

Overview

Security is important for drinking water systems of all sizes. While the mission of public water systems has always been to deliver a dependable and safe supply of water, the challenges inherent in achieving that mission have expanded to include an increased emphasis on security and emergency response planning. State drinking water primacy agencies, along with other state agencies and organizations, are working to support this “all hazards” approach and enhance the security and emergency response capabilities of public drinking water supplies by:

- providing training and technical assistance;
- integrating security and emergency response into other drinking water program areas;
- increasing communication among inter-state and intra-state agencies, and
- improving measures to protect the public from bioterrorism, man-made threats, and natural disasters.

Integration is one important way state primacy agencies can help to incorporate security into their capacity development strategies. For example, capacity self-assessment forms used by many states help small systems analyze their technical, managerial, and financial (TMF) capabilities. Adding security and emergency response-related questions to these forms will help systems consider elements of basic security and enable them to explore options that improve performance and enhance security.

This brochure focuses on the needs of drinking water systems serving 3,300 or fewer persons and illustrates how states can use existing tools—such as capacity self-assessments—to help systems address security concerns. It also explains why states should encourage systems to assess their vulnerabilities and plan for emergencies.

How Does a Security “All Hazards” Approach Help Capacity Development?

A well managed, financially sound, and technically proficient water system is better prepared and positioned to respond to any type of emergency. Any system that has: identified and assessed its physical, human, and cyber vulnerabilities; taken positive steps to reduce its risk to manmade and naturally occurring events; devised a strategy to cover improvement costs; and shared strategic decision points with its customers is an excellent example of a system that demonstrates TMF capacity.

Assessing vulnerabilities and planning for emergencies are important actions for all systems to take because vulnerability assessments help identify and assess the risks posed by both potential attacks and natural disasters. They also can help systems plan to reduce risks and respond to emergencies. Some small water systems may already have emergency response plans (ERPs) that address such issues as the handling and use of chlorine or loss of power. However, most small system ERPs do not address the potential for intentional attacks or the consequences of pandemic influenza, so states should consider helping systems design or revise their ERPs to address these possibly disastrous situations. Each of these activities also support one or more elements of TMF capacity.

How Can State Capacity Development Programs Help Small Systems Improve Security?

State capacity development programs help drinking water systems acquire and maintain the TMF capabilities needed to consistently achieve the Safe Drinking Water Act's (SDWA's) public health objectives. The fundamental goal of capacity development assistance and oversight is to improve a system's ability to provide a safe and reliable supply of drinking water. Ensuring that a water system has adequate security is an integral part of reaching that goal.

States can use their capacity development programs to help small systems better position themselves to prepare for, detect, deter, respond, and recover from any incident – whether man-made, ranging from vandalism to intentional contamination, or natural disasters such as hurricanes, tornadoes, or earthquakes. Combining these efforts will enable systems to continue to improve TMF capacity while also protecting against threats and being better positioned to recover from an event. The capacity self-assessments that many states use are excellent tools to incorporate security and emergency response activities. Adding security-related questions to an existing self-assessment can:

States can use their capacity development programs to help small systems identify and implement new security measures and strengthen existing ones.



Destruction in the wake of Hurricane Katrina

- *Help systems consider security and ERP strengths and weaknesses;*
- *Help states and systems coordinate planning and response capabilities to further protect public health;*
- *Help states target technical assistance, training and funding opportunities for security enhancements.*

Achieving Integration: Bringing Security and Capacity Development to Small Systems

Assessing the vulnerability of a water system can be integrated into systems' efforts to achieve and maintain TMF capacity. Coordinating these efforts will enable systems to improve performance and be better prepared for any emergency. The following questions are intended primarily for use with existing capacity self-assessment forms; however, the questions can be incorporated into capacity development efforts in other ways to meet the needs of individual states.

Technical Capacity

The following questions relate to the technical capabilities of a water system. Ensuring the security of a system's infrastructure, equipment, and water source, and planning for continued operation in the event of an attack or natural disaster are important components of **TECHNICAL CAPACITY**.

1. Does the system have a plan to protect its facilities? Security procedures, including limiting access to sensitive sites such as treatment facilities and areas where data (electronic or hard copy) are stored, will help protect system facilities. Developing procedures to protect the system (including its physical infrastructure and computer and Supervisory Control and Data Acquisition [SCADA] systems) will help reduce the threat posed by disgruntled personnel or others. Password control should be a priority.



Fencing provides security for an impoundment.

2. Does the system have basic physical security components, such as door locks and fencing? An effective way to improve technical capacity and protect a public water system against vandalism and other acts of destruction is to lock all facilities (e.g., buildings, storage hatches, and access gates) and fenced in infrastructure components such as well heads, storage tanks, equipment, and water treatment plants (especially areas where chemicals are stored or used). Roads to treatment plants, storage tanks, and other facilities should be properly gated, locked, and routinely inspected.

3. Does the system have a policies and procedures manual, and does the manual include security-related information? Having a policies and procedures manual will help to ensure that system personnel have a plan of action and are equipped to handle emergencies when they arise. An ERP can establish a clear chain of command in the event of any security or disaster-related event. It should specify which staff members are responsible for alerting the police, securing facilities, and contacting customers.

4. Is there security-related training available to the operator? As part of a state's operator certification or other educational programs, operators should be encouraged to participate in security-related training. Such training can inform operators about the types of emergencies that may occur, the appropriate response procedures, and new tools and security-related information that are available.

5. Are critical facilities and components inspected as part of the operator's daily routine? Increased frequency of inspections of water system components and infrastructure will increase the opportunities to identify and address signs of tampering, vandalism, or potential disruption. It may also help identify a time frame when the incident could have occurred which will assist in determining the type and level of response needed.

6. Does the operator(s) know the location of existing hydrants and valves? The operator should routinely exercise valves and make sure there are enough valves, in the proper locations, to isolate any contaminated parts of the system. Hydrants should be flushed on a regular schedule and locked when not in use.



A sign warns against tampering with this hydrant



Public access to storage facilities should be restricted

7. Have abandoned wells and intakes been properly removed from service? Abandoned wells should be filled completely with grout to prevent accidental or intentional contamination of an aquifer that provides drinking water. Such wells and abandoned surface water intakes should all be physically disconnected from the system.

8. Are chemicals used for treatment properly stored? Flammable or explosive chemicals should be stored in locked areas with proper safety equipment. Upon delivery, the operator should review the chain of custody sheet or bill of lading, stock numbers to verify chemicals are certified for potable water, and material safety data sheets.

9. Does the water system track chemical usage? The operator should make sure that records of water and chemical use are kept and routinely updated. A sudden increase in chemical or water use may signal potential contamination or tampering with chemical supplies.

10. Is the entire staff properly trained in the location and use of safety equipment? Staff should know where the safety equipment is and how to use it with confidence during an emergency. Routine safety drills will help improve familiarity with safety equipment and operation. Safety equipment should be checked routinely to ensure proper performance.

11. Does the system have a backflow prevention or cross-connection control program in place? Unprotected cross-connections can result in serious chemical or microbiological contamination. Cross-connections should be protected in order to prevent backflow, which can be hard to detect. In any distribution system, potential cross-connections, and therefore sources of contamination can be numerous, varied, and unpredictable. Having these programs in place can help avoid the costs of responding to a contamination incident.

Managerial Capacity

Ensuring that procedures are in place to handle a breach of security or a natural disaster is an extension of managerial capacity. The questions below will help systems identify communication gaps and vulnerabilities, as well as the security procedures necessary to ensure adequate **MANAGERIAL CAPACITY**.

1. Has the system taken measures to improve security? To be prepared for a natural disaster or man-made emergency, a system may need to improve existing infrastructure and security-related measures. States can encourage small systems to take a variety of measures, including preparing a vulnerability assessment, an ERP, or both, to assess their security strengths and weaknesses.

2. Are written procedures for operating the system in place and updated regularly? Written procedures are important for consistent operation and are particularly useful for helping new staff members understand the system. Written procedures are important for facilities operated by SCADA systems so that if the SCADA network fails, the water system can be operated manually. Written procedures—plus training—will facilitate continued operation of the system before, during, and after an emergency occurs.

3. Does the system have procedures for handling new and former employees (e.g., collecting keys, changing locks and computer passwords)? New personnel and disgruntled or terminated employees may present a potential security risk. Limiting access to secure areas using photo identification and developing procedures to protect system components (including physical infrastructure, computer, and SCADA systems) will help to reduce potential threats to the system. Systems should practice proper hiring procedures and should conduct background checks on all employees.



4. How does the system receive information about state security programs?

A water system's knowledge of good security plans and procedures is an indicator of managerial capacity. A system that understands SDWA requirements and state-specific protocols, knows how to comply with them, and has the capability (e.g., equipment and expertise) to comply will also be better prepared to protect public health during an attack, incident, or emergency situation.

5. Does the system communicate regularly with state and local officials, including law enforcement, on security matters? Using established communication channels with state agencies and local law enforcement, water systems can improve their security risk management by increasing their awareness of new developments and tools. These channels can also provide state and local officials with up-to-date system contact information. One of the most advantageous means of achieving this communication is through participation in a mutual aid network.

6. Has the system established a good working relationship with local emergency response and local health agencies? Coordinating with local emergency response agencies provides water system personnel with information about potential threats. Coordinating with local health officials provides opportunities for information exchange to meeting common public health protection goals. These relationships will enable the system to identify other state and local officials who should be notified about breaches of security, natural disasters, and other health crises.

7. Is the system routinely patrolled by local law enforcement, and do the local law enforcement personnel know whom to call at the system in an emergency? Because they are often the first to respond in an emergency, local law enforcement should be familiar with public water system facilities. Providing local law enforcement with a list of public water system contacts (including home and cellular telephone numbers) and their responsibilities will help ensure that facilities and customers are safeguarded in the event of an emergency. Systems should be encouraged to invite local law enforcement to tour their facilities and should provide information about important system components, including their locations.

8. Does the operator know whom to contact in the event of an emergency, and does the system maintain a written list of contacts? Water system operators should know whom to call in case of natural disaster and in response to criminal threats and security breaches. The water system should create and maintain a list of contacts that is updated periodically for this purpose. The method of notification and the appropriate contact person will depend on the type of threat.

9. Has the system developed a communication plan to alert customers to a natural or intentional threat to public health? A clear communication plan ensures that the public is alerted when a natural disaster or criminal attack leads to changes in the water supply. Management must be able to notify and provide instructions to the public quickly and efficiently before, during, and after an emergency occurs.

10. Does the system work with citizens to promote security awareness? Communication between system personnel and customers is an important indicator of managerial capacity. Systems can educate and empower consumers so they can effectively and inexpensively act as security agents to protect system facilities, similar to neighborhood watch programs.

11. Has the system conducted or participated in tabletop or other practice scenarios for water security or taken advantage of available security training on topics such as Incident Command System (ICS)? Operators are a small system's first line of defense. It is critical that they have the knowledge and understanding to respond appropriately in time of crisis. Tabletop exercises, held in coordination with first responders, emergency management personnel, and law enforcement, can help ensure that any necessary response is appropriate, timely, and well coordinated. Small systems should also be aware of recent Federal requirements for compliance with the National Incident Management System-Incident Command System as a condition of eligibility for Federal funding.



Tabletop exercises are useful for planning coordinated responses to security threats

Financial Capacity

Having sufficient resources, or access to adequate financial capital, is important when addressing security-related matters. Systems need to be prepared financially to deal with emergencies to ensure continued service, protection of public health, and economic stability of the community. The following questions will help determine if a system's current financial situation and planning efforts will ensure adequate **FINANCIAL CAPACITY** to address security-related matters.

- 1. Do the rates cover the costs of security planning and response needs, and are the rates reviewed at least annually?** Annual reviews of water rates should be a part of a system's financial planning. These reviews help ensure that water rates continue to cover all costs. Anticipating costs early will help the system prepare for necessary improvements and will allow the impacts on system revenues to be spread out over time.
- 2. Does the system's budget include resources for assessing vulnerabilities and planning for emergencies?** A budget that allows a system to assess vulnerabilities and properly prepare for emergencies will ensure that the water it delivers is safe and consumers are not at risk.
- 3. Does the system's budget include resources for staff training in security matters?** Having capable staff on hand in an emergency is the first line of defense for a water system. A budget that ensures the system has the appropriate staff to handle emergencies is an important part of water system financial capacity. Funding for training in security matters will prepare system operators and other personnel to deal effectively with emergencies.
- 4. Does the system produce and use a capital improvement plan that includes security upgrades and components?** A capital improvement plan is an important part of a system's long-term financial future. Security improvements that a system plans to make during the next 5-7 years should be accounted for in its capital improvement plan.
- 5. Does the system have reserve funds available in the event of an emergency?** In an emergency, a water system may need quick access to capital. An emergency reserve fund will help prepare the system to meet the financial obligations that may arise (e.g., pumps, chemicals, renting equipment, supplemental staff)
- 6. Does the system's budget include funds to communicate with the public to promote security awareness?** Allocating funds to develop communication materials that promote security awareness will ensure that consumers understand potential security threats, know how to help in case of an emergency, and understand the system's ongoing efforts to improve security. Some systems promote security awareness through neighborhood watch programs and other community efforts.
- 7. Does the system's budget include funds to develop and implement a communications plan to alert customers in an emergency?** An emergency may affect a system's ability to provide safe drinking water to the public. Preparing and implementing a communications plan will ensure that staff know how to provide information to the public and partners in an emergency.





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Communication: Building and Strengthening Partnerships

Communication is a key to system security. To help systems improve security, states should encourage them to develop and enhance a wide range of communication tools, such as:

Mutual Aid and Assistance Networks

- A mutual aid and assistance agreement is the foundation of the utilities helping utilities concept and it outlines the parameters for one utility to provide personnel, equipment, or other resources to another utility during an emergency. Throughout the nation, utilities are joining together to form Water/Wastewater Agency Response Networks (WARNs)—intrastate mutual aid and assistance programs in which utilities within the state sign a common mutual aid and assistance agreement.

Health Network (Pandemic Influenza + Local Health Officials)

- Using existing relationships between water systems and state and local officials ensures that system owners or operators are alerted to new security developments and tools for implementing security initiatives. It also ensures that the state has up-to-date contact information and knows about system security efforts and needs.

Water Security Channel (WaterSC)

- This free electronic newsletter helps water systems keep up-to-date with the latest news and events specific to water security. WaterSC sends out bulletins and advisories issued by USEPA and the Department of Homeland Security (DHS). The WaterSC also maintains a password-protected Internet library of federal advisories.

Developing new networks. States should encourage water systems to work with community organizations, stakeholders, customers, local public safety groups, and public health departments to capitalize on the benefits of networking to improve security and response efforts. States should encourage systems to:

- Work with Local Emergency Planning Committees (LEPCs) to coordinate emergency response efforts. A typical LEPC is made up of representatives of the municipal government, fire department, hospitals, environmental organizations, and citizen groups; law enforcement and other emergency response officials; industry; and other interested parties. LEPCs are charged with developing accident prevention strategies and improving capabilities to respond to releases of hazardous chemicals. Water systems can coordinate with their LEPCs to learn about potential threats, identify emergency response procedures, and develop consumer notification protocols.
- Develop relationships with consumers and stakeholders by creating citizen watch groups. By increasing communication between consumers, stakeholders, and system personnel, these watch groups can be an effective and inexpensive way to improve water system security.
- Work with hospitals and local pharmacies to address patterns of illness that may be associated with contaminated drinking water. In many instances, the local medical community (e.g., hospital emergency rooms, clinics, and pharmacies) may be the first to discover a potentially widespread public health threat.

Maintaining contact information lists. These lists are important tools for systems to use when developing emergency response strategies. States should encourage systems to identify contacts (including names and phone numbers, as well as, where appropriate, home and cellular telephone numbers) for these organizations and place the information in the system's O&M manual:

- Local public safety (police, fire, and county sheriff's department)
- LEPCs
- Neighboring drinking water utilities
- State drinking water officials
- Local and state public health departments
- Hazardous materials (Hazmat) response teams
- Critical customers, including hospitals, schools, and industries
- Power companies
- Newspapers/Media
- Critical suppliers (chemicals, equipment)
- WARN or mutual aid and assistance network

Additional Information

States also may want to encourage the use of many security-related documents, workbooks, and checklists that can help small water systems improve security.

- U. S. Environmental Protection Agency (EPA)
... <http://cfpub.epa.gov/safewater/watersecurity/index.cfm>
- American Water Works Association (AWWA),
- Association of State Drinking Water Administrators (ASDWA),
- National Rural Water Association (NRWA),
- Rural Community Assistance Program (RCAP)
- National Environmental Services Center (NESC)

Selected T^MF Capacity-Specific Information

Technical Capacity

Infrastructure Adequacy - Source Water Protection - System Operations

- **Water Security Research and Technical Support Action Plan**
... www.epa.gov/safewater/watersecurity/pubs/action_plan_final.pdf
- **Emergency/Incident Planning** ... cfpub.epa.gov/safewater/watersecurity/home.cfm?program_id=8
- **Interim Voluntary Security Guidance for Water Utilities (includes Tips for Small Systems)**
... www.awwa.org/science/wise/report/cover.pdf
- **EPA Security Product Guides** ... cfpub.epa.gov/safewater/watersecurity/guide/tableofcontents.cfm
- **EPA Emergency Response Plan for Small and Medium Systems**
... www.epa.gov/safewater/watersecurity/pubs/small_medium_ERP_guidance040704.pdf

Managerial Capacity

Effective External Linkages - Ownership Accountability - Staffing and Organization

- **Emergency Response Tabletop Exercises** ... www.epa.gov/safewater/watersecurity/tools/trainingcd/
- **Top Ten List for Small Groundwater Suppliers**
... www.epa.gov/safewater/watersecurity/pubs/fs_security_smallsuppliers_top10.pdf
- **AWWA WARN** ... www.awwa.org/Advocacy/govtaff/issues/Issue07_Water_Response_Networks.cfm

Financial Capacity

Credit Worthiness - Fiscal/Management Controls - Revenue Sufficiency

- **EPA Water Security - Grants and Funding** ... cfpub.epa.gov/safewater/watersecurity/financeassist.cfm
- **Drinking Water State Revolving Fund (DWSRF)** ... www.epa.gov/safewater/dwsrf/index.html
- **NIMS/ICS Training** ... www.nimsonline.com/ics_training/index.htm

Full-size graphic is available online at http://www.epa.gov/safewater/watersecurity/pubs/brochure_top10.pdf

TOP TEN LIST

Water Supply Emergency Preparedness and Security for Law Enforcement

Balancing public health protection, evidence preservation, public alerts, multi-agency coordination, and the safety of first responders will be a difficult task. These are ten ideas to help you achieve that balance:

- 10 Know the water systems in your jurisdiction** including the location and function of each water supply source and facility.
- 9 Conduct walk through familiarization exercises** regularly with water supply personnel. Discuss areas of system vulnerability.
- 8 Know the chemicals,** at each facility. Be familiar with emergency response procedures and routine chemical delivery procedures and schedules.
- 7 Meet water supply personnel** face to face. Know official vehicles and identification badge or card type.
- 6 Work with established community watch groups.** Be sure to include a feedback mechanism for future support.
- 5 Respond, investigate and report** each and every incident involving water supply facilities using the appropriate reporting form. Contact the water supplier about any incident if they are not already present.
- 4 Participate in public notification strategies** in context with local emergency response plans. Know the clearly established communications responsibilities.
- 3 Exercise vigilance** during patrols for suspicious activity including those of vehicle movement, fire hydrant incidents or any other unusual incidents near water supply facilities.
- 2 Know the Homeland Security Advisory System** response steps for law enforcement personnel.
- 1 Water supply security...for the community and for your safety!** All law enforcement personnel must be cognizant that both individual and collective efforts for increased water supply security will enhance community and officer safety.

visit us on the web at:
<http://www.epa.gov/safewater/security/>

Local water supplier phone #:

printed on 100% recycled paper, with a minimum of 50% post consumer waste, using vegetable based inks

Additional Resources

EPA Small Systems Web site	www.epa.gov/safewater/smallsys.html
EPA Security Web site	cfpub.epa.gov/safewater/watersecurity
EPA Drinking Water Academy	www.epa.gov/safewater/dwa.html
EPA Homeland Security Research	www.epa.gov/ordnhsrc
EPA Emergency Preparedness	www.epa.gov/ebtpages/emergencypreparedness.html
EPA Lab Compendium	www.epa.gov/compendium
EPA Water Contaminant Information Tool	www.epa.gov/wcit
Water Security Channel	www.watersc.org
Center for Disease Control	www.bt.cdc.gov
Department of Homeland Security	www.dhs.gov
FEMA Emergency Management Institute	www.training.fema.gov/IS/ceus.asp
FEMA National Incident Management System Integration Center	www.fema.gov/emergency/nims/index.shtm
US National Response Team	www.nrt.org
Water Health Connection	www.waterhealthconnection.org

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