Drinking Water Advisory Tabletop Exercise

July 1, 2019
Metropolitan Washington Council of Governments
Washington, DC

This TTX was adapted from a Virtual Table Top Exercise (VTTX) “City Without Water” created by CDC for use on the FEMA Emergency Management Institute.

Acknowledgments: CDC Rob Blake, Jonathan Yoder, Tom Jones. FEMA Douglas Kahn

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INTRODUCTION

Background

The Centers for Disease Control and Prevention (CDC) is sponsoring, in conjunction with the Emergency Management Institute (EMI), a series of Tabletop Exercises (TTX) that are designed to help prepare organizations in the event of a public health emergency. Each TTX presents a different scenario based on anticipated seasonal events and/or potential threats. One of the goals of this series is to increase preparedness for these threats through the collaborative exercises among participating agencies. Successful exercises lead to an ongoing preparedness process for improvements.

CDC serves as the national leader for developing and applying disease prevention and control, environmental health, and health promotion and health education activities designed to improve the health of the people of the United States.

In collaboration with State and local partners, CDC works to strengthen and support the nation's health security by saving lives and protecting against public health threats. Public health preparedness involves a cycle of outreach, planning, capability development, training, exercising, evaluation, and improvement. CDC collaborates with partners at the national, state, local, tribal, and territorial levels to prevent, protect, respond to, mitigate, prepare for, and recover from public health emergencies.

This TTX uses a major water main break of a city's drinking water supply as the scenario to establish a learning environment for participants to exercise their emergency response plans, policies, and procedures for this scenario.

Purpose

The purpose of this exercise is to provide participants with an opportunity to assess their preparedness, response, and recovery protocols, plans, and capabilities for a TTX scenario.

Scope

Players will participate in facilitated discussions within their organizations to address the challenges presented by the scenario, and share those outcomes with the community of participants. Discussions will focus on response coordination, critical decision-making, and the integration of resources necessary to prepare for, respond to, and recover from the loss of a city's drinking water supply.

Core Capabilities

The National Preparedness Goal (September 2015) has directed the focus of homeland security planning toward a capabilities-based approach. Because the timing and specificity of the next disaster is uncertain, this type of planning uses an all-hazards approach to build capabilities that can be applied to a wide variety of incidents. States and urban areas use capabilities-based planning to identify a baseline assessment of their homeland security efforts by comparing their current capabilities against the Core Capabilities.

Core Capabilities are essential for the execution of the five mission areas: Prevention, Protection, Mitigation, Response, and Recovery. The purpose of this exercise is to measure and validate performance of these Core Capabilities

All Mission Areas

Planning - Conduct a systematic process engaging the whole community as appropriate in the development of executable strategic, operational, and/or community-based approaches to meet defined objectives.

Public Information and Warning - Deliver coordinated, prompt, reliable, and actionable information to the whole community through the use of clear, consistent, accessible, and culturally and linguistically appropriate methods to effectively relay information regarding any threat or hazard and, as appropriate, the actions being taken and the assistance being made available. When targeting a specific population (e.g. the elderly, pregnant women, immunocompromised individuals, etc.), identify the communications channel(s) that are most appropriate and impactful.

Operational Coordination - Establish and maintain a unified and coordinated operational structure and process that appropriately integrates all critical stakeholders and supports the execution of core capabilities.

Response Mission Area Response includes those capabilities necessary to save lives, protect property and the environment, and meet basic human needs after an incident has occurred.

Infrastructure Systems - Stabilize critical infrastructure functions, minimize health and safety threats, and efficiently restore and revitalize systems and services to support a viable, resilient community.

Mass Care Services - Provide life-sustaining services to the affected population with a focus on hydration, feeding, and sheltering to those who have the most need, as well as support for reunifying families.

Situational Assessment - Provide all decision makers with decision-relevant information regarding the nature and extent of the hazard, any cascading effects, and the status of the response.

Environmental Response/Health and Safety – Conduct appropriate measures to ensure the protection of the health and safety of the public and workers, as well as the environment, from all-hazards in support of responder operations and the affected communities.

Recovery Mission Area Recovery includes those capabilities necessary to assist communities affected by an incident in recovering effectively. It is focused on a timely

restoration, strengthening, and revitalization of the infrastructure; housing; a sustainable economy; and the health, social, cultural, historic, and environmental fabric of communities affected by a catastrophic incident.

> **Economic Recovery** - Return economic and business activities (including food and agriculture) to a healthy state and develop new business and employment opportunities that result in a sustainable and economically viable community.
>
> **Health and Social Services** - Restore and improve health and social services networks to promote the resilience, independence, health (including behavioral health), and well-being of the whole community.
>
> **Infrastructure Systems** - Stabilize critical infrastructure functions, minimize health and safety threats, and efficiently restore and revitalize systems and services to support a viable, resilient community.

Exercise Objectives

The following exercise objectives were created for to develop an effective response based on the scenario and identify opportunities for future improvements.

1. Conduct a systematic planning to engage the whole community.
2. Deliver coordinated, prompt, reliable, and actionable information to the whole community using appropriate communications channels.
3. Establish and maintain a unified and coordinated operational structure and process that integrates all critical stakeholders.
4. Provide life-sustaining services to the affected population.
5. Present decision-makers with relevant information on the nature and extent of hazards.
6. Restore and improve health and social services networks.

Drinking water, sanitation, and hygiene (WASH) emergencies trigger a response because of their potential for causing community-wide outbreaks and disruption. Often the local and state public health agencies responsible for responding to these emergencies have done no prior planning, do not have appropriate tools, and lack timely and credible public health messaging.

During this exercise, participants will learn, discuss and share knowledge about responding to WASH emergencies by walking through a tabletop exercise and focusing on the importance of partnerships and appropriate communication tools.

Learning Objectives

1. Assess key resources and tools to enhance or sustain professional work or volunteer role in planning for, responding to, and recovering from disasters and other public health emergencies.
2. Develop proficiency in WASH emergency preparedness concepts and tools by participating in a table top exercise.
3. Understand the importance of developing strong partnerships and having tools to better respond to WASH emergencies.

Assumptions

In any exercise, assumptions are necessary to complete play in the time allotted. During this exercise, the following apply

- The scenario is plausible. Events occur as they are presented.
- There is no hidden agenda, and no trick questions.
- All players receive the same information at the same time.

Exercise Ground Rules

- This TTX will be conducted in a stress free, informal environment.
- Participate openly in all discussions and respect the thoughts, ideas and opinions of your fellow participants (disagreements are okay, they may point out a weak area of a plan and help foster mutual solutions).
- Use your expert knowledge to suggest solutions. Problem-solving efforts should be the focus. Issue identification is not as valuable as suggestions and recommended actions that could improve response and recovery efforts.
- Respond to the scenario using your knowledge of current plans and capabilities (i.e., you may use only existing assets) and insights derived from your training.
- Decisions are not precedent setting and may not reflect your organization's final position on a given issue. This exercise is an opportunity to discuss and present multiple options and possible solutions.
- Keep your thoughts and comments to the point in consideration of time constraints.

Metropolitan Washington
Council of Governments

DRINKING WATER ADVISORY TTX

Monday, July 1, 2019
10:00 - 3:30 P.M.
Walter A. Scheiber Board Room

DRAFT AGENDA

10:00 A.M.	1.	INTRODUCTIONS *Oscar Alleyne, National Association of County and City Health Officials (NACCHO)* *Jonathan Yoder, Centers for Disease Control and Prevention (CDC)* *Steve Bieber, Council of Governments (COG)*
10:15 A.M.	2.	OVERVIEW *Lisa Ragain, COG*
10:10 A.M.	3.	MODULE 1 – DAY 1 MORNING
11:30 A.M.	4.	MODULE 2 – DAY 1 AFTERNOON AND EVENING
12:15 P.M.	5.	WORKING LUNCH
12:30 P.M.	6.	REPORT OUT
1:15 P.M.	7.	MODULE 3 – DAY 2
1:40 P.M.	8.	MODULE 4 – DAY 3 TO DAY 6
2:40 P.M.	9.	Report Out
1:40 P.M.	10.	HOTWASH
3:20 P.M.	12.	CLOSING REMARKS
3:30 P.M.	13.	ADJOURN

MODULE 1 RESPONSE

Tuesday, April 17th

It is an overcast day after a week of heavy rain; the temperature is 50 degrees Fahrenheit with colder weather expected over the next few days.

0430AM Operators notice a significant pressure loss in the distribution system. They monitor the situation and begin to look for the cause.

0445AM Police respond to flooding just north of a busy highway. Cars are attempting to pass through the standing water.

0520AM A water utility crew responds but are not able to immediately stop the gushing water. They investigate and find a main break in a 48-inch water transmission line from the water treatment plant.

0600AM News crews arrive on the incident site.

0630AM Water utility staff meet to assess the situation and debate the need to issue a drinking water advisory. They consult with the state primacy agency and decide an advisory is necessary due to loss of pressure, though there is no known contamination.

Call volume increases on water utility customer service phone line. Social media traffic is increasing. Some areas are reporting having no water, while others are reporting a reduced flow.

0720AM Schools and businesses in the affected area delay opening due to lack of water.

0830AM Water utility crews isolate the leaking pipe, shutting off the 48-inch water main transmission line. The utility is now concerned the system may be depressurized and drain stored water supplies.

The general manager calls the Emergency Manager and Chief Administrative Officer (CAO). They consider issuing a Wireless Emergency Alert (WEA).

0900AM The utility releases a boil water advisory which includes instructions for residents to conserve water.

The utility begins sampling to identify contamination in the distribution system. There is growing concern of system wide loss of pressure.

The highway is closed in both directions due to flooding.

1000 AM The Emergency Manager activates the Emergency Operations Center (EOC) and asks staff to contact key individuals. The CAO calls an initial meeting of key individuals.

1030 AM A call comes in to county dispatch stating sinkholes are appearing on the major road next to the main water break.

Social media posts claim the water is running out. Some complain of strange color and odor in the water. People go to the stores to stockpile bottled water.

Module 1 Questions

The following questions are provided as suggested general subjects that you may wish to address as the discussion progresses. Please feel free to identify additional requirements, critical issues, decisions, or questions that should be addressed at this time.

1. What are your priorities as you respond?

2. Are other jurisdictions or water systems affected?

3. What are the appropriate local and/or state agencies to involve in your area?

4. What potential public health hazards are emerging in this incident?

5. What critical infrastructure is affected by a water outage? Does this affect the response?

6. Is messaging necessary beyond the boil water advisory? Who would have templates, FAQs or other communication strategies and materials? Which agency takes the lead?

7. Does your community have criteria for issuing a WEA? Is a WEA appropriate for unconfirmed contamination? A water outage?

8. Can schools and businesses remain open during a low pressure or water outage incident? Is it okay to wash hands but not drink the water? Are businesses responsible for providing bottled water for employees?

MODULE 2 EXTENDED RESPONSE

Tuesday, April 17

1100 AM Businesses and government offices are closing due to lack of water. All schools and universities in the jurisdiction are closed for the day.

Hospitals reschedule elective surgeries and concern is rising in long-term care facilities. Health department and laboratory services are limited.

1200PM The CAO and utility manager hold a press conference. News crews are pressing for interviews to explain the situation.

Progress on the site excavation is slow, due to the wet site conditions and the proximity to other utility lines.

100PM Government offices remain closed. HVAC systems and water-cooled IT servers in the affected area are at risk of failing.

130PM Residents are clearing store shelves of bottled water. Alternate supplies are needed.

200PM Restaurants are asking questions about using tap water to cook and wash dishes, and if ice is safe to use. Many assume they need to close.

Residents have similar questions and many others, including letting their pets drink tap water.

245PM Isolated reports come in of residents complaining of nausea and vomiting.

430PM The water utility issues an update to the community in a press release. They announce the advisory will continue for a minimum of 18-24 hours after repairs are complete until the lab confirms the water is safe.

930PM Crews have partially pressurized the system. Most people have water with reduced pressure but are still under a boil water advisory.

Module 2 Questions

The following questions are provided to stimulate discussion. Please feel free to identify additional requirements, critical issues, decisions, or questions that should be addressed at this time.

1. What are your priorities for the response at this stage? How is the response coordinated across agencies? Which agency is leading the response?

2. What resources do you still need during this stage? Are there additional resources you need? Who is responsible for providing alternative water supplies to the community?

3. How do response agencies coordinate messaging? Would you hold a press conference at this stage? Which agencies should be a part of a press conference?

4. How do you reach specific groups? What are the specific messaging strategies for reaching different audiences such as vulnerable populations, jail, hospitals, food service and processing, and other large-scale water users?

5. Do you have translation resources? American Sign Language (ASL) interpreters?

6. What new public health issues are emerging? How would you address the reports about the isolated reports of vomiting?

7. Who is working on public messaging from what agencies?

8. Is a Joint Information Center (JIC) in operation? What agencies are in the JIC? How is this achieved?

9. What systems are available to determine the cause of suspected illnesses? How do you communicate with healthcare providers?

MODULE 3 RECOVERY

Wednesday, April 18th

0500AM The water main repair is complete. Pressure to the water distribution system is gradually restored. Water sampling continues. Residents are calling about rusty and brown colored water. Distribution flushing is done through fire hydrants. The boil water advisory continues until test results show it can be lifted.

0800AM The water pressure in the system is improving but the water is more discolored - and the boil water advisory is still in place. There is a growing sense of agitation and dissatisfaction in the community.

0900AM Schools and businesses are reopened. Schools are not allowing students to wash their hands after using the restroom, and students are required to bring their own water from home to drink.

1000AM The health department opens an investigation regarding illnesses potentially related to contaminated drinking water.

1200PM Some restaurants in town are open, while others remain closed. The local news start reporting on the inconsistency.

1230 PM Individuals on social media are saying pitcher or faucet water filters are safe to use in lieu of boiling water.

0130 PM One hospital's alternative water supply is running low.

Module 3 Questions

The following questions are provided as suggested general subjects that you may wish to address as the discussion progresses. Please feel free to identify any additional requirements, critical issues, decisions, or questions that should be addressed at this time.

1. What public health protective measures are needed?

2. What resources are still needed at this stage of response?

3. How do you investigate reports of illness and address concerns about outbreaks?

MODULE 4 EXTENDED RECOVERY

Thursday, April 19th

1100 AM The sample results come back clean. Full water pressure was restored in the early morning.

1200 PM The CAO, water utility and health department hold a joint press conference announcing water pressure is restored and no contamination water found. The boil water advisory is lifted in conjunction with the state primacy agency.

500PM Evening news and social media are rehashing the incident and questioning the safety of consuming water that is rusty and smells heavily of chlorine. Several elected and public officials are interviewed for the segments. This continues through the weekend.

Monday, April 23nd

The CAO and board of elected officials call an emergency meeting to discuss the incident and why the main break occurred. They discuss why a boil water advisory was necessary if there was no contamination. Business owners and residents show up in force to give their experiences about the incident, outlining personal experiences and economic losses.

Module 4 Questions

The following questions are provided as suggested general subjects that you may wish to address as the discussion progresses. Please feel free to identify any additional requirements, critical issues, decisions, or questions that should be addressed at this time.

1. What are the criteria to end a drinking water advisory? To demobilize the EOC?

2. Does your community have a plan for a major water outage or contamination incident?

3. How do you know when to change the operation from response to recovery?

4. When will you know you no longer need additional resources? Were there resources not included in the response that should have been considered?

5. How will your public messaging need to change? What advice or questions will residents, businesses and building managers need? Is there a need to flush the plumbing after the boil water advisory is lifted?

6. What reassurance will the public and businesses need?

7. Has your community addressed the effects of an aging water system? What remedies have been discussed?

APPENDIX A ACRONYMS

AAR	After Action Report
AWWA	American Water Works Association
CAO	Chief Administrative Officer
CDC	Centers for Disease Control and Prevention
DHS	US Department of Homeland Security
DWACT	Drinking Water Advisory Communication Toolbox
EEG	Exercise Evaluation Guide
EMI	Emergency Management Institute
EOC	Emergency Operations Center
EPA	U.S. Environmental Protection Agency
EWSP	Emergency Water Supply Plan
FEMA	Federal Emergency Management Agency
HSEEP	Homeland Security Exercise and Evaluation Program
ICS	Incident Command System
JIC	Joint Information Center
LEPC	Local emergency planning committee
PIO	Public Information Officer
POC	Point of Contact
SA	Situational Awareness
SME	Subject Matter Expert
USG	US Government
TTX	Tabletop Exercise

APPENDIX B DRINKING WATER ADVISORY COMMUNICATION TOOLBOX (DWACT) AND EMERGENCY WATER SUPPLY PLAN (EWSP)

The *Drinking Water Advisory Communication Toolkit* (DWACT) is a collaborative effort by several agencies and partners. The goal of the DWACT is to provide a protocol and practical toolbox for communicating with stakeholders and the public about water advisories. The project addresses the range of situations that generate drinking water advisories, but the current DWACT mainly focuses on microbiological contamination. An updated version of the DWACT addressing other forms of contamination will be available soon.

Link http //www.cdc.gov/healthywater/emergency/dwa-comm-toolbox/

The *Emergency Water Supply Plan* (EWSP) is developed for health care facilities to prepare for, respond to, and recover from a partial or total disruption of normal water supply. Health care facility staff, as well as representatives from external partners, created the EWSP. After development, the document is normally revised annually. The EWSP is designed to help health care facilities comply with the facilities' Emergency Operations Plans (EOP). Elements of a EWSP include a facility description; a water supply description; water demand during normal and emergency situations; an equipment and materials list; a backflow prevention plan; a maintenance plan; copies of all contracts and other agreements related to supplying emergency water and other supplies that would be used in an emergency; a menu of emergency supply alternatives; operational guidelines and protocols that address treatment process and water quality testing; an implementation timeline during an emergency; a recovery plan; a post-incident surveillance plan; and a EWSP evaluation and improvement strategy.

Link http //www.cdc.gov/healthywater/pdf/emergency/emergency-water-supply-planning-guide.pdf

APPENDIX C ADDITIONAL RESOURCES FOR SAFE WATER AND SAFE WATER PREPAREDNESS

CDC

Water, Sanitation, & Hygiene (WASH)-related Emergencies & Outbreaks: http //www.cdc.gov/healthywater/emergency/drinking/index.html

Healthy Water – Drinking Water: http //www.cdc.gov/healthywater/drinking/public/water_quality.html

EPA

Guidance for the safe emergency disinfection of drinking water: https//www.epa.gov/ground-water-and-drinking-water/emergency-disinfection-drinking-water

EPA Drinking Water Standards and Regulations: https//www.epa.gov/dwstandardsregulations

FDA

The Food Related Emergency Exercise Bundle (FREE-B) water incident exercise. **Wat'er You Thinking** is a scenario on the investigation of possible water supply contamination in an industrial town and illustrates the importance of water safety from all parties involved in the treatment, storage, and distribution of water. The exercise also highlights the significance of collaborating in a diverse team of professionals, establishing roles and responsibilities, and responding to an urgent event. http //www.fda.gov/Food/FoodDefense/ToolsEducationalMaterials/ucm295902.htm

Technical Guidance applicable to Continental US (CONUS) Army water systems classified as Public Water Systems: https//phc.amedd.army.mil/PHC%20Resource%20Library/TG179_ComplyingwiththeSafeDrinkingWaterAct_April2015.pdf

Appendix D Glossary

A

Abbreviated message: Brief communication with essential information that directs the reader to a separate location for additional information. It is typically delivered through electronic means, such as a phone message, a text message, a social media format, or a scroll on a television broadcast.

Advisory [Drinking Water Advisory]: Communication to water users (customers) about specific actions to take regarding water use.

After Action Review (AAR): A structured and facilitated discussion and written report among participants in an incident to compare what actually happened with what was intended to occur.

ASDWA: Association of State Drinking Water Administrators.

Automated message: Communication delivered through a mechanical system, such as a mass text.

AWWA: American Water Works Association.

B

Boil Water Advisory (BWA): Communication to customers of a water system about the need to boil water before using it.

C

Capacity: The ability of an organization to contribute resources, such as staff time, money, and expertise.

CCR: Consumer Confidence Report - An annual water quality report that provides detailed information about the quality of the drinking water in a community, required by the U.S. Environmental Protection Agency (EPA).

CDC: U.S. Centers for Disease Control and Prevention.

Coliform bacteria: Coliforms are a group of bacteria that are present in the digestive tract and feces of humans and animals. When found in water, they are indicators of possible animal or human fecal contamination. Most of the time, these bacteria are not harmful. Total coliforms is another term for the full group of coliforms.

Coliphage: A virus that infects bacteria is called a phage. Phages infect specific species of bacteria. Coliphages infect coliform bacteria. Coliphages do not infect humans or cause illness. A positive test for coliphages indicates the water may be contaminated with feces or *E. coli or* viruses.

Consecutive system: A water system that purchases its water supply from another water system.

Contaminant: An unwanted and/or undesirable chemical or microbe found in drinking water.

Corrective Action: The activities taken by a water system to fix an identified deficiency.

Crisis communication: A communication approach that relays the risks and benefits of different actions to agencies, consumers, and other stakeholders during an emergency or disaster.

Critical customer: Customers that receive priority notification during a drinking water advisory like hospitals or nursing homes.

CS: Customer service.

D

Drinking Water Advisory: Water systems and state or local agencies issue drinking water advisories when they believe water quality is or may be compromised. Advisories tell individuals, schools, hospitals, businesses, and others about the situation and how to take immediate action.

Debriefing: An informal, semi-structured discussion with stakeholders, partners, and other participants, after an advisory, exercise, or incident, used to obtain useful information and improve or enhance operations.

Do Not Drink Advisory: Communication to customers of a water system to avoid tap water and to use other sources of water for human consumption. A Do Not Drink Advisory is used if boiling the water will not kill, inactivate, or remove the contaminant of concern, or if boiling would concentrate or release it into the air. For example, a Do Not Drink Advisory would be issued if water is contaminated with a cyanotoxin.

Do Not Use Advisory: Communication to customers of a water system not to use tap water for any purpose, including sanitation and fire protection. For instance, a Do Not Use Advisory is utilized if water is contaminated by lead.

E

EOC: Emergency Operations Center - The physical location at which the coordination of information and resources to support incident management (on-scene operations) activities normally takes place. An EOC may be a temporary facility or may be located in a more central or permanently established facility, perhaps at a higher level of organization within a jurisdiction. EOCs may be organized by major functional disciplines (e.g., fire, law enforcement, medical services), by jurisdiction (e.g., Federal, State, regional, tribal, city, county), or by some combination thereof.

Escherichia coli (E. coli): A species of fecal coliform bacteria. *E. coli* almost always comes from animal feces. *E. coli* is considered the best indicator of fecal water contamination. If *E. coli* is present, harmful bacteria or other pathogens may also be present in the water. Some rare types of *E. coli*, such as O157:H7, can cause serious illness.

EPA: U.S. Environmental Protection Agency.

ERP: Emergency response plan.

Evaluation: A process that compares outcomes to expectations. Evaluation consists of systematically collecting information about the characteristics and outcomes of activities and comparing them to practices, protocols, and materials. Based on the comparison, recommended changes to practices, protocols, and materials can be made in order to reduce uncertainties and improve effectiveness in future actions and decisions.

Evaluator: An individual who observes and assesses the interactions and outcomes of an exercise. Evaluators do not participate in the exercise.

Exercise: A practice event based on a scenario to test the effectiveness of planning. Also called drill or tabletop exercise.

F

Facilitator: A designated individual to structure and run an exercise or debriefing.

Fecal coliform indicators: Groups of microbes, such as *E. coli*, enterococci, and coliphage, used under the Groundwater Rule to indicate possible water contamination.

G

Groundwater: Water from wells, springs, or aquifers used by water systems for drinking water.

H

Health literacy: The ability to receive, process, understand, and act on basic health information.

HSEEP: Homeland Security Exercise and Evaluation Program.

Homeland Security Presidential Directive 5 (HSPD-5): A presidential directive for management of domestic incidents that requires all federal departments and agencies to make adoption of the National Incident Management System (NIMS) by state, tribal, and local organizations a condition for federal preparedness assistance.

I

Incident Command System (ICS): A standardized, on-scene management approach used by all levels of government, many nongovernmental organizations, and the private sector to provide organizational structure for emergency response and recovery.

J

Joint Information Center (JIC): A facility established to coordinate critical emergency information, crisis communications, and public affairs functions. The Joint Information Center is the central point of contact for all news media. The Public Information Officer may activate the JIC to better manage external communication.

Jurisdiction: The sphere of authority related to legal responsibilities and that can be political/geographic (city, county, state) or functional (water service, public health).

M

Mandatory advisory: A notice or communication required by federal or state law and issued to protect public health.

MCL: Maximum Contaminant Level - Standards set by the EPA for drinking water quality; a legal threshold limit on the amount of a substance that is allowed in public water systems under the Safe Water Drinking Act.

Message: The primary instructions, actions, and information expressed in a communication with an audience.

Message map: A risk communication tool to develop the most pertinent information about an incident or emergency. A message map is a set of organized statements that address likely questions about an incident.

MOU: Memorandum of understanding.

N

National Incident Management System (NIMS): A system to coordinate emergency preparedness and incident management among various federal, state, and local agencies. NIMS provides the template for the management of incidents.

Network: A group of partners that work together to achieve timely, effective, and extensive outreach. Some communities may have an existing collaboration, usually coordinated around emergency management.

Nitrate: Nitrate is a chemical found in most fertilizers, animal manure, and liquid waste discharged from septic tanks. Natural bacteria in soil can convert nitrogen into nitrate.

Notification: The process of communicating information to audiences per the Environmental Protection Agency (EPA) requirements.

P

Partner: Any organization or agency that can help to plan, develop, and distribute messages.

pH: The measure of the acidity or alkalinity of a solution on a scale from 0–14.

Precautionary advisory: Communication to customers of a water system issued when contamination is suspected but not confirmed.

PIO: Public Information Officer - Under the Incident Command System (ICS)—the system that defines the operating characteristics, management components, and organizational structure under the National Incident Management System —the PIO is a key staff member supporting the Incident Command structure. The PIO advises and represents the Incident Command on all public information matters relating to the management of the incident.

PNR: Public Notification Rule – Under the Safe Drinking Water Act the Public Notification Rule ensures that consumers will know if there is a problem with their drinking water. These notices alert consumers if: 1) there is risk to public health; 2) the water does not meet drinking water standards; 3) the water system fails to test its water; 4) the system has been granted a variance (use of less costly technology); or 5) the system has been granted an exemption (more time to comply with a new regulation).

Preparedness: Anticipating and planning response and recovery to unpredictable events.

Primacy agency: The agency that regulates and enforces community water systems under the Safe Drinking Water Act. Drinking water programs can be located in a state department of health, a state department of environment, or at the regional Environmental Protection Agency (EPA) level.

Public official: Any elected or appointed member of a jurisdictional or water system governing body.

R

Risk communication: An exchange of information and opinion among a water system, consumers, primacy agencies, public health authorities, and other stakeholders in both nonemergency situations and as part of crisis communication. This exchange assists customers as they evaluate information, put it into context, and make health-related decisions for themselves and those who depend on them.

S

Safe Drinking Water Act (SDWA): The main federal law that ensures the quality of Americans' drinking water. Under the SDWA, the Environmental Protection Agency (EPA) sets standards for drinking water quality and oversees the states, localities, and water suppliers who implement those standards.

Scope, scale, and severity: Terms used in this project as criteria to help water systems define how much collaboration and outreach is needed for an advisory.

Scope:
The population, number of water systems, and/or jurisdictions involved with the advisory. The greater the number affected, the larger the scope.

Scale:
Size of the area affected, such as a neighborhood, entire city, or geographic region. The larger the area affected, the larger the scale of the response.

Severity:
Is this a routine situation or new? A disease outbreak or natural disaster or cross connection? The greater the threat to public health, the greater the severity.

SOP: Standard Operating Procedures.

Spokesperson: An individual responsible for interfacing with the public, the media, and/or other agencies requiring information about an incident.

Strategic communication plan: A business management tool that community water systems can use for decision making and resource allocation in communicating with the public, customers, and other stakeholders.

Surface water: Water that collects on the ground and in an open body of water, such as a lake, stream, river, or pond.

Susceptible populations: Groups of people with conditions or medical needs that make them more vulnerable to the adverse effects of poor water quality. Susceptible populations include babies and young children, pregnant women, and people who are immunocompromised, elderly, or on dialysis.

T

Tier 1 Public Notice: The top level of public notice, which requires water systems to inform customers within 24 hours of a violation of the Safe Drinking Water Act (SDWA) standards because the situation poses an acute public health risk.

V

Variable Message Signs (VMS): VMS, also known as changeable message signs (CMS) or dynamic message signs (DMS), are electronic road signs that display messages.

W

Wholesale system: A public water system that treats source water as necessary to produce finished water and then delivers some or all of that finished water to another public water system. Delivery may be through a direct connection or through the distribution system of one or more consecutive systems.

APPENDIX E TOOLS

Tier 1 Public Notification Rule Compliant Press Release Template

PURPOSE

Use when a corresponding Tier 1 Public Notice boil water advisory is required and issued.

DIRECTIONS:

Replace information in brackets with specific water system and advisory information. Adapt it as needed.

▲ **Denotes required element of a public notice per EPA's Public Notification Rule**

■ **Denotes mandatory health effects language per EPA's Public Notification Rule**

.....

[Date]

FOR IMMEDIATE RELEASE

Contact: [Name, Title, Phone, E-mail]

[Water System] issues a boil water advisory for all customers in [location]

[Water System] advises all customers to boil their drinking water. The boil water advisory is in effect until further notice.

▲ Customers should:

- Fill a pot with water.
- Heat the water until bubbles come quickly from the bottom of the pot to the top.
- Keep heating the water for one more minute.
- Turn off the heat source and let the water cool.
- Pour water into a clean, sanitized container with a cover for storage.

Use bottled water or boiled water that has cooled for:

- Drinking
- Brushing teeth
- Washing fruits and vegetables
- Preparing food and baby formula
- Making ice
- Giving to pets

The advisory is in effect until [Water System] and [other agencies] are confident there is no longer a public health concern. We will provide the next update at [date or timeframe]. Customers will be notified immediately when the advisory is lifted.

Tests results from [date] showed [▲ contaminant] at [▲ levels/amount]. The [Primacy Agency/Health Department] is working closely with [Water System] to find the contamination source and fix the problem. [*Optional—include a quote from system spokesperson*]

To correct the problem, we are [▲ what is being done (e.g., chlorine was applied to the entire system)]. [▲ Give dates or time estimate for duration of the advisory, if possible]. [Number or No] illnesses related to the community's drinking water are reported.

▲ If you are concerned about your health or your family, call your healthcare provider or the [local health department].

[▲ Required EPA Health Effects Language for specific contaminant or violation. (■ Fecal coliforms and *E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk to infants, young children, some of the elderly, and people with severely compromised immune systems.)]

These symptoms are caused by many illnesses other than drinking water. [People at increased risk should seek advice about drinking water from their healthcare provider.]

[If applicable: (▲ Water System or City) customers may pick up (alternative water supply, bottled water) at (location and time).]

■ ▲ Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses).

For more information, go to [website] or call [▲ phone]. Mail inquiries should be sent to [▲ name], [Water System], [▲ address]. [If applicable, include health department contact.]

[*Optional—General guidelines on ways to lessen the risk of infection by microbes are available from the EPA Safe Drinking Water Hotline at 1-800-426-4791*.]

Frequently Asked Questions About Boil Water Advisories

PURPOSE

This list includes questions most often asked during boil water advisories. This information was developed from Centers for Disease Control and Prevention (CDC), Environmental Protection Agency (EPA), water system, and primacy agency materials. The content was adapted to help water systems provide customers with clear and concise information and actions to take.

Water systems are encouraged to use this information as a guide to help create their own fact sheets and other communication materials. Recommendations may vary depending on the circumstances and severity of water contamination. Select specific questions that are appropriate for each advisory situation.

This information is for Tier 1 Public Notices. For a waterborne disease outbreak, consult with local and state public health authorities to adapt the information.

While there are no federal regulations requiring boil water advisories, local authorities are responsible for issuing boil water advisories.

DIRECTIONS

- Brackets [ ] indicate places to insert specific information, such as the water system name, health department information, or the contaminant.
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- Media kits and updates
- Customer fact sheets
- Websites and online tools

Bottled Water

Should I drink bottled water during an advisory?

Yes. If bottled water is available, that is the best option until officials say otherwise. If you do not have bottled water available, the next best option is to boil your tap water to make it safe to drink.

Boiling Water

I do not have bottled water available for drinking. How do I boil my water to make it safe to drink?

- Fill a pot with water.
- Heat the water until bubbles come quickly from the bottom of the pot to the top.
- Keep heating the water for one more minute.
- Turn off the heat source and let the water cool.
- Pour water into a clean, sanitized container with a cover for storage.

I don't like the taste of boiled water. What can I do?

To improve the taste of boiled water you can:

- Pour cooled, boiled water back and forth from one clean glass or container into another to add air to the water, or
- Let the water stand for a few hours, or
- Add a pinch of salt to each quart of boiled water.

Why do I have to boil my water?

Your water [may be, is] contaminated by [bacteria, virus, protozoa, parasite]. Contamination [may be, is] due to [equipment failure, leaking/broken pipes in the system, insufficient disinfectant in the water supply]. The boil water advisory gives you information so you can take action to protect your health.

Disinfecting Water

I do not have bottled water for drinking and I cannot boil my water to make it safe to drink. How do I disinfect my water to make it safe to drink?

Caution: Water contaminated with fuel or a toxic chemical will not be made safe by boiling or disinfection. Use another source of water if you know or suspect that your water might be contaminated with fuel or a toxic chemical.

You will need a clean, sanitized container to store any water you disinfect. We recommend you clean and sanitize your container before you start to disinfect your water by following these steps:

1. Wash the storage container with dishwashing soap and water and rinse completely.
2. Sanitize the container with a solution made by mixing 1 teaspoon of unscented household bleach (bleach that does not have an added scent) in one quart (32 ounces, 4 cups, or about 1 liter) of water.

3. Cover the container and shake it well so that the sanitizing bleach solution touches all inside surfaces of the container.
4. Wait at least 30 seconds and then pour the sanitizing solution out of the container.
5. Let the empty sanitized container air-dry before use OR rinse the empty container with clean, safe water that is available already.

Note: When preparing safe water, it is best to use food grade water storage containers, such as those found at surplus or camping supply stores.

If you are not able to use a food grade water storage container, be sure the container you choose:

- Has a top that can be closed tightly
- Is made of durable, unbreakable materials (i.e. not glass)

DO NOT USE containers that previously have been used to hold liquid or solid toxic chemicals (bleach, pesticides, etc.)

To disinfect your tap water

If the tap water is clear:

- Use unscented household bleach (bleach that does not have an added scent). The label should say that it contains 8.25% of sodium hypochlorite.
- Add 6 drops (using a medicine dropper) or 0.5 milliliters of bleach to 1 gallon (16 cups) of water.
- Mix well and wait 30 minutes or more before drinking.
- Store disinfected water in a clean, sanitized container with a cover.

If the tap water is cloudy:

- Filter through a clean cloth
- Use unscented household bleach (bleach that does not have an added scent). The label should say that it contains 8.25% of sodium hypochlorite.
- Add 12 drops (using a medicine dropper), 1 milliliter, or 1/8 teaspoon of bleach to 1 gallon (16 cups) of water.
- Mix well and wait 30 minutes or more before drinking.
- Store disinfected water in a clean, sanitized container with a cover.

Food and Beverages

Can I use my coffee maker, ice machine, or water or soda dispenser?

Do not use water from any appliance connected to your water lines. This includes the water and ice dispensers in your refrigerator/freezer. Most kitchen and other household water filters typically do not remove or kill all bacteria or viruses.

- Use bottled, boiled, or disinfected water to make coffee and ice.
- When the boil water advisory is lifted, consult the owner's manual to find out how to sanitize appliances.

Can I use ice from my refrigerator/freezer?

- Do not use ice from ice trays, ice dispensers, or ice makers.
- Throw out all ice made with tap water.
- Make new ice with bottled, boiled, or disinfected water.

What should I do about preparing food and beverages? How should I wash fruit, vegetables, and food preparation surfaces?

- Wash fruits and vegetables with bottled, boiled, or disinfected water.
- Use bottled or boiled water that has cooled to cook food.
- Use bottled, boiled, or disinfected water when preparing drinks, such as coffee, tea, and lemonade.
- Wash food preparation surfaces with bottled, boiled, or disinfected water.

What should I do about feeding my baby?

Breastfeeding is best. Continue to breastfeed. If breastfeeding is not an option:

- Use ready-to-use baby formula, if possible.
- Prepare powdered or concentrated baby formula with bottled water. Use boiled water if you do not have bottled water.
- Wash and sterilize bottles and nipples before use with bottled or boiled water.
- If you cannot sterilize bottles, try to use single-serve, ready-to-feed bottles.

How do I wash dishes during a boil water advisory?

Use disposable plates, cups, and utensils, if possible. If you do not have disposable dishes, follow the instructions below.

Household dishwashers generally are safe to use. If possible, set your dishwasher so it is using a hot water rinse or sanitizing cycle.

To wash dishes by hand:

- Wash and rinse the dishes as you normally would using hot water.
- In a separate basin, add 1 teaspoon of unscented household liquid bleach for each gallon of warm water.
- Soak the rinsed dishes in the water for at least 1 minute.
- Let the dishes air dry completely before using them again.

Health

I already drank the water. Will I get sick?

Most people who happen to drink this water will not get sick. If you do get sick, the symptoms are similar to food poisoning: nausea, diarrhea, cramps, and possibly a mild fever.

What should I do if I have symptoms?

The most important thing to do is avoid dehydration. Drink plenty of fluids and avoid drinks with caffeine, such as soda, coffee, and tea. If you are concerned about your health or the health of a family member, contact your healthcare provider or [local health department].

Household Information

Note: Some of the answers related to pet health may need to be customized once the nature of the contaminant or chemical is known and its effects on animal health is determined.

Should I give my pets boiled water?

Yes. Pets can get sick from the same contaminants as people. It is a good idea to give them bottled, boiled, or disinfected water. Boiled water should always be cooled before using.

Do I need to worry about my fish or aquatic pets (e.g., reptiles, frogs)?

Most germs that infect people do not infect reptiles or fish. If your water system is using more chlorine or changing disinfection, be cautious about changing the water in your fish tank or aquarium. Standard aquarium operations require removal of chlorine and chloramines, which can be toxic to fish and reptiles.

Contact your local pet store or veterinarian for more information.

Is it safe to water my garden and house plants?

Yes, you can use the tap water for household plants and gardens.

Is it safe to let my children play in a kiddie pool filled with tap water?

No. Due to the high chance that children will get water in their mouth while playing in a kiddie pool, we recommend that you avoid using your kiddie pool during the boil water advisory.

What [microbe, organisms, germs, bacteria] might be in the water?

Many types of microbes could be in the water. Water systems are concerned about bacteria such as shigella, viruses such as norovirus, and parasites such as *Cryptosporidium*.

Human illness from these microbes is usually caused by eating raw or undercooked food, ingesting contaminated recreational or other untreated water, or poor hand-washing. Diarrheal illness from these microbes is not usually life threatening, except in the elderly, the very young, or those with weak immune systems. If you are concerned, consult your healthcare provider or contact [local health department].

Hygiene

Can I use tap water to wash my hands?

In many situations, you can use tap water and soap to wash your hands. Follow the guidance of your local public health officials or emergency managers. Be sure to scrub your hands with soap and water (warm or cold) for 20 seconds and rinse them well under running water. It is important to dry hands completely with a towel or by letting them air dry.

Can I use tap water to brush my teeth?

No. Use bottled water or boiled water that has cooled to brush your teeth.

Is it safe to take a shower or bath?

Yes, it is safe to take a bath or shower, but be careful not to swallow any water. Use caution when bathing babies and young children. Consider giving them a sponge bath to reduce the chance of them swallowing water.

What about shaving?

Yes, you can shave as usual.

What about doing laundry?

Yes, it is safe to do laundry as usual.

For more information, see or contact:

- **Creating & Storing an Emergency Water Supply**: CDC provides guidance on the amount of water needed for good health, as well as how to prepare and store safe water before and during an emergency.
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- **Ground Water and Drinking Water**: EPA provides information and guidance about drinking water quality, emergencies, contaminants, public health issues, and treatment and storage.
- Water system: [name, title, phone, e-mail, website]
- State or local public health department: [name, title, phone, e-mail, website]
- Primacy Agency: [name, title, phone, e-mail, website]

Guidelines for Food Service Facilities During and After a Boil Water Advisory

During a Boil Water Advisory

When a boil water advisory is issued that affects a food service establishment and the local health department does not indicate that food service establishments must close, the following precautions should be taken by food service facilities until they are notified by authorities that the advisory has ended.

General

- Post signs or copies of the water system's health advisory.
- Develop a plan to notify and educate employees about emergency procedures.

Food Preparation

- Shut off appliances that use tap water, such as ice machines, drinking fountains, produce misters, bottled water refill machines, soft drink fountains connected to the water supply, and water dipper wells.
- Discard ice and mixed beverages made with contaminated water.
- Use packaged ice from approved sources.
- Use bottled water, boiled water, or water that has been disinfected with bleach for drinking, food preparation, washing produce and cooking.
- If possible, use disposable plates, cups, and utensils.

Hygiene and Cleaning

- Wash hands with soap and tap water. When you are done washing and drying your hands, use an alcohol based hand-sanitizer and let hands air dry.
- Commercial dishwashers generally are safe to use if the water reaches a final rinse temperature of at least 165°F–180°F, as determined by your local or state authorities.
- If you are not able to use disposable plates, cups, and utensils and do not have a dishwasher, wash dishes by hand following these instructions:
- Wash and rinse the dishes as you normally would using hot water.
    - In a separate basin, add 1 teaspoon of unscented household bleach for each gallon of warm water. The bleach label should say that it contains 8.25% of sodium hypochlorite.
    - Soak the rinsed dishes in the water for at least 1 minute.
    - Let the dishes air dry completely before using again.

The local health department may add requirements to protect public health during the boil water advisory, such as modifying food preparation, prohibiting menu items or closing operations. Consult with [health department contact] for specific requirements.

For more information, contact:

[Utility contact name] [Utility contact phone number] [Utility website]
[Local public health department phone number][Local public health department website]

After a Boil Water Advisory

When a food service establishment is notified that the boil water advisory has been lifted and the drinking water supply is safe, the following actions need to be taken.

- Flush pipes throughout the facility by running each faucet with cold water for [X] minutes.
- Flush, clean, and sanitize appliances that use tap water (such as beverage dispensers, spray misters, coffee and tea urns, ice machines, glass washers, dishwashers) according to the manufacturer's instructions.
- Run water softeners through a regeneration cycle.
- Flush hot water tanks.
- Run drinking fountains continuously for [X] minutes to flush the system.
- Replace and sanitize water filter cartridges according to the manufacturer's instructions.
- Take proper steps to flush ice machines by following the manufacturer's instructions, including:
    - Throw out any remaining ice.
    - Flush the water line to the machine inlet.
    - Close the valve on the water line behind the machine.
    - Disconnect the water line from the machine inlet.
    - Open the valve and run 5 gallons of water through the valve.
    - Dispose of the water.
    - Close the valve.

For more information, contact:

[Utility contact name] [Utility contact phone number] [Utility website]
[Local public health department phone number][Local public health department website]

Frequently Asked Questions About Boil Water Advisories

PURPOSE

This list includes questions most often asked during boil water advisories. This information was developed from Centers for Disease Control and Prevention (CDC), Environmental Protection Agency (EPA), water system, and primacy agency materials. The content was adapted to help water systems provide customers with clear and concise information and actions to take.

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Hygiene

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Can I use tap water to brush my teeth?

No. Use bottled water or boiled water that has cooled to brush your teeth.

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What about shaving?

Yes, you can shave as usual.

What about doing laundry?

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For more information, see or contact:

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- **Ground Water and Drinking Water**: EPA provides information and guidance about drinking water quality, emergencies, contaminants, public health issues, and treatment and storage.
- Water system: [name, title, phone, e-mail, website]
- State or local public health department: [name, title, phone, e-mail, website]
- Primacy Agency: [name, title, phone, e-mail, website]

APPENDIX F PARTICIPANT EVALUATION

Please enter your responses in the form field or check box after the appropriate selection.

Name **Title**

Agency

Role Player ☐ Facilitator ☐ Observer ☐ Evaluator ☐

Part I Recommendations and Corrective Actions

1. Based on the discussions today and the tasks identified, list the top three strengths and/or areas that need improvement.

   1. _____
   2. _____
   3. _____

2. Identify the action steps that should be taken to address the issues identified above. For each action step, indicate if it is a high, medium, or low priority.

Corrective Action	Priority

3. Describe the corrective actions that relate to your area of responsibility. Who should be assigned responsibility for each corrective action?

Corrective Action	Priority

4. List the policies, plans, and procedures that should be reviewed, revised, or developed. Indicate the priority level for each.

Review Item	Priority

Part II Exercise Assessment

On a scale of 1 to 5, rate your overall assessment of the exercise relative to the statements provided below, with 1 indicating strong disagreement with the statement and 5 indicating strong agreement.

Assessment Factor	Strongly Disagree				Strongly Agree
The exercise was well structured and organized.	1	2	3	4	5
The exercise scenario was plausible and realistic.	1	2	3	4	5
The multimedia presentation helped the participants understand and become engaged in the scenario.	1	2	3	4	5
The facilitator(s) was knowledgeable about the material, kept the exercise on target, and was sensitive to group dynamics.	1	2	3	4	5
The Situation Manual used during the exercise was a valuable tool throughout the exercise.	1	2	3	4	5
Participation in the exercise was appropriate for someone in my position.	1	2	3	4	5
The participants included the right people in terms of level and mix of disciplines.	1	2	3	4	5

Part III Participant Feedback

What changes would you make to this exercise? Please provide any recommendations on how this exercise or future exercises could be improved or enhanced.