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Safeguarding the Nation's Drinking Water: EPA and Congressional Actions

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Summary

The events of September 11, 2001, focused attention on the security status of the nation's drinking water supplies and their vulnerability to attack. Since then, Congress has enacted security requirements for public water systems and provided funding for vulnerability assessments, emergency planning, and drinking water research. Key issues that continue to draw congressional attention include the capacity of water utilities and relevant first responders to prevent, detect, and respond to attacks; and the status of efforts by water utilities to assess vulnerabilities, improve preparedness and response capabilities, and make security improvements.

After a presidential commission on critical infrastructure protection identified vulnerabilities in the water sector in 1997, the Environmental Protection Agency (EPA), with other federal agencies, water utilities, and state and local governments, began taking steps to improve the security of water systems. The 1998 Presidential Decision Directive (PDD) 63 on protecting critical infrastructure designated EPA as the lead federal agency for the water sector; however, efforts focused almost entirely on cyber security. Since 2001, EPA and its water sector partners have pursued an array of actions intended to enhance the security of water supplies and infrastructure.

The 107th Congress passed legislation to address water security issues. The *Public Health Security and Bioterrorism Preparedness and Response Act of 2002* (P.L. 107-188) required some 8,400 water systems to assess vulnerabilities and prepare emergency response plans. The act authorized funding for these activities and for emergency grants to states and utilities, and it directed EPA to review methods to prevent, detect, and respond to threats to water safety and infrastructure security. In addition, Congress has appropriated funds each year for EPA to work with the water sector to improve the security of drinking water supplies.

In the *Homeland Security Act of 2002* (P.L. 107-296), Congress created a Department of Homeland Security (DHS) and gave DHS responsibility for assessing and protecting the nation's critical infrastructures. However, the act did not transfer EPA's water security functions, and in December 2003, the White House issued Homeland Security Presidential Directive (HSPD-7), confirming EPA's lead role in protecting the water infrastructure sector from terrorist attacks or sabotage.

Although EPA, states, localities, and water utilities have taken various steps to address security concerns, the security status of the nation's water supplies has continued to attract congressional interest. Issues have included the availability of funding for public water systems to make security upgrades; the relative roles and responsibilities of EPA and DHS regarding the water sector; and the status of research and development of technologies to help water systems identify, remove, and inactivate potential biological and chemical contaminants. This report reviews governmental and water utility efforts to improve drinking water security. It will be updated to reflect developments.

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Background

Ensuring the security of the nations' drinking water supplies poses a substantial challenge, partly because the number of water systems is very large and also because the responsibility for protecting drinking water safety is shared among federal, state and local governments and utilities. Nationwide, there are nearly 160,000 public water systems, and these systems range greatly in size, serving from as few as 25 persons to more than 1 million persons. More than 131,000 of these water systems serve 500 people or fewer. Approximately 400 systems serve more than 100,000 people and provide water to nearly half of the total population served. Because water supplies support many uses (from drinking water to fire suppression), their disruption could have significant impacts.

A 1996 executive order on critical infrastructure protection (E. O. 13010), included water supply systems as one of 8 national infrastructures vital to the security of the United States.[1] In 1997, the President's Commission on Critical Infrastructure Protection (created by the executive order) issued a report on the vulnerabilities of these infrastructure sectors and strategies for protecting them. The Commission identified three attributes crucial to water supply users: water must be available on demand, it must be delivered at sufficient pressure, and it must be safe for use.[2] Actions affecting any of these factors could be debilitating for the infrastructure.

Major threats to water supplies include physical destruction of facilities or distribution systems, biological or chemical contamination of supplies, and cyber attacks. The 1997 Commission concluded that water supplies had inadequate protection against the threat of chemical or biological contamination, and that technology was insufficient to allow detection, identification, measurement, and treatment of highly toxic, waterborne contaminants. Water utilities were also found to be vulnerable to cyber attacks as they rely increasingly on computers to control water flow and pressure. Information sharing was the most immediate need, and warning and analytical capabilities and research and development all were found to be insufficient. (For a broader review of water sector security issues (including dams and sewage treatment plants), see CRS Report RL32189, *Terrorism and Security Issues Facing the Water Infrastructure Sector*, by Claudia Copeland and Betsy Cody.)

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[1] For a review of critical infrastructures, related security issues and protection initiatives, and activities within the Department of Homeland Security, see CRS Report RL30153, *Critical Infrastructures: Background, Policy, and Implementation*, by John D. Moteff.

[2] The President's Commission on Critical Infrastructure Protection, *Critical Foundations: Protecting America's Infrastructures. Report of the President's Commission on Critical Infrastructure Protection*, Appendix A, Sector Summary Reports, Oct. 1997, p. A-45.

In response to these findings and related developments, President Clinton, in 1998, issued Presidential Decision Directive (PDD) 63 on critical infrastructure protection. Under this directive, a public/private partnership was established to put in place prevention, response, and recovery measures to ensure the security of the nation's critical infrastructures against criminal or terrorist attacks. PDD-63 designated EPA as the lead federal agency for the water supply sector, and EPA appointed the Association of Metropolitan Water Agencies (AMWA) to coordinate the water sector. Before September 11, however, the main focus of PDD-63 efforts for all critical infrastructure sectors was on cyber security. Subsequently, efforts to protect the nation's critical infrastructures were expanded markedly.

Homeland Security Presidential Directive 7 (HPSD-7), issued in December 2003, affirmed EPA as the lead federal agency for coordinating the protection of the nation's critical infrastructure for the water sector. To carry out its water sector responsibilities, EPA established a Water Security Division within the Office of Ground Water and Drinking Water. This Division works with drinking water and wastewater utilities, states, tribes, and other stakeholders to improve the security of these utilities and improve their ability to respond to security threats and breaches. Among its responsibilities and activities, the Water Security Division provides security and antiterrorism-related technical assistance and training to the water sector. Although the Water Security Division was established in 2003, the Office of Water has provided security-related assistance to its stakeholders for a number of years. Several key initiatives are discussed below.

EPA Actions to Increase Drinking Water Security

EPA believes that the threat of public harm from an attack on the nation's water supplies is small. Nonetheless, in October 2001, the agency set a goal to ensure that water utilities in all communities (1) have access to scientific information and expertise, (2) assess their vulnerability to a terrorist attack, (3) improve security, and (4) know the immediate steps to take should an attack occur.

The Agency has worked with state, local, and tribal governments, the drinking water industry, training organizations, and other federal agencies to improve preparedness and increase the security of public water supplies. Security-related activities have fallen into five general categories, including (1) establishing an information center for drinking water alerts or incidents; (2) developing vulnerability assessment tools; (3) identifying actions to minimize vulnerabilities; (4) revising emergency operations plans; and (5) supporting research on biological and chemical contaminants considered to be potential weapons of mass destruction. Several key government and private sector efforts are described below.

Information Sharing and Analysis. One goal of PDD-63 in 1998 was to establish an Information Sharing and Analysis Center (ISAC) for each critical infrastructure sector. With assistance from EPA and the Federal Bureau of Investigation (FBI), the Association of Metropolitan Water Agencies has led the effort to develop and implement an ISAC for water utilities. The Water ISAC provides a communications link between the water sector and federal homeland security, law enforcement, intelligence, environmental, and public health agencies. This secure, web-based communication system is intended to disseminate information

regarding threats against the physical and cyber systems of drinking water and wastewater facilities, allow drinking water and wastewater utilities to share information on security incidents, and provide an opportunity for utilities to have security incidents analyzed by counter-terrorism experts.[3]

Vulnerability Assessment Tools and Technical Assistance. Concern over the security of drinking water infrastructure and supplies had grown among water utilities during the 1990s. In 2000, the American Water Works Association Research Foundation (AWWARF) and the Sandia National Laboratories, with EPA support, initiated a project to develop a methodology for utilities to use to assess their vulnerabilities and develop plans to minimize identified risks. The project was expedited after the September 11 attacks, and completed in November 2001. This methodology, known as the Risk Assessment Methodology for Water Utilities (RAM-W), has been used widely by large water systems to develop vulnerability assessments. Subsequently, states and drinking water organizations, in collaboration with EPA, developed several other vulnerability assessment tools to assist water systems of various sizes, with a particular focus on the needs of medium and small drinking water systems.

EPA also has worked with states and drinking water organizations to provide technical assistance to utilities on a wide range of security matters. Much of this assistance is aimed at helping smaller water systems, which typically are least likely to have the capacity to address security concerns. The agency has used "train-the-trainer"grants to build a pool of environmental professionals that has provided training and technical assistance to water systems serving fewer than 50,000 people.[4] In addition, on-site assistance for vulnerability assessment and emergency response planning has been made available to small and medium wastewater utilities at no cost through the Wastewater Operator Training Program.

In 2002, EPA issued model emergency response guidelines to provide uniform response, recovery and remediation guidance for water utility actions in response to man-made or technological emergencies. The guidance describes minimum actions that EPA recommends be carried out by water utilities for various described events, and identifies federal responsibilities and capabilities that can support local response efforts.[5] EPA also issued a water security strategy for systems serving fewer than 100,000 persons.[6]

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[3] For further information on the Water ISAC, see [http://www.waterisac.org].

[4] EPA generally does not perform security training; rather, the agency delivers training at locations across the country through stakeholder organizations and other federal partners. Organizations that provide training include professional associations, such as the American Water Works Association, the Water Environment Federation, and the National Rural Water Association. Congress has provided some grant funds to these organizations, through EPA, to support their water security training activities.

[5] U.S. Environmental Protection Agency, *Guidance for Water Utility Response, Recovery & Remediation Actions for Man-Made and/or Technological Emergencies*, EPA 810-R-02-001, April 2002. Available at [http://www.epa.gov/safewater/security].

[6] U.S. Environmental Protection Agency, *Water Security Strategy for Systems Serving* (continued...)

In October 2003, EPA awarded a grant to several associations to support the development of voluntary physical security guidance and standards for water and wastewater systems. The $1.6 million grant has supported an initiative developed by AWWA, the American Society of Civil Engineers, and the Water Environment Federation to develop new and update existing industry guidelines and standards to reduce risks associated with terrorist events and natural disasters. The guidance documents are intended to help local communities mitigate potential risks when constructing new utilities and operating existing ones.

EPA also has made available the *Response Protocol Toolbox: Planning for and Responding to Contamination Threats to Drinking Water Systems*. This toolbox was developed to help water utilities respond to intentional contamination threats and incidents, and includes separate guides on water utility planning, contamination threat management, site characterization and investigation, and water sample analysis. During 2004, EPA issued two additional modules, including a public heath response guide and a remediation and recovery guide.

Research. Questions regarding the security of water supplies often involve the ability of water systems to identify and respond to intentional contamination incidents. EPA has participated in various research and development activities related to water security, including research to evaluate the ability of drinking water treatment systems to remove and inactivate biological and chemical warfare agents. EPA also has supported research projects to determine the fate and transport of contaminants within rivers and streams and within water treatment plants and distribution systems, as well as research to develop biodetectors for detecting and quantifying biological contaminants in drinking water supplies.

During FY2002, EPA worked with the Department of Defense, the Centers for Disease Control and Prevention, the FBI, and the Food and Drug Administration to review what was known about potential biological, chemical, and radiological contaminants; available detection methods; and how to respond to their presence in drinking water. EPA drafted a water security research program built on the information gathered in the interagency review. EPA also developed a contaminant database listing high risk contaminants and information on the identification, treatment, and potential health effects of such contaminants.

The Office of Homeland Security's 2003 *National Strategy for the Physical Protection of Critical Infrastructure and Key Assets* spelled out national policy and guiding principles for key infrastructure sectors. The strategy noted that the water sector had taken great strides to protect its critical facilities and systems, and was focusing on four categories of possible attacks that could have the greatest health or economic consequences.[7] The categories included (1) physical damage or destruction of critical assets (including the intentional release of toxic chemicals); (2) actual or

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[6] (...continued)
Populations Less Than 100,000/15 MGD or Less (for drinking water utilities and for wastewater utilities treating 1,500 million gallons per day (MGD) or less), July 2002.

[7] Office of Homeland Security, *The National Strategy for the Physical Protection of Critical Infrastructures and Key Assets*, February 2003, p. 39.

threatened contamination of the water supply; (3) cyber attack; and (4) interruption of services from another infrastructure (such as energy supply).

The strategy noted that to prioritize investments on security measures, the water sector required better threat information. It also identified the need for research and development of new monitoring and analytic capabilities to enhance detection of biological, chemical, or radiological contaminants that could be introduced to the water supply, and noted that additional resources would likely be needed.

EPA's FY2004 budget request described a rigorous and specific agenda for drinking water security research, which would require a number of years to execute. Key research categories and activities reflected the priorities and concerns expressed in the national strategy and included the following elements:

- *contaminant detection and characterization* (testing and verifying devices to detect contaminants, characterizing contaminants that pose threats, developing standard field screening and laboratory analysis methodologies);

- *contaminant containment* (developing methods and procedures to prevent the spread of contaminants in drinking water sources);

- *drinking water decontamination* (developing technologies and procedures to decontaminate water, including developing point-of-use and point-of-entry technologies for removing contaminants and new methods to neutralize, analyze, and remediate contamination);

- *scientific and technical support* (including developing a database of contaminant characteristics for first responders, refining detection, containment, and decontamination technologies based on vulnerability assessments, improving coordination of water managers and public health officials, and enhancing physical security of water systems); and

- *risk communication* (instituting monitoring approaches and networks to help public health officials identify and control disease outbreaks, and transferring techniques to utility managers and first responders).[8]

To coordinate and oversee research involving the prevention and response to terrorist attacks, EPA's Office of Research and Development established the National Homeland Security Research Center (NHSRC). The Center's key areas of research involve water infrastructure protection, decontamination and consequence management, and threat and consequence assessment.

In 2004, the NHSRC and the Office of Water's Water Security Division issued a Water Security Research and Technical Support Action Plan to define a specific

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[8] U.S. Environmental Protection Agency, *FY2004 Annual Performance Plan and Congressional Justification*, pp. II-15 - II-16.

program of research and technical support for protecting drinking water and wastewater systems from terrorist threats and attacks.[9] The Action Plan, which was reviewed by the National Research Council (NRC), identifies projects involving physical and cyber infrastructure protection; contaminant identification; monitoring and analysis; treatment, decontamination, and disposal; contingency planning; infrastructure interdependencies; and risk assessment and communication.

A key concern the NRC expressed regarding the action Plan was that it did not discuss the financial resources that would be required to complete the proposed research and technical support projects and to implement countermeasures needed to improve water security. The NRC recommended that EPA try to quantify the costs and benefits associated with the research and technical support projects. The NRC further noted that more emphasis was needed on communicating the value of water and increased security, because water rate increases would likely be needed to generate the resources needed to implement counter measures.[10]

EPA's 2004 agency-wide Homeland Security Strategy set several goals related to water security research. The strategy updated the 2002 strategic plan, incorporated tasks outlined in the Homeland Security Presidential Directives, and refined EPA's agenda for technical assistance and research supporting the water sector. Reflecting this strategy, the Agency's subsequent research goals have been to increase the availability and use of models to predict and track the transport of contaminants in water and water distribution systems; improve water utilities' ability to use models to aid decision-making on security improvements; and coordinate with other agencies to develop mobile treatment and pumping units for use during emergency situations.[11] For FY2006, the agency has focused homeland security research on the detection, containment, decontamination, and disposal of chemical and biological agents that could be used in attacks on water systems.[12]

Funding for Drinking Water Security Activities

Since 2001, Congress has provided funds annually to EPA for increasing the security of public water supplies. The *Emergency Supplemental Appropriations Act for FY2002* (P.L. 107-117) provided EPA with $175.6 million for emergency expenses to respond to the September 11 attacks and to support counter-terrorism activities. The accompanying conference report, H.Rept. 107-350, specified that approximately $90 million was for improving security at EPA laboratories, performing drinking water vulnerability assessments, and anthrax decontamination activities. Another $5 million was for state grants for counter-terrorism coordinators to work with EPA and water utilities in assessing drinking water safety.

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[9] U.S. Environmental Protection Agency, *Homeland Security Strategy*, October 2004.

[10] National Academy of Sciences, *A Review of the EPA Water Security Research and technical Support Action Plan: Parts I and II*, National Academy Press, 2003.

[11] U.S. Environmental Protection Agency, *Homeland Security Strategy*, pp. 5-6.

[12] Environmental Protection Agency, *FY2006 Annual Performance Plan and Congressional Justification*, Goal 4: Health Communities and Ecosystems, p. 4-19.

During **FY2002**, EPA allocated roughly $89 million of the amount provided in the emergency supplemental appropriation to support security enhancements at the nation's drinking water systems. Of this amount, EPA targeted approximately $80 million to: (1) provide grants to the largest drinking water systems to conduct vulnerability assessments and enhance emergency response plans; (2) provide technical assistance on vulnerability assessments and emergency response plans to small and medium drinking water systems; and (3) refine security-related detection, monitoring, and treatment tools. EPA targeted another $4 million to: accelerate the development and testing of counter-terrorism tools; support training for the development of vulnerability assessments; provide technical assistance; and conduct, test, and implement research on redesign and detection for collection and treatment systems. EPA also used funds to develop tools and provide training for medium and small drinking water systems to assess vulnerabilities and develop emergency response plans. Additionally, EPA allocated $5 million to the states to support homeland security coordination work involving EPA and drinking water utilities.

EPA awarded approximately $51 million in water security grants to the community water systems that serve more than 100,000 individuals (more than 400 systems). Grants were made to publicly and privately owned community water systems for as much as $115,000 per grant. Utilities were able to use their grants to develop vulnerability assessments, emergency response plans, and security enhancement plans and designs. Utilities also could use grant funds for in-house or contractor support; however, funds could not be used for physical improvements.

Although these grants were made only to large systems, EPA has worked with states and utilities to determine the best ways to meet the security needs of small and medium-sized drinking water systems. EPA provided roughly $20 million of FY2002 supplemental funds directly to the states for technical assistance and training for drinking water systems serving fewer than 100,000 people.

For **FY2003**, EPA requested $16.9 million to assist small and medium-sized systems with vulnerability assessments and emergency response plans, and $5 million in grants to states to support homeland security coordination. The Consolidated Appropriations Resolution for FY2003 (P.L. 108-7), provided this amount. It also contained several drinking water security earmarks, including $2 million for the National Rural Water Association to help small water systems conduct vulnerability assessments and $1 million for the American Water Works Association for water security training activities.

As requested for **FY2004**, EPA received approximately $32 million for critical water infrastructure protection, including $5 million for state homeland security grants in P.L. 108-199. This funding supported states' efforts to work with water and wastewater systems to develop and enhance emergency operations plans; conduct training in the implementation of remedial plans in small systems; and develop detection, monitoring and treatment technology to enhance water security. EPA used funds to assist the nearly 8,000 community water systems that serve water to populations between 3,300 and 100,000 and are subject to the Bioterrorism Act. P.L. 108-199 also included $2 million for the Water ISAC to gather, analyze and disseminate sensitive security information to water and wastewater systems.

For **FY2005**, EPA requested $5 million for state water security grants and $6.1 million for other critical infrastructure protection efforts. EPA's budget justification explained that the $21.3 million reduction reflected a shift in priorities from assistance and training on vulnerability assessments. (The Bioterrorism Act required community water systems to complete vulnerability assessments by June 30, 2004.) In the Consolidated Appropriations Act, FY2005 (P.L. 108-447), Congress provided the requested amount. As in FY2004, the appropriated amount included $2 million for the Water ISAC, and the conferees again specified that the Water ISAC is to be implemented through a grant to the Association of Metropolitan Water Agencies.

In the **FY2006** budget request, the President again requested $5 million for state water security grants. The President also requested $44 million to launch the Water Sentinel Initiative in response to EPA's responsibilities under Homeland Security Presidential Directive (HSPD) 7, which designated EPA as the lead agency for water infrastructure security. The goal of the initiative is to establish pilot early warning systems through intensive water monitoring and surveillance for certain chemical and biological contaminants in five cities. EPA also proposed to form a water laboratory alliance to build the analytical capacity needed to support the surveillance program to ensure that large systems would have the tools and information needed to prevent, detect, and respond to attacks.[13] In EPA's FY2006 appropriations act (P.L. 109-54, H.R. 2361), Congress provided $9 million for the Water Sentinel Initiative, as proposed by the House; the Senate had proposed $5.6 million. The House Appropriations Committee (H.Rept. 109-80) stated that EPA should develop specific goals for the Water Sentinel Initiative and justify the request more clearly in the next budget request. Congress also provided $5 million for state water security grants.

In addition to the above resources, EPA has identified numerous security measures that are eligible for funding through the Drinking Water State Revolving Fund (DWSRF) program.[14] Examples of eligible measures include vulnerability assessments, contingency plans, and various facility improvements. Congress has provided approximately $845 million annually for this program in recent years. However, it is uncertain how readily funds might become available for security measures, as the key purpose of the DWSRF is to facilitate compliance with federal drinking water regulations, and competition for these funds can be considerable.

Another potential source of funding for community water systems is the State Homeland Security Grant Program, administered by DHS. This program provides assistance to states to detect, prevent, and respond to terrorist attacks. Under this program, states are required to allocate 80% of the grant funds to localities, in accordance with their approved homeland security plans. Funds may be used for homeland security related training and for protecting critical infrastructure, including making physical security improvements. Local public works agencies are eligible to

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[13] Environmental Protection Agency, *FY2006 Annual Performance Plan and Congressional Justification*, Science and Technology, Homeland Security: Critical Infrastructure Protection, pp. S&T-21 - S&T-23.

[14] See EPA Fact Sheet, *Use of the Drinking Water State Revolving Fund (DWSRF) to Implement Security Measures at Public Water Systems*, EPA 816-F-02-040, November 2001. Available at [http://www.epa.gov/safewater/dwsrf/security-fs.pdf], visited Jan. 24, 2006.

receive funding from the state. The conference report for the FY2005 Department of Homeland Security Appropriations Act (P.L. 108-334, H.Rept. 108-774) provided $1.1 billion for this grant program, and revised the definition of "local unit of government" for purposes of this program to specifically include water districts, special districts, and other political subdivisions of a state.

Congressional Actions to Enhance Drinking Water Security

Since September 11, 2001, Congress held multiple hearings to examine security issues facing the water infrastructure sector[15] and acted on several bills to improve drinking water security. In the 107th Congress, two major pieces of legislation were enacted that addressed drinking water security: the Bioterrorism Act of 2002, and the Homeland Security Act of 2002.

Bioterrorism Act of 2002. The *Public Health Security and Bioterrorism Preparedness and Response Act of 2002* (P.L. 107-188) was enacted in June 2002. Title IV of the act (42 U.S.C. 300i) amended the Safe Drinking Water Act (SDWA) to require community water systems serving more than 3,300 individuals to conduct an assessment of their system's vulnerability to terrorist attacks or other intentional acts to disrupt the provision of a safe and reliable drinking water supply. These systems were required certify to EPA that they had conducted a vulnerability assessment and submit a copy of the assessment to EPA. The act also required the water utilities to prepare or revise emergency response plans incorporating the results of the vulnerability assessments no later than six months after completing them. (**Table 1** outlines the schedule for the nearly 8,400 water systems that were required to submit vulnerability assessments to EPA and complete emergency response plans.) EPA was required to issue guidance on conducting vulnerability assessments, preparing emergency response plans, and addressing threats to help smaller systems not covered by the Bioterrorism Act.[16]

Table 1. Community Water System Requirements under the Bioterrorism Act

System size by population served (est. no. of systems)	Date for completing vulnerability assessments	Date for completing emergency response plans
100,000 or more (425)	March 31, 2003	September 30, 2003
50,000 - 99,999 (460)	December 31, 2003	June 30, 2004
3,301 - 49,999 (7,500)	June 30, 2004	December 31, 2004

[15] See, for example: U.S. Congress. House of Representatives, Committee on Energy and Commerce, Subcommittee on Environment and Hazardous Materials. *Controlling Bioterror: Assessing Our Nation's Drinking Water Security*. Serial No. 108-123. Sept. 30, 2004.

[16] EPA published *Water Security Strategy for Systems Serving Populations Less than 100,000/15MGD or Less* (July 2002).

The act exempted the contents of the vulnerability assessments from disclosure under the Freedom of Information Act (except for information contained in the certification that identified the system and the date of the certification). As required by the Bioterrorism Act, EPA developed protocols to protect the assessments from unauthorized disclosure, and provides for civil and criminal penalties for inappropriate disclosure of information by government officials.

The Bioterrorism Act authorized $160 million for FY2002, and such sums as may be necessary for FY2003-FY2005, to provide financial assistance to community water systems to conduct vulnerability assessments, to prepare response plans, and for expenses and contracts to address basic security enhancements and significant threats. (Security enhancements may include purchase and installation of intruder detection equipment and lighting, enhancing security of automated systems, personnel training and security screening of employees or contractors, etc. Funding may not be used for personnel costs, plant operations, monitoring or maintenance.)

For grants to states and water systems to assist in responding to emergency situations, the act authorized $35 million for FY2002, and such sums as may be necessary thereafter. Finally, the act authorized $15 million for FY2002, and such sums as may be necessary for FY2003 through FY2005, for EPA to review methods by which terrorists or others could disrupt the provision of safe water supplies, and methods for preventing, detecting, and responding to such disruptions.

Homeland Security Act of 2002. The *Homeland Security Act of 2002* (P.L. 107-296) combined the functions of all or parts of 22 federal agencies and departments into a new Department of Homeland Security (DHS). The act gave key responsibility for critical infrastructure protection to DHS, but did not transfer EPA water security functions to the new Department.

The Homeland Security Act established within DHS a Directorate for Information Analysis and Infrastructure Protection (IA/IP), headed by an undersecretary. The responsibilities assigned to the undersecretary included

- receiving, analyzing, and integrating law enforcement, intelligence and other information to identify and assess the nature and scope of terrorist threats to the United States;
- assessing vulnerabilities of key resources and critical infrastructure; integrating information, analyses, and vulnerability assessments to identify priorities for protective and support measures;
- ensuring timely access by DHS to necessary information; and
- developing a comprehensive national plan for securing key resources and critical infrastructures.[17]

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[17] In 2005, Homeland Security Secretary Chertoff proposed a major restructuring of the Department of Homeland Security that included reorganizing the IA/IP Directorate and (continued...)

Under the Bioterrorism Act, Congress gave EPA new authorities and responsibilities to assist water utilities and states in enhancing the security of drinking water supplies and facilities, and directed community water systems to submit vulnerability assessments to EPA. With the creation of DHS, which has overall responsibility for critical infrastructure vulnerability assessment and protection, the relative responsibilities of EPA and DHS were not clear.

In December 2003, the White House issued Homeland Security Presidential Directive (HSPD-7), which superseded PDD-63. This Directive established national policy and outlined the roles and responsibilities of federal departments and agencies regarding critical infrastructure protection. It identified EPA as the federal agency with lead responsibilities for ensuring the protection of the water infrastructure sector from terrorist attacks or sabotage. The HSPD-7 gave DHS responsibility for overall coordination and integration of national critical infrastructure protection efforts by federal, state, and local governments and the private sector.

Issues for Congress

With ongoing concern over the potential for terrorist attacks, Congress has remained attentive to the security status of the nation's public water supplies and infrastructure. Interest in the 109th Congress continues to focus on implementation of the drinking water security provisions of the Bioterrorism Act and, more broadly, on the status and adequacy of public and private efforts to enhance the security and emergency preparedness of public water systems. Because of actions on the part of the drinking water community, EPA and Congress, efforts to improve security in the water sector appear to be ahead of those in certain other sectors (for example, chemical facilities). However, a number of issues and challenges remain.

The relationship between EPA and DHS has been an issue for Congress. Although the Bioterrorism Act helped elucidate EPA's role in the drinking water sector, Congress has expressed concerned that, overall, EPA's homeland security responsibilities have not been well articulated. EPA and DHS have taken steps to clarify their roles, and have entered into agreements to coordinate on specific activities, such as research. However, some overlaps and conflicts have arisen. In the conference report for the Consolidated Appropriations Act, 2005 (P.L. 108-447, H.Rept. 108- 792), conferees directed EPA to enter into a comprehensive memorandum of understanding (MOU) with DHS that defines the relationship and responsibilities of the two entities regarding homeland security and protection. Conferees specified that the MOU identify areas of responsibilities and the potential costs (including which entity pays) for meeting those responsibilities.[18]

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[17] (...continued)
separating information analysis and infrastructure protection. The IA/IP Directorate was renamed the Directorate of Preparedness, and the IA function was moved to a new Office of Intelligence and Analysis. For a detailed discussion of the review and reorganization of DHS by Secretary Chertoff, see CRS Report RL33042, *Department of Homeland Security Reorganization: The 2SR Initiative*, by Harold Relyea and Henry Hogue.

[18] H.Rept. 108-792, conference report to accompany H.R. 4818, *Consolidated* (continued...)

Another issue involves the availability of funding for water systems to make security upgrades needed to address risks identified in their vulnerability assessments. Congress has not provided funding specifically for this purpose. Although community water systems potentially are eligible to receive funding from the states through the DHS State Homeland Security Grant Program, competition for funds is severe and the preponderance of funds have gone to meet the needs of first responders. In an effort to address one element of this concern, the conference report to the Department of Homeland Security Appropriations Act for FY2005 (P.L. 108-334, H.Rept. 108-774) modified the definition of "local unit of government" to specifically include water districts. This appropriations act provided $1.1 billion for the Homeland Security Grant Program for FY2005.[19] It is uncertain what portion of homeland security grants have since been allocated to improve the security of critical water infrastructure, as DHS has not made such information available.

The related question of how to set priorities for allocating homeland security funding continues to be debated.[20] At a September 2004 hearing held by the House Energy and Commerce Committee on bioterrorism and the security of water supplies, the Government Accountability Office (GAO) testified that water security experts widely agreed that decisions for allocating federal funding for water security improvements should be based primarily on two criteria: (1) population density, and (2) information from vulnerability assessments.[21] Security experts also set funding priorities at the utility level, and identified distribution systems as the most vulnerable component of a water system. Other water system components identified as requiring protective measures included utility computer systems, chemicals stored on-site, and source water supplies. Three broad categories of security activities were identified as most deserving of funding, including physical and technological upgrades, education and training, and strengthening relationships between water utilities and agencies that would be involved in any emergency responses.[22]

A major concern for the water sector is the need for more research to develop real-time monitoring methods to detect contaminants, and technologies to remove or

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[18] (...continued)
Appropriations Act, 2005 (P.L. 108-447), November 20, 2004, p. 1563.

[19] For information on this and other homeland security grant programs, see CRS Report RL32348, *Selected Federal Homeland Security Assistance Programs: A Summary*, by Shawn Reese.

[20] For a discussion of this issue and funding allocations among the states, see CRS Report RL32696, *Fiscal Year 2005 Homeland Security Grant Program: State Allocations and Issues for Congressional Oversight*, by Shawn Reese.

[21] U.S. Government Accountability Office, *Drinking Water: Experts' Views on How Future Federal Funding Can Best Be Spent to Improve Security*, Testimony before the Subcommittee on Environment and Hazardous Materials, Committee on Energy and Commerce, House of Representatives. September 30, 2004. Testimony was based on report of same title to the Committee on Environment and Public Works, U.S. Senate, Oct. 2003, GAO-04-29.

[22] U.S. Government Accountability Office, *Drinking Water: Experts' Views on How Future Federal Funding Can Best Be Spent to Improve Security*, Testimony, pp. 2-3.

inactivate them. The GAO survey of security experts found strongest support for research on developing monitoring technologies that can quickly detect contaminants in water that has already left a treatment plant for distribution to consumers.[23] In its FY2006 budget request, EPA proposed to focus homeland security research on the detection, containment, decontamination, and disposal of chemical and biological agents that could be used in attacks on water systems.[24] Specifically, EPA requested $44 million for a new drinking water security initiative, the Water Sentinel program, to help address water utilities' concerns regarding their ability to monitor, detect, and respond to certain chemical and biological contaminants.[25] The agency's resource request for this initiative received critical attention from appropriations committees. In EPA's FY2006 appropriations act (P.L. 109-54, H.R. 2361), Congress provided $9 million for the new initiative. In recommending a large reduction, the House Appropriations Committee commented that EPA should develop clear goals for the Water Sentinel Initiative, seek the advice of the Science Advisory Board, and justify the request more clearly in the budget request for FY2007.[26] As this initiative is a key element of EPA's effort to meet its water security responsibilities under HSPD-9, Congress is likely to give it further consideration during the second session

[23] Ibid. p. 7.

[24] Environmental Protection Agency, *FY2006 Annual Performance Plan and Congressional Justification*, Goal 4: Health Communities and Ecosystems, p. 4-19.

[25] Environmental Protection Agency, *FY2006 Annual Performance Plan and Congressional Justification*, Science and Technology, Homeland Security: Critical Infrastructure Protection, p. S&T-21 - S&T-23.

[26] U.S. Congress, House Committee on Appropriations, *Department of the Interior, Environment, and Related Agencies Appropriation Bill, 2006*, report to accompany H.R. 2361, 109th Cong., 1st sess., H.Rept. 109-80, p. 94.