related shortage of semiconductors, availability of the liquor decreased as well.

Case Study: Ferric Chloride Supply Challenges

- To manage this issue, chemical suppliers worked with their water system customers to identify alternate coagulants, such as ferric sulfate or aluminum chlorohydrate, for use.
  - One major supplier recommended that all their water and wastewater customers begin planning for use of alternative coagulants.
  - Another supplier sent staff to water utility sites to conduct jar testing of other coagulants. They took their assistance a step further by working with the state to streamline approval for those water utilities seeking a switch.
- A proactive stance from water utilities and their suppliers allowed many of those that experienced disruptions in their supply to switch to an alternate coagulant in a timely manner.

MS Teams Page for Supply Chain Issues

MS Teams page has been created for reporting and discussion of significant supply chain issues impacting water and wastewater systems.



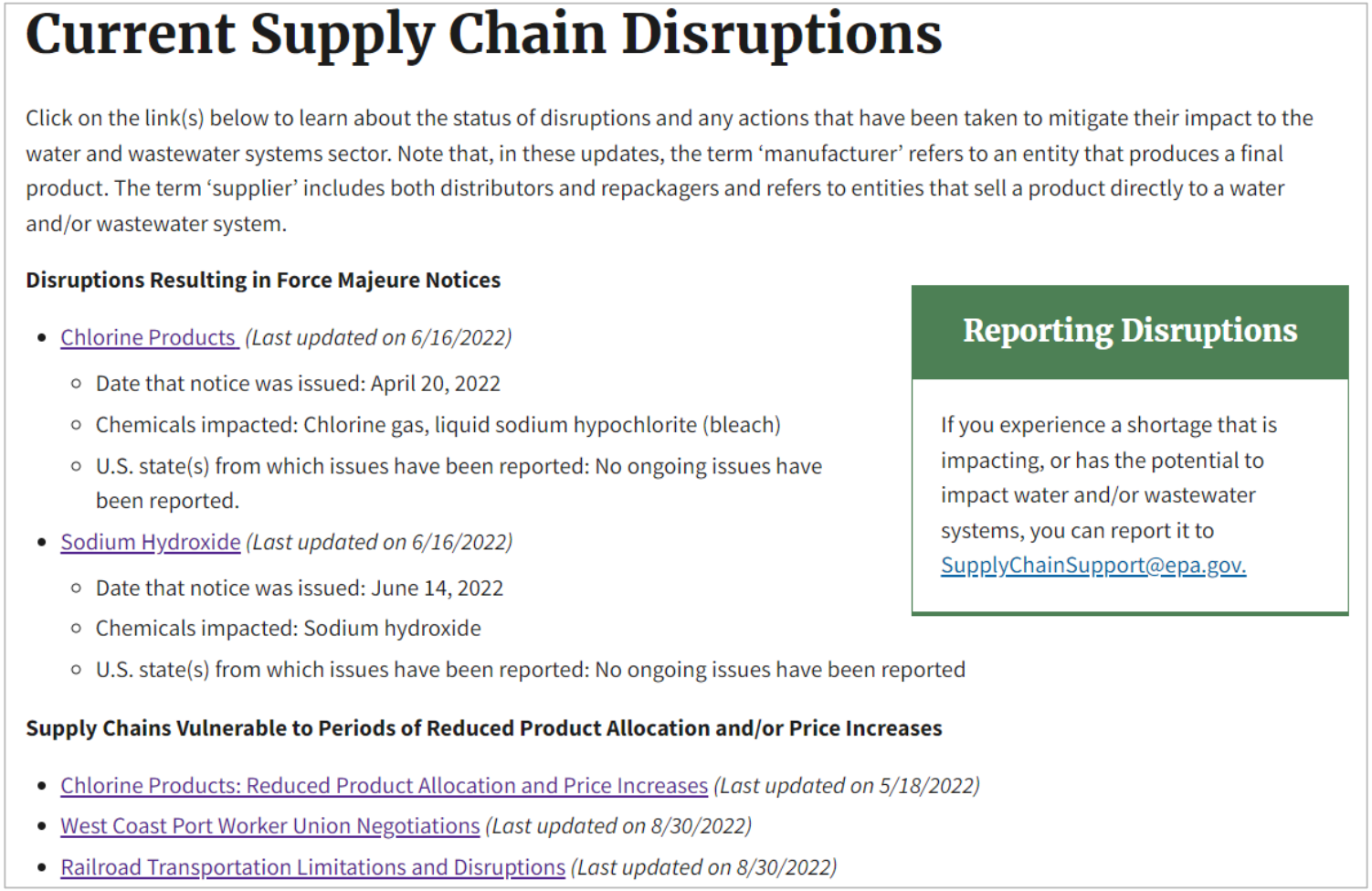
Page currently has almost 180 members representing:

- U.S. EPA HQ
- U.S. EPA regions
- State primacy agencies
- Other government entities
- Water/wastewater systems
- Water/wastewater trade organizations
- Chemical manufacturers/suppliers
- Chemical sector trade organizations

Bi-weekly emails that highlight recent developments are sent to members of the page (unscheduled emails will be sent for time-sensitive updates).

Webpage With Supply Chain Updates

Webpage with up-to-date information on supply chain issues impacting water and wastewater systems.



Current Supply Chain Disruptions

Click on the link(s) below to learn about the status of disruptions and any actions that have been taken to mitigate their impact to the water and wastewater systems sector. Note that, in these updates, the term 'manufacturer' refers to an entity that produces a final product. The term 'supplier' includes both distributors and repackagers and refers to entities that sell a product directly to a water and/or wastewater system.

Disruptions Resulting in Force Majeure Notices

- Chlorine Products *(Last updated on 6/16/2022)*
  - Date that notice was issued: April 20, 2022
  - Chemicals impacted: Chlorine gas, liquid sodium hypochlorite (bleach)
  - U.S. state(s) from which issues have been reported: No ongoing issues have been reported.
- Sodium Hydroxide *(Last updated on 6/16/2022)*
  - Date that notice was issued: June 14, 2022
  - Chemicals impacted: Sodium hydroxide
  - U.S. state(s) from which issues have been reported: No ongoing issues have been reported

Reporting Disruptions

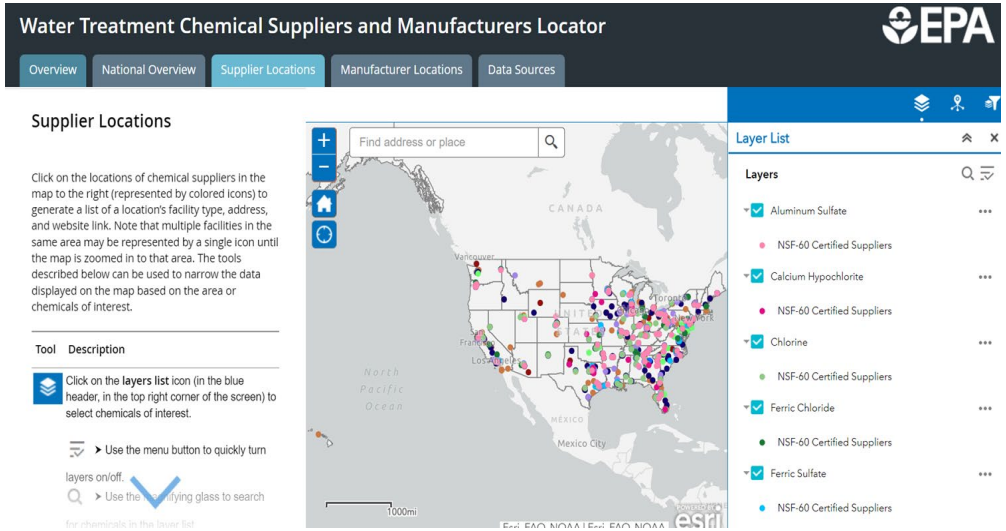
If you experience a shortage that is impacting, or has the potential to impact water and/or wastewater systems, you can report it to SupplyChainSupport@epa.gov.

Supply Chains Vulnerable to Periods of Reduced Product Allocation and/or Price Increases

- Chlorine Products: Reduced Product Allocation and Price Increases *(Last updated on 5/18/2022)*
- West Coast Port Worker Union Negotiations *(Last updated on 8/30/2022)*
- Railroad Transportation Limitations and Disruptions *(Last updated on 8/30/2022)*

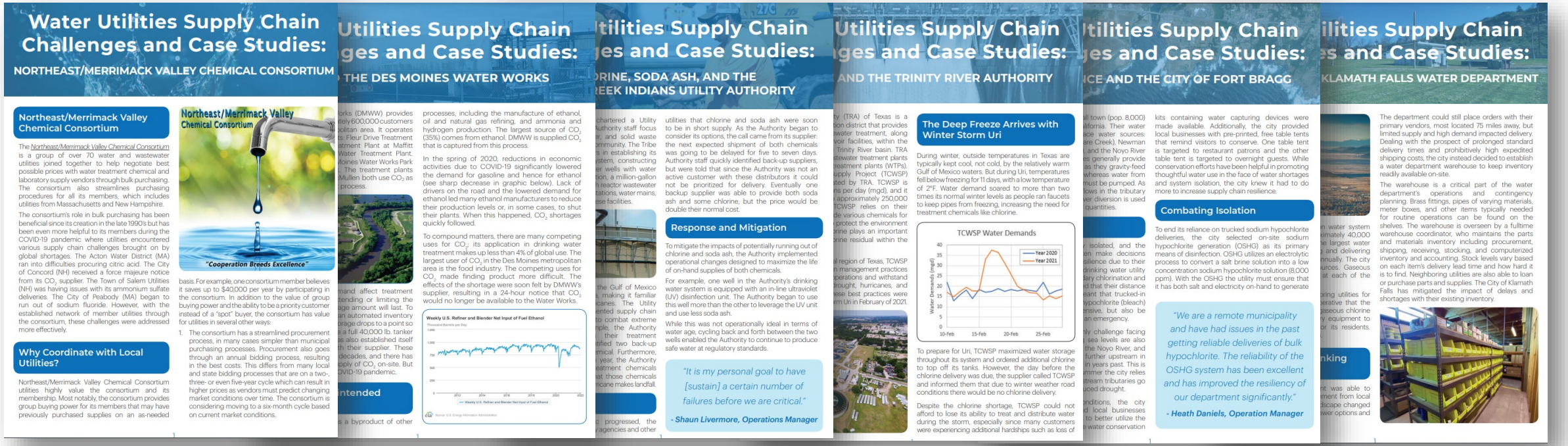
Water Treatment Chemical Locator Tool

- Water and wastewater utilities can search for suppliers and manufacturers across the U.S. to fulfill their chemical supply needs
- Provides location and company website of suppliers and manufacturers
- The Locator Tool is password protected and can only be accessed by drinking water and wastewater utilities, federal, state, and local agencies.
- More information can be found at: https://www.epa.gov/waterutilityresponse/chemical-suppliers-and-manufacturers-locator-tool

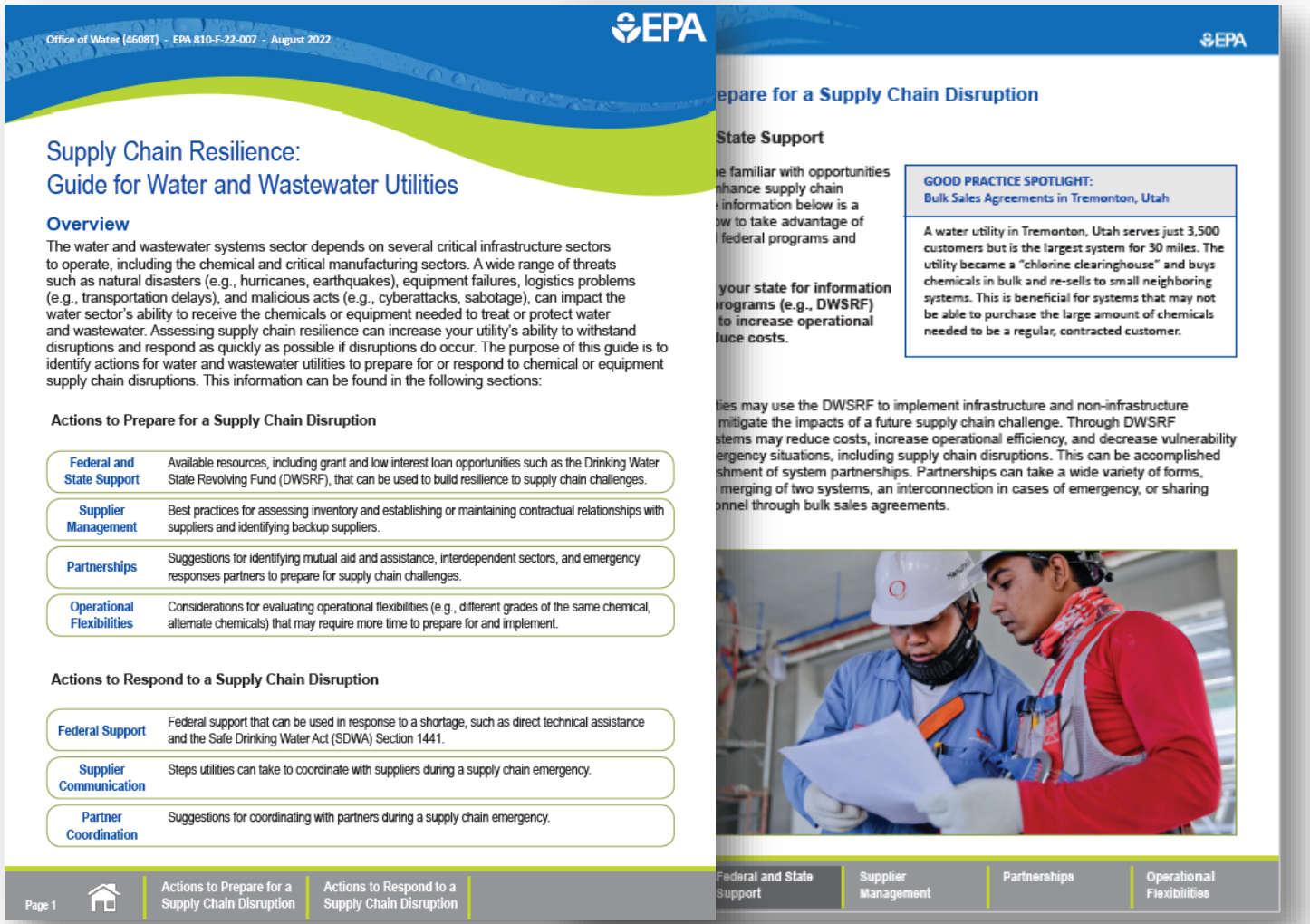


Supply Chain Case Studies

- 6 *new* case studies that share lessons learned and best practices to prepare for, or respond to, supply chain challenges.



Utility-Level Resilience – *New* Resilience Guide



Office of Water (4608T) - EPA 810-F-22-007 - August 2022

EPA

Supply Chain Resilience: Guide for Water and Wastewater Utilities

Overview

The water and wastewater systems sector depends on several critical infrastructure sectors to operate, including the chemical and critical manufacturing sectors. A wide range of threats such as natural disasters (e.g., hurricanes, earthquakes), equipment failures, logistics problems (e.g., transportation delays), and malicious acts (e.g., cyberattacks, sabotage), can impact the water sector's ability to receive the chemicals or equipment needed to treat or protect water and wastewater. Assessing supply chain resilience can increase your utility's ability to withstand disruptions and respond as quickly as possible if disruptions do occur. The purpose of this guide is to identify actions for water and wastewater utilities to prepare for or respond to chemical or equipment supply chain disruptions. This information can be found in the following sections:

Actions to Prepare for a Supply Chain Disruption

Federal and State Support	Available resources, including grant and low interest loan opportunities such as the Drinking Water State Revolving Fund (DWSRF), that can be used to build resilience to supply chain challenges.
Supplier Management	Best practices for assessing inventory and establishing or maintaining contractual relationships with suppliers and identifying backup suppliers.
Partnerships	Suggestions for identifying mutual aid and assistance, interdependent sectors, and emergency responses partners to prepare for supply chain challenges.
Operational Flexibilities	Considerations for evaluating operational flexibilities (e.g., different grades of the same chemical, alternate chemicals) that may require more time to prepare for and implement.

Actions to Respond to a Supply Chain Disruption

Federal Support	Federal support that can be used in response to a shortage, such as direct technical assistance and the Safe Drinking Water Act (SDWA) Section 1441.
Supplier Communication	Steps utilities can take to coordinate with suppliers during a supply chain emergency.
Partner Coordination	Suggestions for coordinating with partners during a supply chain emergency.

Page 1 | Actions to Prepare for a Supply Chain Disruption | Actions to Respond to a Supply Chain Disruption

EPA

epare for a Supply Chain Disruption

State Support

e familiar with opportunities
nhance supply chain
information below is a
w to take advantage of
federal programs and

your state for information
rograms (e.g., DWSRF)
to increase operational
luce costs.

GOOD PRACTICE SPOTLIGHT:
Bulk Sales Agreements in Tremonton, Utah

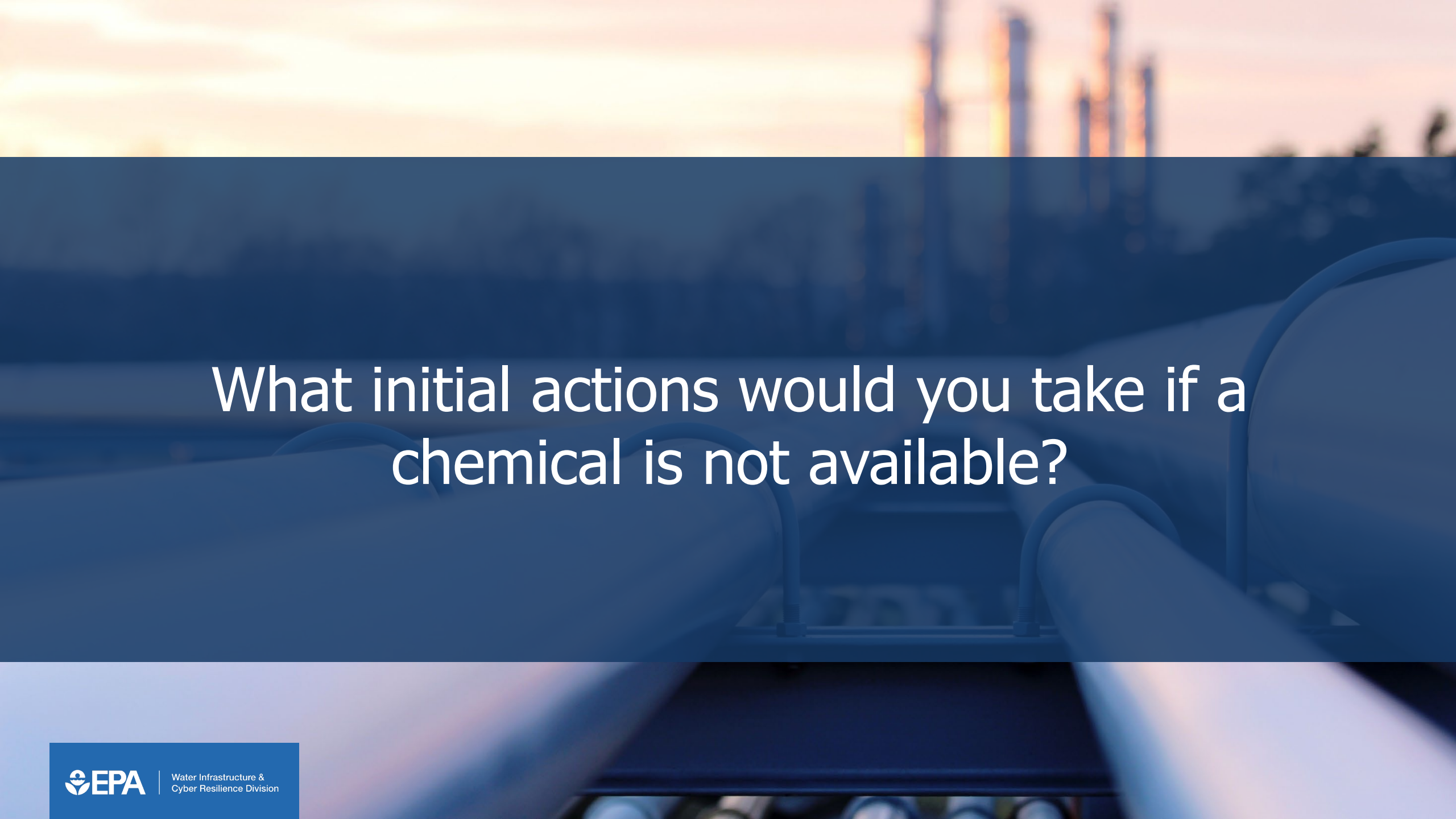
A water utility in Tremonton, Utah serves just 3,500 customers but is the largest system for 30 miles. The utility became a "chlorine clearinghouse" and buys chemicals in bulk and re-sells to small neighboring systems. This is beneficial for systems that may not be able to purchase the large amount of chemicals needed to be a regular, contracted customer.

ties may use the DWSRF to implement infrastructure and non-infrastructure
mitigate the impacts of a future supply chain challenge. Through DWSRF
stems may reduce costs, increase operational efficiency, and decrease vulnerability
ergency situations, including supply chain disruptions. This can be accomplished
shment of system partnerships. Partnerships can take a wide variety of forms,
merging of two systems, an interconnection in cases of emergency, or sharing
onnel through bulk sales agreements.

Federal and State Support | Supplier Management | Partnerships | Operational Flexibilities

WHERE CAN I FIND IT?

The guide is published on EPA's Water and Wastewater Sector Supply Chain Resilience page and can be found at: www.epa.gov/waterutilityresponse/supply-chain-resilience-guide-water-and-wastewater-utilities



What initial actions would you take if a chemical is not available?

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Suggested Actions to Address Supply Chain Challenges

- Maintain contact with your supplier and elevate to senior staff as needed
- Inventory and confirm the amount of chemical on-site
- Document and report the following information to the applicable parties.
  - Name/type/address of facility.
  - Name/concentration of chemical.
  - Storage capacity.
  - Amount of chemical used (annually/monthly).
  - Days until impact if allocation is not fulfilled.
  - Operational flexibility (e.g., if alternate chemicals can be used).
  - Name/contact of current supplier.
  - Additional suppliers contacted, if any.
- Contact EPA for technical assistance or to utilize the Safe Drinking Water Act (SDWA) Section 1441

Technical Assistance

- WICRD directly supports the sector with supply chain shortages in two primary ways: direct technical assistance and through the Safe Drinking Water Act (SDWA) Section 1441 authorities.
- WICRD provides direct technical assistance to water and wastewater utilities by:
  - Communicating with a utility's current supplier to understand the cause and expected duration of the potential shortage
  - Identifying potential alternate suppliers in the region that meet supply requirements
  - Evaluating additional actions such as mutual aid networks or alternate chemicals that are approved by the state drinking water primacy agency.
- WICRD developed a process for exercising authorities under the SDWA Section 1441 to address an interruption in the supply of a treatment chemical or other critical supply.

SDWA Section 1441

SDWA Section 1441 authorizes the Department of Commerce (DOC) to issue orders to suppliers to provide a treatment chemical to water or wastewater systems when it is not reasonably available.

Who can submit an application?

- Any entity that treats water "in any public water system or in any public treatment works." A representative of the impacted utility can fill out the application. Contractors can assist the utility in filling out the application.

What is the threshold for applying for a certification of need?

- Applications are considered on a case-by-case basis and turnaround can be up to six weeks. PWSs and POTWs should consider applying at their earliest opportunity if it appears that a chemical may not be available in the quantity needed for treatment in the future. Applicants are encouraged to first take the following steps:
    - Communicate with current suppliers;
    - Contact alternate suppliers;
    - Reach out to mutual aid and assistance networks; and
    - Coordinate with their state primacy agency.

SDWA Section 1441 Process and Timeline

- Upon receipt, EPA will notify the appropriate state primacy agency and EPA region of the application.
- EPA will conduct a technical review of the application by working with DOC, the applicant, manufacturer, repackager, regions, and state agencies, as needed.
- The application will be added to a Federal Register Notice (FRN) with a 14-day comment period. After which, EPA will issue or deny a certification of need within 30-days from the FRN posting.
- Opportunity to waive the FRN comment period.
- If approved, the certification of need will be provided to the DOC for implementation.
- DOC must issue an order within 7 days.
- Turnaround time can be up to 6 weeks.

SDWA Order Considerations

- Impact of prioritizing applicants on the remaining customers and equitably apportioning orders among other suppliers who may serve the water sector.
- Geographical relationships and established commercial relationships between suppliers and the water and/or wastewater systems.
- Amount of the chemical historically supplied to treat water in public water systems and public treatment works.
- Total annual production of the chemical in the US and the portion allocated to the water sector.
- Such other factors as determined "are relevant to the apportionment of orders" SDWA §1441(c)(2)(C).

Continuous Planning for All Hazards

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Continuous Planning for All Hazards

- Regularly review and update your risk and resilience assessment and emergency response plan after incidents and as new hazards in your area emerge.
- There is FEMA funding available to help you implement mitigation measures.
- EPA has a variety of resources and data-driven advice. EPA can help systems prepare with resources including, among others:
  - Hazard Mitigation Guide
  - CREAT Tool
  - WCIT

What Does Long-Term Mitigation Look Like?

Elevated Wellhead

Interconnections

Reinforced Structure

Emergency Generator

Hazard Mitigation Guide

- Learn how to work with local mitigation planners to implement priority projects using FEMA or other source funding.
- Includes practical examples of mitigation projects to address the impacts of earthquakes, tornados, floods, drought, wildfires, and power outages.

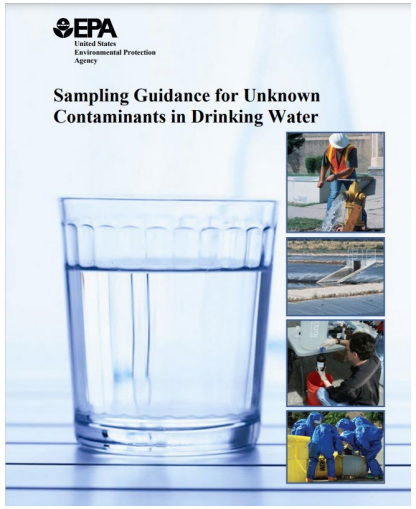
Climate Resilience Evaluation and Awareness Tool (CREAT)

- Assess Climate Change risks to utility assets and operations with CREAT.
- Incorporating CREAT results into best management practices and capital investment decisions builds confidence that a utility is proactive in identifying significant climate-related risks.

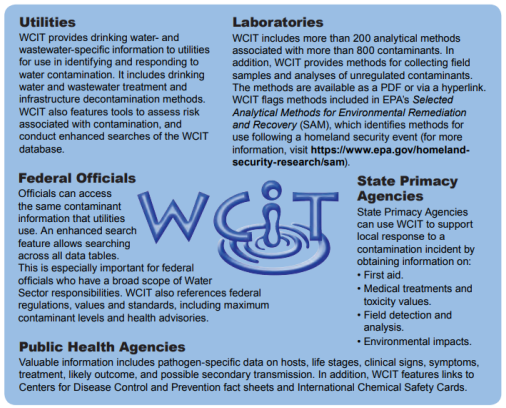
Lab Support Tools

Prepare system labs for all hazards with EPA tools:

- Sampling Guidance for Unknown Contaminants
  - Provides recommendations for conducting routine and baseline monitoring in responding to a contamination incident.



- Water Contamination Information Tool (WCIT)
  - Compiles drinking water- and wastewater-specific data about chemical, biological, and radiochemical contaminants in a one-stop, easy-to-use tool.



Federal Funding Sources

Fed FUNDs provides information on funding from various federal agencies (e.g., FEMA, EPA, USDA, HUD, and SBA).

Website includes:

- Quick search for funding options.
- Completed applications and funding success stories.
- Information on how to combine funding from different sources.

For utilities serving, less than 10,000 people:

- USDA Emergency Community Water Assistance Grants.
- USDA Water & Waste Disposal Loan & Grant Program.

EPA Sources:

- Clean Water State Revolving Funds.
- Drinking Water State Revolving Funds.

Wrap-up / Questions & Answers

EPA | Water Infrastructure & Cyber Resilience Division

Main Takeaways

- RRAs and ERPs should be reviewed and updated regularly.
- Work with interdependent sectors to prepare your community for all hazards.
- Supply chain resilience is a critical part of planning.
- Take advantage of EPA tools and resources to build resilience.
- Join EPA's contact list to stay updated on new and existing tools and resources to support your utility's hazard resilience.

Questions?

THANK YOU!

For more information or any questions about the material presented, please contact EPA at dwresilience@epa.gov.

For information about the upcoming and recorded AWIA webinars and Regional trainings, visit

https://www.epa.gov/waterresiliencetraining

Gabrielle Minton
Minton.Gabrielle@epa.gov

Water Infrastructure and Cyber Resileince Division

WICRD-outreach@epa.gov

https://www.epa.gov/waterresilience

AWIA Requirement Questions

Kormondy.Charlene@epa.gov

dwresilience@epa.gov

https://www.epa.gov/waterresilience/awia-section-2013