UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
INSPECTOR GENERAL

May 11, 2010

MEMORANDUM

SUBJECT: EPA's Fiscal Year 2010 Management Challenges

TO: Lisa P. Jackson
Administrator

We are pleased to provide you with a list of areas the Office of Inspector General considers to be key management challenges confronting the U.S. Environmental Protection Agency (EPA). We developed a definition for management challenges to clarify and distinguish them from internal control weaknesses. Weaknesses are deficiencies in internal control activities designed to address and meet internal control standards. In contrast, we define management challenges as a lack of capability derived from internal, self-imposed constraints or, more likely, externally imposed constraints that prevent an organization from reacting effectively to a changing environment. For example, lack of controls over approval of bankcard purchases would be considered a control weakness because it can be corrected internally by adding the necessary controls. Conversely, the Agency's ability to address an issue such as funding shortfalls for water infrastructure repairs would constitute a management challenge, as EPA does not have the ability to solve these challenges without outside assistance, such as from Congress and States.

We identified the management challenges listed below using past audit, evaluation, or investigative work along with additional analysis of Agency operations. Other challenges may exist in areas that we have not yet reviewed. Detailed summaries of the challenges are provided in the Attachment.

This year, we deleted three challenges primarily due to EPA's actions to address our prior concerns: (1) Management of Stimulus Funds, (2) Meeting Homeland Security Requirements, and (3) Voluntary Programs. We also deleted EPA's Organization and Infrastructure as a challenge because we believe that remaining actions that need to be taken are within EPA's control. The Need for a National Environmental Policy incorporates and replaces the prior Threat and Risk Assessment challenge, and Oversight of Delegations to States includes prior Performance Measurement information.

We welcome the opportunity to discuss our list of challenges and any comments you might have.

Bill A. Roderick
Acting Inspector General

Attachment

The Need for a National Environmental Policy

Congress passed the National Environmental Policy Act and created the U.S. Environmental Protection Agency (EPA) in 1970 to carryout national policy. Before EPA's creation, more than a dozen federal agencies had environmental responsibilities, and there was no organized, concerted focus to address pollution and degradation of the environment caused by prior years of neglect. Creating EPA served as the first step to address national environmental policy by consolidating separate federal efforts. A 2002 National Academy of Public Administration (NAPA) case study noted that establishing EPA proved difficult because its Administrator had no clear authority or 'organic' act[1] with which to integrate various statutorily separate programs. An earlier NAPA report noted that EPA has suffered since its inception from its structure and conflicting goals[2] – challenges that remain as EPA nears its 40th anniversary.

Environmental law scholars have noted that rigid environmental laws do not allow EPA to confront emerging, cross-media, and cross-boundary challenges. In 1997, the National Research Council (NRC) recognized that problems such as global climate change, stratospheric ozone depletion, the loss of biological diversity, long-range transport of pollutants in air or water, global pressures on ocean resources, and regional water scarcity are broader, more complex environmental problems than those that received major attention several decades ago, and require more concerted, coordinated efforts.[3] The current fragmented approach to these problems stems from environmental laws that often focus on a single media or threat, and EPA's goals and program offices that implement separate legislative mandates. Additionally, EPA lacks complete authority or control over many activities that impact the condition of our nation's environment, such as land use and transportation planning. Environmental quality depends on policies related to farming, energy, water, transportation, and federal land management, but neither Congress nor the Executive Branch is fully engaged in harmonizing these issues. A national policy would help EPA and other federal agencies go beyond existing, fragmented coordination efforts.

Testimony in 1995 by the Comptroller General of the United States before the Senate Committee on Government Affairs relates to EPA's current predicament: "[T]he lack of an integrated approach to government leads to redundancy and waste. [G]overnment can make huge efforts to provide services to the public, yet still fall far short of its intentions because of faulty coordination of its efforts within and across agency lines." As a result, observations from a 1996 NRC report still resonate today: "Although substantial progress has been made in improving environmental quality, the country still lacks a unified national strategy."[4] The Environmental Law Institute further noted, "Interagency coordination concerning the environment is uneven at best."[5]

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[1] Ink, Dwight, NAPA, *Ash Council Case Study: 1969-1970*, Historical Documents on Management Reform Maintained by the Executive Organization and Management Panel, March 12, 2002.
[2] NAPA, *Resolving the Paradox of Environmental Protection: An Agenda for Congress, EPA & the States*, September 1997.
[3] NRC, Committee on Research Opportunities and Priorities for EPA, *Building a Foundation for Sound Environmental Decisions*, 1997.
[4] NRC, Policy Division, *Linking Science and Technology to Society's Environmental Goals*, 1996.
[5] Environmental Law Reporter News & Analysis, Special Issue: Agenda for a Sustainable America, National Governance: Still Stumbling Toward Sustainability, 39 Envtl. L. Rep. News & Analysis 10321 (April 2009).

The structure created by the National Environmental Policy Act 40 years ago has not resulted in a comprehensive approach to environmental protection. EPA's main effort to identify and address national goals was its *Proposed Environmental Goals for America with Milestones for 2005* (1995). The NRC said this effort did not prioritize individual goals or acknowledge trade-offs between desired outcomes and/or goal choices. Officials within EPA said the 1995 report was a creative effort that lacked follow-through. In the 2008 *Report on the Environment*, EPA provided data on cross-program issues in the form of indicators that assessed the status and trends of environmental conditions at the time. However, this report did not integrate cross-agency strategies to address national environmental goals. EPA's 2006-2011 Strategic Plan identifies 25 federal agencies that contribute to EPA's goals. While goal-specific chapters describe cross-media and interagency activities, the Strategic Plan does not integrate these efforts or describe national goals that go beyond EPA's current mission and goal structure. The Plan also notes that delegated State programs conduct much of the day-to-day work involved in many air and water programs. However, our evaluations have shown that EPA's oversight of State programs requires improvement. Thus, though EPA has undertaken worthwhile efforts in the past, the Agency has not developed a comprehensive environmental protection plan that includes the efforts of all stakeholders.

Other federal agencies and countries have taken steps to integrate efforts across all levels of government. For example, after the terrorist attacks on September 11, 2001, the White House and Congress created the U.S. Department of Homeland Security to organize activities spread across more than 40 federal agencies.[6] The comprehensive *National Strategy for Homeland Security* seeks to develop a complementary system connecting all levels of government without duplicating effort. In 2007, Congress passed legislation mandating a Quadrennial Homeland Security Review of the Strategy beginning in FY 2009.[7] This review provides an enterprise-wide focus on responsibilities across government supporting "a national strategy, not a federal strategy" to "guide, organize, and unify our Nation's homeland security efforts." Australia and Japan have successfully taken a national policy approach to environmental protection and conservation legislation and activities.[8] Both countries have recognized the value of establishing national environmental goals and setting national policy.

Developing and implementing a national policy poses a number of challenges. However, environmental protection – like homeland security – is a public good and as such requires a nationally coordinated approach toward policy. EPA must have the force of national environmental goals to set regulatory standards, particularly for problems that cross State or national borders or pose risks to future generations. Congress should provide EPA, States, and the other 25 federal agencies that share a responsibility for environmental protection the means

[6] U.S. Department of Homeland Security, History Office, *Brief Documentary History of the Department of Homeland Security: 2001-2008*, 2008.

[7] "The Implementing Recommendations of the 9/11 Commission Act of 2007," which passed into law on August 3, 2007, requires that every 4 years, beginning in FY 2009, the Secretary of Homeland Security conduct a Quadrennial Homeland Security Review of the United States. The Secretary planned to provide conclusions of the first review to Congress in a final report by December 31, 2009, but issued the report in February 2010.

[8] Australia enacted its primary environmental legislation – the Environment Protection and Biodiversity Conservation Act 1999 – in July 2000. In 1993, Japan established a "Basic Environmental Law" to chart the direction of the nation's environmental policies.

to identify and manage environmental problems of national significance. EPA should work with Congress and the Administration to examine ways to leverage resources expended on various, insular environmental protection efforts. The Administration should propose to Congress that it create expert panels to consider formulating a national environmental policy and subsequent quadrennial review. Congress could also consider integrating or passing legislation that may be recommended by these panels to harmonize various efforts and, where appropriate, maintain existing requirements in environmental statutes. Through these efforts, EPA and its partners could move away from isolated, media- and interest-specific initiatives toward a more cohesive, unified, and future-thinking approach to environmental protection. While EPA has much to celebrate heading into its 40th anniversary, by its 50th the Agency should have taken the critical – albeit challenging – steps necessary to integrate efforts through its role as the Nation's environmental leader.

Water and Wastewater Infrastructure

The water and wastewater infrastructure gap remains a major challenge for 2010. Drinking water and wastewater treatment systems are reaching the end of their life cycles, and huge capital investments are needed to replace, repair, and construct facilities so that municipalities can meet existing and emerging federal human health and environmental standards.

Approximately 160,000 public drinking water systems provide the Nation with drinking water, while 16,000 sewage treatment plants treat and dispose of wastewater.[9] Under the Clean Water Act (CWA) and Safe Drinking Water Act (SDWA), water and wastewater facilities are responsible for ensuring that water leaving their facilities meets federal standards. EPA is responsible for administering these laws, enforcing violations of the standards, and assisting facilities to meet their treatment requirements.

Aging Infrastructure. Much of the drinking water and wastewater infrastructure in the United States was built over 40 years ago.[10] Some of the Nation's water infrastructure systems have components over 100 years old. The American Society of Civil Engineers recently assigned an overall "D" grade in its Report Card for America's Infrastructure and "D-" to drinking water and wastewater.[11] Replacing aging systems is necessary to maintain our Nation's waters and public health, but it will be costly. EPA has struggled to update these systems over the years because neither the Agency nor municipalities have sufficient modernization and replacement funds.

Meeting Existing Standards. Meeting existing standards requires regular investment for treatment plants and distribution systems. Water and wastewater facilities already make considerable capital expenditures; local governments spend more on water infrastructure than on anything else except education.[12] However, many drinking water and wastewater systems are

[9] U.S. EPA Website, "Safe Drinking Water Act – Basic Information"; U.S. Department of Energy, Energy Efficiency and Renewable Energy, Federal Energy Management Program, "Biomass and Alternative Methane Fuels Fact Sheet," July 2004.
[10] U.S. EPA Website, "Sustainable Infrastructure for Water & Wastewater."
[11] American Society of Civil Engineers, *2009 Report Card for America's Infrastructure* – full report.
[12] U.S. Conference of Mayors, Mayors Water Council, *Who Pays for the Water Pipes, Pumps, and Treatment Works? Local Government Expenditures on Sewer and Water – 1991 to 2005*.

failing to keep up with repairs and new construction required to maintain compliance with federal standards. According to EPA, each year there are approximately 240,000 water main breaks and 75,000 sewer overflows, resulting in public health threats.[13]

Meeting Additional Standards. New and more stringent standards compel systems to make even more extensive capital improvements. For example, many wastewater treatment plants are beginning to install costly nutrient removal technologies. Drinking water facilities will also need to meet new standards. Between January 2006 and December 2007, EPA issued three new rules[14] and made substantial revisions to the existing Lead and Copper Rule.

Paying for Upgrades and Maintenance. Funding is the biggest issue facing public water agencies, said Ken Kirk, executive director of the National Association of Clean Water Agencies (NACWA). As an example of the magnitude of costs, a single city, the District of Columbia, estimated it will need to spend $3.6 billion to meet some CWA requirements.[15] In a recent white paper, NACWA said the federal contribution to the nation's overall water and wastewater investment has dropped from about 78 percent in the 1970s to 3 percent today. EPA and the U.S. Government Accountability Office (GAO) have cited an estimated $300-$500 billion funding gap for wastewater treatment and water infrastructure over the next 20 years.[16] The gap represents infrastructure failures, like water main breaks and sewer overflows that could increase public health, environmental, and economic risks.

The Federal Government does not have a national approach to bridging the water and wastewater infrastructure gap. EPA's Clean Water and Drinking Water State Revolving Funds received a total of about $1.4 billion in federal capitalization grants in FY 2009.[17] Congress added $6 billion to these funds in the American Recovery and Reinvestment Act of 2009 (ARRA). The U.S. Department of Housing and Urban Development and the U.S. Department of Agriculture also provided grant and loan assistance for water and wastewater infrastructure of about $2 billion in FY 2006[18] and received funding through the ARRA. However, these programs are small in relation to the gap and are not part of a comprehensive investment strategy to address water infrastructure needs; they reflect each agency's mission and congressional direction. On February 24, 2010, the Senate passed a bill allocating an additional $1 billion for Safe Drinking Water Capitalization grants, provided the projects are under contract within 8 months and under

[13] U.S. EPA, Office of Research and Development, National Risk Management Research Laboratory, Aging Water Infrastructure Research Program, *Addressing the Challenge through Innovation,* EPA/600/F-07/015, September 2007.
[14] U.S. EPA, Final Ground Water Rule (November 2006), Long Term 2 Enhanced Surface Water Treatment Rule (January 2006), and the Stage 2 Disinfection Byproducts Rule (January 2006).
[15] NACWA, PowerPoint presentation on CSOs, 2007.
[16] *Daily Environment Report*, "Stormwater, Nutrients, Wetlands Jurisdiction Seen as Leading Clean Water Issues for 2010," January 20, 2010.
[17] U.S. EPA, *Drinking Water State Revolving Fund Allotments;* U.S. EPA, *Clean Water SRF Federal Capitalization Grants by Federal Fiscal Year of Award by State.*
[18] U.S. Department of Agriculture, Rural Development, Water and Environmental Programs, *Annual Activity Report – FY 2006*, page 6.

construction within 12 months.[19] The bill also provides the U.S. Army Corps of Engineers an additional $30 million for water infrastructure construction.[20]

EPA's Role. While EPA is responsible for administering the CWA and SDWA, it does not have resources or authority to address the funding gap. However, EPA should take the lead in organizing a coherent federal strategy within the limits of its statutory authorities and responsibilities.

On January 12, 2010, Administrator Jackson defined seven key themes to focus the work of the Agency. One theme, "Protecting America's Waters," noted that "Recovery Act funding will expand construction of water infrastructure, and we will work with states to develop and launch an Urban Waters initiative."[21] Despite this key theme, the Office of Enforcement and Compliance Assurance did not list infrastructure as a priority for its 2011-2013 activities.[22]

In its role administering the CWA and the SDWA, EPA should ensure there is a comprehensive federal understanding of the risks to public health, the environment, and the economy if this critical resource gap remains unresolved. A comprehensive approach to bridging the water and wastewater infrastructure gap would systematically assess the investment requirements, alert the public and Congress of unfunded liabilities and risks, and work with States and local governments to organize resources to meet needs.

Oversight of Delegations to States

EPA's oversight of State programs requires improvement. GAO and our office have reported that EPA has made some progress in this area; however, there are a number of factors and practices that reduce the effectiveness of Agency oversight. Key among these are limitations in the availability, quality, and robustness of program implementation and effectiveness data, and limited Agency resources to independently obtain such data. Differences between State and federal policies, interpretations, and priorities make effective oversight a challenge.

EPA's mission is to protect human health and the environment. To accomplish its mission, EPA develops regulations and establishes programs that implement environmental laws. These programs may be delegated to State, local, and tribal agencies that request to take primacy of the program. Delegation, however, does not abrogate EPA of its statutory and trust responsibilities for protecting human health and the environment. EPA performs oversight of State, local, and tribal programs to provide reasonable assurance that delegated programs are achieving their goals. In addition to regulatory programs, EPA sponsors voluntary partnerships and programs with more than 10,000 industries, businesses, nonprofit organizations, and State and local governments on more than 40 pollution prevention programs and energy conservation efforts.

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[19] See HR 2847, Commerce, Justice, Science, and Related Agencies Appropriations Act, 2010, House Amendment to Senate Amendment, page 13.
[20] See HR 2847, Commerce, Justice, Science, and Related Agencies Appropriations Act, 2010, House Amendment to Senate Amendment, page 3.
[21] U.S. EPA Memorandum, "Our Top Priorities," issued by Administrator Lisa Jackson to all EPA employees, January 12, 2010.
[22] U.S. EPA Website, Office of Enforcement and Compliance Assurance, *National Enforcement Initiatives for Fiscal Years 2011-2013.*

Dealing with partners requires different types of management approaches and controls as compared with dealing with parties that require oversight. EPA does not have the resources to effectively administer all of its responsibilities directly. EPA relies heavily on local, State, and tribal agencies for compliance and enforcement and to obtain performance data. In its *FY 2007 Performance and Accountability Report,* EPA states it delegated the responsibility for issuing permits and for monitoring and enforcing compliance to the States and tribes.

A critical management challenge for EPA is oversight of its delegations to States. Federal environmental statutes grant EPA a significant role in implementing the intent of the law, and also authorize a substantial role for States. Federal intent is to give all citizens an equal level of environmental protection. However, quality data are often lacking to ensure that the intent of the law is met. For example, EPA lacks the data necessary to assess the benefits of its air toxics standards, such as data on decreased incidence of cancer. Data on the program's effectiveness, such as changes in emissions, concentrations of air toxics in the (ambient) outdoor air, and data on compliance with air toxics standards are limited and inconclusive. In addition, federal requirements establish consistency for businesses and within industries nationwide. States' discretion adds flexibility to address specific circumstances and local issues. Joint implementation and enforcement leads to special challenges in interpretations, strategies, and priorities.

EPA has begun to improve its oversight by implementing the State Review Framework. The Framework is intended to be a consistent approach for overseeing programs and identifying weaknesses and areas for improvement. However, EPA has not yet implemented it in a consistent manner. GAO reported that while EPA has made substantial progress in improving priority setting and enforcement planning with States, EPA's oversight needed further enhancement. For example, State Revolving Fund reviews show that EPA has limited ability to determine whether States are performing appropriate enforcement in a timely manner, and whether penalties are applied to environmental violators in a fair and consistent manner within and among States. In response to these findings, EPA has initiated a Clean Water Act Enforcement Action Plan, which among other things is aimed at strengthening Agency oversight of State water quality compliance and enforcement.

We have continued our work on this topic. In studies we have published this past year, we found that EPA does not exercise its authority to oversee programs when necessary. *EPA Oversight and Policy for High Priority Violations of Clean Air Act Need Improvement* noted that Headquarters did not oversee regional and State high-priority violator (HPV) performance, and regions did not oversee State HPV performance. If HPVs are not addressed in a timely manner, continued emissions from facilities may result in significant environmental and public health impacts, undermining deterrence efforts and creating unfair economic benefits.

EPA Needs to Accelerate Adoption of Numeric Nutrient Water Quality Standards noted that EPA has not held States accountable to committed milestones, and States have not been motivated to create nutrient water quality standards because implementation is costly and often unpopular with constituencies. We recommended that EPA use its CWA authority to promulgate water quality standards for States as needed.

An ongoing review of issues related to this management challenge focuses on agreements between EPA and States that operate National Pollution Discharge Elimination System programs. EPA expressed concern that, if inadequate, these documents could limit EPA's authority to take enforcement actions when needed. We are assessing this question and the adequacy of these documents to establish national baselines for State program characteristics, monitoring, inspections, and enforcement. We will follow this review with projects that bear on other aspects of how EPA manages its relations with its State and tribal partners.

In summary, while EPA is renewing its attention on the oversight of programs delegated to States, much remains to be done because the issues are complex and changeable. Effective oversight of delegations to States is a continuous management challenge that requires an agile organization, accurate data, and consistent interpretations of policy. To provide effective oversight, the Agency must address limitations in the availability, quality, and robustness of program implementation and data.

Safe Reuse of Contaminated Sites

In the last decade, EPA has placed increasing emphasis on the reuse of contaminated or once-contaminated properties. Today, EPA has a performance measure to define a population of contaminated sites that are "ready for reuse.[23] The Agency has identified thousands of contaminated sites that it encourages developers and "anyone interested" to use for building renewable energy facilities (e.g., wind, solar, biomass facilities).[24] EPA has successfully turned some actual or perceived problem sites into properties that reinvigorated communities and created jobs.[25] Contaminated properties have become viable again as retail stores, public recreation areas, housing complexes, sports stadiums, and commercial office space.

EPA's goal to recycle and reuse contaminated property can produce measured economic benefits, provide environmental benefits that result from preserving undeveloped lands, and improve quality of life for communities. While these goals are notable and may have added significance in difficult economic times, EPA's duty is to ensure that contaminated sites are safe for humans and the environment. EPA faces significant and increasing challenges in this area due to (1) the common practice of not removing all sources of contamination from hazardous sites; (2) a regulatory structure that places key responsibilities for monitoring and enforcing the long-term safety of contaminated sites on non-EPA parties that may lack necessary resources, information, and skill; (3) changes in site risks as site conditions change over time; and (4) weaknesses in EPA's oversight of the long-term safety of sites.

Many contaminated sites, such as Superfund sites, must be monitored in the long term (i.e., 30 years or more) because known contamination is often not removed or remediated and controls that prevent prohibited activities at sites must be maintained and enforced. New controls or

[23] U.S. EPA, *Guidance for Documenting and Reporting the Superfund Sitewide Ready-for-Reuse Performance Measure, Attachment A,* OSWER 9365.0–36.
[24] U.S. EPA Website, "RE-Powering America's Land: Renewable Energy on Contaminated Land and Mining Sites."
[25] U.S. EPA Website, "Superfund Redevelopment."

monitoring may be required if previously undetected or new contaminants emerge,[26] which can happen directly as a result of a change in the site brought about by reuse. The lack of effective long-term monitoring and enforcement of reuse controls at contaminated sites can pose significant risks to human health and the environment. The New York Department of Environmental Conservation released a report in March 2009 listing hundreds of "old" Superfund, Brownfields, and other clean-up cases that were reopened to investigate potential new threats from vapor intrusion.[27] Improvements in analytic techniques and knowledge gained from site investigations has led to increased awareness of soil vapor as a medium of concern and of the potential for human exposure from the soil vapor intrusion pathway.[28] However, EPA has yet to finalize Agency guidance on assessing or addressing the potential risks from vapor intrusion and does not estimate it will do so until 2012.[29]

EPA has acknowledged challenges to ensuring the long-term safety of contaminated sites.[30] In 2005, the Agency released a report that examined a range of long-term stewardship issues[31] and challenges it faced, as well as the role of non-EPA parties (i.e., States, tribes, and other federal agencies) in ensuring long-term safety of contaminated sites. The Agency identified five categories of challenges: (1) understanding roles and responsibilities; (2) implementing and enforcing institutional controls;[32] (3) implementing, enforcing, and monitoring engineering controls;[33] (4) estimating long-term stewardship costs and obtaining funding and resources; and (5) managing and communicating information to prevent breaches of controls and ensuring consistent information in databases. The report made a number of recommendations that generally rely on partnerships and relationships to share, communicate, and exchange necessary information on roles, responsibilities, and costs associated with long-term stewardship responsibilities. The report encouraged non-EPA parties to adhere to legal provisions for implementing institutional controls, where applicable (e.g., Uniform Environmental Covenants

[26] U.S. EPA, *Brownfields Technology Primer: Vapor Intrusion Considerations for Redevelopment*, EPA 542-R-08-001, March 2008.
[27] New York State Department of Environmental Conservation, *Status of Vapor Intrusion Evaluations at Legacy Sites*, February 11, 2009; New York State Department of Environmental Conservation, *Strategy for Evaluating Soil Vapor Intrusion at Remedial Sites in New York*, DER-13, October 18, 2006.
[28] New York State Department of Environmental Conservation, *Strategy For Evaluating Soil Vapor Intrusion at Remedial Sites in New York*, DER-13, October 18, 2006.
[29] EPA-OIG, *Lack of Final Guidance on Vapor Intrusion Impedes Efforts to Address Indoor Air Risks*, Report No. 10-P-0042, December 14, 2009.
[30] U.S. EPA, *Long-Term Stewardship: Ensuring Environmental Site Cleanups Remain Protective Over Time: Challenges and Opportunities Facing EPA's Cleanup Programs*, EPA 500-R-05-001, September 2005.
[31] EPA generally characterizes long-term stewardship activities as activities that ensure (1) ongoing protection of human health and the environment, (2) the integrity of remedial or corrective actions so they continue to operate properly, and (3) the ability of people to reuse sites in a safe and protective manner.
[32] Institutional controls are legal or administrative controls intended to minimize the potential for human exposure to contamination by limiting land or resource use. A local government is often the only entity that has legal authority to implement certain types of institutional controls (e.g., zoning restrictions).
[33] Engineering controls are the engineered physical barriers or structures designed to monitor and prevent or limit exposure to the contamination.

Act[34]). In response to reported GAO concerns in this area, EPA has also taken some steps to better manage the implementation of institutional controls at Superfund sites.[35] However, many sites remain for which the implementation status of institutional controls is not available.[36]

Our work has identified a number of additional challenges that EPA faces in ensuring effective long-term monitoring or stewardship of contaminated sites. We found that some States were not financially prepared to take over their long-term monitoring and maintenance responsibilities for Superfund sites.[37] Recent news from Michigan's Department of Environmental Quality shows that the Department believes that it will run out of money for its hazardous waste clean-up program by the end of 2010.[38] We have reported on State failures to enforce clean-up agreements,[39] EPA's failure to follow Superfund site deletion guidance[40] and five-year review procedures,[41] and EPA's lack of systems to determine whether a site clean-up is noncompliant.[42] We have found that EPA relies on the self-certification of a third-party environmental professional to determine whether statutorily required environmental due diligence has been performed at Brownfields sites funded by EPA grants.[43] EPA also conducts no oversight of the requirement to meet "continuing obligations" at Brownfields properties funded by EPA. Continuing obligations include land use controls and institutional controls designed to prevent unacceptable uses of a contaminated properties.[44] Weaknesses or lapses in meeting environmental due diligence or continuing obligations requirements can result in undetected or undisclosed contamination and inappropriate land use. Although EPA recognized at least 5 years ago that implementing and enforcing institutional controls was a challenge because of its limited authority in this area, EPA does not conduct oversight of these activities even at sites supported with EPA money.

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[34] The Uniform Environmental Covenants Act confirms the validity of environmental covenants (i.e., institutional controls/land use controls) by ensuring that land use restrictions, mandated environmental monitoring requirements, and a wide range of common engineering controls designed to control the potential environmental risk of residual contamination will be reflected in land records and effectively enforced over time. Currently, about one-half of U.S. States have passed a Uniform Environmental Covenants Act. Uniform Environmental Covenants Act, drafted by the National Conference of Commissioners on Uniform State Laws, August 2003.

[35] GAO, *Hazardous Waste Sites: Improved Effectiveness of Controls at Sites Could Better Protect the Public*, GAO-05-163 January 28, 2005. See also U.S. EPA, Superfund Website on institutional controls.

[36] U.S. EPA Website, Superfund Information Systems, *Published Institutional Control Site Reports for All Regions*.

[37] EPA-OIG, *Some States Cannot Address Assessment Needs and Face Limitations in Meeting Future Superfund Cleanup Requirements*, Report No. 2004-P-00027, September 2004.

[38] *The Detroit News*, "Michigan Out of Cash to Clean Up Toxic Sites," March 4, 2010.

[39] EPA-OIG, *Improved Controls Would Reduce Superfund Backlogs*, Report No. 08-P-0169, June 2, 2008.

[40] EPA-OIG, *EPA Decisions to Delete Superfund Sites Should Undergo Quality Assurance Review*, Report No. 08-P-0235, August 20, 2008.

[41] EPA-OIG, *EPA Has Improved Five-Year Review Process for Superfund Remedies, But Further Steps Needed*, Report No. 2007-P-00006 December 5, 2006; EPA-OIG, *EPA's Safety Determination for Delatte Metals Superfund Site Was Unsupported*, Report No. 09-P-0029, November 19, 2008.

[42] EPA-OIG, *EPA Needs to Track Compliance with Superfund Cleanup Requirements*, Report No. 08-P-0141, April 28, 2008.

[43] EPA-OIG Assignment No. 2010-0008 on whether Brownfield grantees meet "All Appropriate Inquiry" requirements to investigate and disclose environmental conditions.

[44] U.S. EPA, *Brownfields Fact Sheet, EPA Brownfields Grants CERCLA Liability and All Appropriate Inquiries*, EPA 560-F-09-026, April 2009.

Our January 2010 report found new contamination at a deleted Superfund site in Delaware where EPA conducted informal and undocumented oversight of the site reuse plans.[45] The current site owner had nearly finalized plans for reusing the site for public recreation but in a manner that was inconsistent with the site clean-up plan. EPA had not kept current with the site reuse plans. In addition, EPA did not issue a Ready for Reuse (RfR) determination for this site because it believed it was not necessary. An RfR could potentially address some of the internal challenges to ensuring safe reuse of contaminated sites. However, RfRs are not required to be completed and have been treated as discretionary. Nonetheless, EPA has held up RfRs as providing the necessary "limitations that need to be followed to ensure [site] protectiveness." An RfR was not issued for the site reviewed in our January 2010 report because site managers seemed to believe an RfR was only needed to aid the real estate market. At another Superfund site, we also found that EPA did not take action to address a 6-year gap in environmental sampling that the State should have conducted.[46] This type of oversight weakness can result in a failure to detect conditions that show a clean-up remedy is not protecting human health and the environment.

Only in the last several years has EPA focused attention on the long-term stewardship aspects of contaminated sites across its clean-up programs. EPA's management of the long-term oversight and monitoring requirements for the safe reuse of contaminated sites has lagged behind the Agency's marketing of site reuse opportunities and its showcasing of successes. This gap promises to increase substantially as EPA continues to heavily promote the reuse of contaminated sites without investing in the tools needed to ensure the safe, long-term use of these sites. Many Superfund sites are now moving to the long-term monitoring phase with more sites expected to do so in the future.[47] EPA's December 2008 report on future Superfund workload needs states that the "post-construction" workload will require the greatest increase in coming years and will increase by 89 percent over the current full-time equivalent distribution.[48] EPA will continually need to assess challenges it faces as well as challenges among the diverse group of non-EPA parties it must work with to ensure sites are safely reused. To address the challenges, these assessments should include consideration of new or expanded authorities and regulations, new organizations, new methods of sharing information, and dedicated funding and resources for long-term stewardship activities.

In its Fiscal Year 2009 Performance and Accountability Report, EPA agreed with the recommendations in this challenge. EPA also stated that it works closely with State and local governments to ensure mechanisms such as institutional controls are maintained to permit safe reuse of sites. It stated that EPA conducts 5-year reviews; has procedures in place to ensure 5-year reviews are properly conducted and Superfund sites are properly deleted; encourages State enforcement of clean-up agreements; and is working to complete draft guidance on tracking

[45] EPA-OIG, *Changes in Conditions at Wildcat Landfill Superfund Site in Delaware Call for Increased EPA Oversight*, Report No. 10-P-0055, January 27, 2010.
[46] EPA-OIG Assignment No. 2008-0018 to test and review results of long-term monitoring efforts at several deleted Superfund sites.
[47] U.S. EPA, *Long-Term Stewardship: Ensuring Environmental Site Cleanups Remain Protective Over Time: Challenges and Opportunities Facing EPA's Cleanup Programs*, EPA 500-R-05-001, September 2005.
[48] U.S. EPA, *Superfund Workload Assessment Report*, OSWER Document 9200-2-81, December 2, 2008. Postconstruction workload can refer to all activities after a clean-up remedy is constructed. This workload includes long-term monitoring and reuse activities.

substantial noncompliance with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) enforcement instruments.

We recognize improvements and efforts EPA has made and it must continue to make to address the significant challenges of ensuring the long-term safety of contaminated sites. Our work and the Agency's work have shown that these challenges derive from internal challenges that EPA can address through improved oversight and management of activities inherent to successful long-term stewardship of contaminated sites. However, successful long-term stewardship also rests on having properly resourced and informed non-EPA parties who have ongoing access to current information, are actively involved in compliance, and conduct appropriate due diligence and oversight of contaminated sites. EPA is highly limited in addressing this challenge when State or local governments with primary responsibility for addressing many long-term safety issues have neither the money nor the will to do so. The lessons from recent issues such as vapor intrusion show that site reuse can generate new environmental risks. New strategies are needed that take EPA beyond merely encouraging non-EPA parties to fulfill requirements and duties and focus on providing EPA, and the parties they must work with, the information, resources, and authorities to ensure long-term safety of reused sites.

Limited Capability to Respond to Cyber Security Attacks

EPA has a limited capacity to effectively respond to external network threats despite reports from security experts that Advanced Persistent Threats (APTs) designed to steal or modify information without detection are becoming more prevalent throughout the government.[49] Our ongoing analysis shows that the Agency has not addressed the challenge of remediating escalating threats from cyber security attacks. To date, EPA has reported that over 5,000 servers and user workstations may have been compromised as a result of recent cyber security attacks. These compromised systems extend to every EPA regional office and Headquarters. Moreover, ongoing work disclosed that EPA could not identify the owners of approximately 10 percent of the Internet Protocol (IP) addresses that are potentially compromised due to an APT.[50]

Our Office of Cyber Investigations and Homeland Security attempted to work with EPA's Office of Technology Operations and Planning (OTOP) to develop an Agency-wide plan of action to investigate and combat the current threat, but OTOP has not agreed to take actions we recommend to improve EPA's awareness of and capability to respond to ongoing APTs. During the course of our investigation, OTOP implemented firewall blocks on known IP addresses and utilized a Domain Name Service "blackholing" technique[51] to further identify systems that may be communicating with possibly hostile Internet sites. However, when Agency management was questioned about this technique and the fact that it cast suspicion on over 5,000 EPA computer systems, the Agency pulled back, stating that it was not confident that these computers were actually compromised. Moreover, EPA declared that it had no means to scan these systems for compromises. We subsequently suggested a solution in which EPA would fund a contract to

[49] *Federal Computer Week*, "Google Attacks: A Wake-up Call or Curtain Call for Agencies?" February 4, 2010.
[50] Electronic mail from EPA's Computer Security Incident Response Capability Center, April 6, 2010.
[51] A Domain Name Service converts host names and domain names into IP addresses on the Internet. The "blackholing" technique is used to deny a route to a machine for a particular IP address or domain. Figures cited based on data provided by OTOP.

install hardware on the network and an agent (a small computer program) on each EPA computer. Our solution would allow for remote acquisition of the computer's memory and hard drive, as well as automatically scan all EPA computer systems to identify relevant data pertaining to the APT. The Agency did not agree to implement our suggested solution.

Security of EPA's network greatly depends on ongoing public- and private-sector partnerships led by the United States Computer Emergency Readiness Team (US-CERT).[52] The unknown origins of many cyber attacks and the complex ways they compromise data networks[53] make this ongoing collaboration crucial to the security of EPA's network. EPA relies heavily on US-CERT to identify external threats, develop technical solutions, and coordinate government-wide responses to cyber attacks because the Agency currently lacks the funds, forensic tools, and technical expertise to establish this capability internally. EPA's overreliance on information provided by US-CERT is further compounded by limited follow-up activities to investigate the extent of and impact on Agency systems. For example, US-CERT provided multiple alerts to the ongoing APT, yet EPA performed limited actions to validate system compromises. Because EPA reported what may be many false positives regarding possible compromises, our office must expend excessive time and travel resources to acquire images and forensically analyze systems. The rejection of an automated approach further hinders our work and impacts Agency security.

The mission of US-CERT is to protect the Nation's Internet infrastructure and to coordinate defense against and responses to cyber attacks across the Nation.[54] Accordingly, it disseminates actionable cyber security information to EPA's Computer Security Incident Response Capability Center (CSIRC), whose goal is to protect EPA information assets and respond to actual and potential incidents.[55] As such, EPA's CSIRC is expected to have sufficient technical expertise and resources to coordinate rapid and highly skilled responses to incidents of malicious attacks on its network.

The results of our ongoing analysis and prior audits lead us to conclude that CSIRC has neither the technical knowledge nor resources to actively pursue a course of action that will enable EPA to promptly identify and effectively remedy ongoing cyber threats. Although EPA currently monitors network traffic to identify hostile traffic at its Internet choke points, the evidence shows that EPA should conduct more detailed analysis to better understand and combat the insidious nature of these cyber attacks. The Agency does not have the resources, in equipment and staff, to adequately assess attacks against its infrastructure. Rather, EPA continues to depend on others to specifically identify whether systems are actually compromised. It relies on (1) US-CERT to alert it to hostile activity originating from within EPA's domain space, and (2) a monitoring device, NIKSUN, acquired by our office. In addition, our offers to train EPA information security officers and other key information technology personnel on proper first response methods were rejected because the Agency believes that first response is not its responsibility.

[52] US-CERT Web Site, http://www.us-cert.gov/aboutus.html.
[53] *CNN.com/technology*, "U.S. Government Sites among Those Hit by Cyberattack," July 8, 2009.
[54] US-CERT Web Site, http://www.us-cert.gov/aboutus.html.
[55] U.S. EPA Intranet, http://cfint.rtpnc.epa.gov/otop//security/csirc/about_us.cfm.

EPA leadership must meet this challenge head-on by sufficiently funding the development of a real capability to identify and investigate attacks against EPA's computer and network systems. Moreover, Congress should fully consider EPA's new budget proposals to ensure that the Agency has the fiscal capacity to tackle this challenge. EPA management cannot continue to rely on a "pay as you go" mentality; rather, EPA needs an established budget for managing information technology infrastructure and security. Key leaders must understand the threats that exist to EPA's confidential business information and the importance of minimizing those risks. Furthermore, the Chief Information Officer and OTOP leadership should carefully study and trust the classified intelligence materials provided to them regarding threats against government domains. The Agency should also develop a method to disseminate sensitive information, including classified data, to senior leadership and technical staff, especially when the network is reportedly (5,000 plus systems) compromised.

Moreover, EPA should acquire forensic tools and experienced technical specialists to analyze and determine whether attackers have gained entry to EPA's network systems, what they did while within EPA's domain space, what information was compromised, and what information may have been maliciously removed from the EPA network. This information is not only necessary for EPA's operational mission, but is also necessary to preserve the crime scene associated with the intrusion event. EPA also should compile a better inventory of network assets, including intellectual properties, and identify where data sit on its network. And, finally, EPA should deploy a better method of identifying and authenticating individuals allowed to access EPA's network. Only then will EPA be able to execute a strategy that effectively protects its resources, infrastructure, and intellectual property from individuals and entities that intend to do harm.

In addition, EPA should aggressively address previously reported security weaknesses to strengthen its ability to detect and respond to network attacks.[56] In particular, EPA should:

- Implement a process that tracks IP address assignments and documents the origin of all active IP addresses so responders can take quicker steps to minimize harm caused by APTs.[57]
- Implement a vulnerability management program to proactively identify and correct commonly known vulnerabilities before they can be exploited.[58]
- Communicate high-risk vulnerability alerts more effectively throughout the Agency and follow up with responsible parties to ensure satisfactory remediation.[59]
- Verify that EPA's numerous Information Security Officers are adequately skilled to conduct regular vulnerability tests of their respective local area networks and systems, as

[56] EPA-OIG, *Project Delays Prevent EPA from Implementing an Agency-wide Information Security Vulnerability Management Program*, Report No. 09-P-0240, September 21, 2009.
[57] EPA-OIG, *Management of EPA Headquarters Internet Protocol Addresses Needs Improvement,* Report No. 08-P-0273, September 23, 2008.
[58] EPA-OIG, *Project Delays Prevent EPA from Implementing an Agency-wide Information Security Vulnerability Management Program*, Report No. 09-P-0240, September 21, 2009.
[59] EPA-OIG, *EPA Needs to Strengthen Financial Database Security Oversight and Monitor Compliance*, Report No. 2007-P-00017, March 29, 2007.

well as successfully recognize and remediate high and medium risks in a uniform and acceptable manner.[60]

- Take steps to improve the reliability of data used to assess the status of its information security program and posture with regard to known network threats.[61]

Taking theses actions would enhance EPA's ability to effectively: (1) identify what key data (intellectual, confidential, privacy) has been stolen, (2) determine collateral damage to the Agency's trusted business partners, and (3) remediate threats as they occur. The Agency's limitation in these areas is alarming, because information security experts believe that a large-scale cyber attack could be as devastating to the U.S. economy and infrastructure as a terrorist bombing.[62]

EPA leadership should acknowledge the seriousness of this challenge by taking aggressive steps to enhance the Agency's cyber security capabilities. EPA leadership must realize that these APTs are spurred by organized, funded, and trained entities that are intent on obtaining and compiling sensitive U.S. data to use against our government. Adequate funding and a coordinated technical strategy would enable EPA to identify an attack signature or methodology or other information that would aid in the battle against parties intent on targeting valuable U.S. data. Then, the Agency would be positioned to share that information and provide a basis for other federal agencies to replicate these actions within their individual domains. The sharing of intellectual information about APTs will enhance the government's position, and prompt actions by EPA could establish it as a leader in government-wide efforts to combat this growing threat.

Reducing Domestic Greenhouse Gas Emissions

In April 2007, the U.S. Supreme Court ruled in the *Massachusetts v. EPA* case that greenhouse gases (GHGs) are air pollutants under the Clean Air Act (CAA).[63] The Supreme Court also ruled that EPA must determine whether GHG emissions from new motor vehicles cause or contribute to air pollution, which in turn could reasonably be anticipated to endanger public health or

[60] EPA-OIG, *Results of Technical Network Vulnerability Assessment: Region 9*, Report No. 09-P-0052, December 9, 2008; EPA-OIG, *Results of Technical Network Vulnerability Assessment: EPA's Radiation and Indoor Environments National Laboratory*, Report No. 09-P-0053, December 9, 2008; EPA-OIG, *Results of Technical Network Vulnerability Assessment: EPA's Las Vegas Finance Center*, Report No. 09-P-0054, December 9, 2008; EPA-OIG, *Results of Technical Network Vulnerability Assessment: EPA's Research Triangle Park Campus*, Report No. 09-P-0055, December 9, 2008; EPA-OIG, *Results of Technical Network Vulnerability Assessment: EPA Headquarters*, Report No. 09-P-0097, February 23, 2009; EPA-OIG, *Results of Technical Network Vulnerability Assessment: EPA's Great Lakes National Program Office*, Report No. 09-P-0185, June 30, 2009; EPA-OIG, *Results of Technical Network Vulnerability Assessment: EPA's National Computer Center*, Report No. 09-P-0186, June 30, 2009; EPA-OIG, *Results of Technical Network Vulnerability Assessment: Region 8*, Report No. 09-P-0187, June 30, 2009; EPA-OIG, *Results of Technical Network Vulnerability Assessment: EPA's Potomac Yard Buildings*, Report No. 09-P-0188, June 30, 2009; EPA-OIG, *Results of Technical Network Vulnerability Assessment: EPA's 1310 L Street Building*, Report No. 09-P-0189, June 30, 2009; EPA-OIG, *Results of Technical Network Vulnerability Assessment: EPA's Research Triangle Park Finance Center*, Report No. 09-P-0227, August 31, 2009.

[61] EPA-OIG, *Self-reported Data Unreliable for Assessing EPA's Computer Security Program*, Report No. 10-P-0058, February 2, 2010.

[62] *CNN.com/technology*, "U.S. at Risk of Cyber Attacks, Experts Say," August 18, 2008.

[63] Supreme Court of the United States, Syllabus, *Massachusetts et al. v. Environmental Protection Agency et al.*, Case No. 05-1120, Certiorari to the United States Court of Appeals for the District of Columbia Circuit, Argued November 29, 2006, Decided April 2, 2007.

welfare. In response to the Supreme Court decision, EPA issued an endangerment finding in December 2009 stating that the current and projected atmospheric concentrations of six GHGs (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) threaten the public health and welfare of current and future generations.[64] EPA also determined that new motor vehicles threaten public health and welfare, as defined under CAA Section 202(a), because they contribute to GHG pollution. The issuance of these findings means that EPA must address the adverse impacts of this new set of air pollutants.[65] Addressing these impacts is a significant undertaking, similar to EPA's establishment of the six CAA criteria pollutants in the 1970s.[66]

EPA is addressing domestic GHG emissions through three avenues: (1) regulations, (2) voluntary programs, and (3) research and development.[67] Each presents the Agency with challenges that are to some extent beyond EPA's direct control.

- **Regulations.** EPA is regulating GHG emissions without specific legislation establishing a GHG program,[68] and in the midst of political and private opposition.[69]
- **Voluntary Programs.** EPA is relying on voluntary programs to reduce GHG emissions, but some of these reductions are based on limited, unverified, and anonymous data.[70]
- **Research and Development.** EPA is relying on multiagency research organizations for the information and tools to help address GHGs,[71] and to accelerate the development of new and advanced GHG reduction technologies.[72] Consequently, EPA has limited control over the content, conduct, and timing of this research.

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[64] *Federal Register*, Environmental Protection Agency, 40 CFR Chapter I, *Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, Final Rule,* December 15, 2009.
[65] *Federal Register*, Environmental Protection Agency, 40 CFR Chapter I, *Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, Proposed Rule*, April 24, 2009.
[66] Kreutzer, David, PhD, and Karen Campbell, PhD, The Heritage Foundation, *CO2-Emission Cuts: The Economic Costs of the EPA's ANPR Regulations*, Center for Data Analysis Report #08-10, October 29, 2008.
[67] U.S. EPA Website, information on U.S. and EPA change regulatory initiatives, policies, and actions.
[68] *Federal Register*, Environmental Protection Agency, 40 CFR Chapter I, *Regulating Greenhouse Gas Emissions Under the Clean Air Act, Proposed Rule*, July 30, 2008; *Federal Register*, Environmental Protection Agency, 40 CFR Parts 86, 87, 89, et al., *Mandatory Reporting of Greenhouse Gases, Final Rule*, October 30, 2009; U.S. EPA Administrator's letter to Senator Rockefeller concerning EPA's work to comply with the Supreme Court's decision in *Massachusetts v. EPA*, February 22, 2010
[69] Bravender, Robin, "16 'Endangerment' Lawsuits Filed Against EPA Before Deadline," *New York Times*, February 17, 2010; Berger, Matthew, "GOP Protest Builds Against EPA Regulating Greenhouse Gases," *Solve Climate Blog*, December 30, 2009.
[70] EPA-OIG, *Voluntary Greenhouse Gas Reduction Programs Have Limited Potential*, Report No. 08-P-0206, July 23, 2008.
[71] EPA-OIG, *EPA Needs a Comprehensive Research Plan and Policies to Fulfill its Emerging Climate Change Role*, Report No. 09-P-0089, February 2, 2009; Pielke, Roger A., Jr., "Scientific Information and Global Change Policymaking," *Climate Change* 28: 315-19, 1994.
[72] *C-Span* video archives, EPA Administrator's Address to the National Press Club on the Agency's Key Priorities, March 8, 2010, at 00:24:04 and 00:25:48.

EPA has begun developing regulations to control GHG emissions from vehicles[73] and large industrial facilities,[74] and plans to develop other GHG regulations,[75] but there is no statutory language that specifically establishes a GHG emissions reduction program[76] beyond new motor vehicles.[77] Without such language, EPA is relying on its interpretation of its authorities under the CAA to regulate GHG emissions from thousands of sources,[78] which could increase the risk of legal challenges to its GHG rules.[79] Industry groups, policy institutes, selected lawmakers, and three States have already filed 16 lawsuits challenging EPA's December 2009 endangerment finding.[80] Additionally, some lawmakers have proposed legislation to veto EPA's endangerment finding and stop the Agency from regulating GHGs.[81] Such political and private opposition make it more difficult for EPA to obtain the information it needs to develop and sustain GHG regulations.

To regulate sources of the six GHGs, EPA needs quality emissions data from GHG sources, assessments of the effectiveness of available GHG emissions reduction technologies, cost-benefit and cost-effectiveness analyses of regulatory control options, and assessments of the effectiveness of long-term storage of captured GHGs.[82] Obtaining quality information to develop and sustain regulatory decisions – already a difficult, lengthy process[83] – can be even more challenging when sources challenge the legal basis of the Agency's rules. For example, the 1990 CAA Amendments required that EPA address the hazards of mercury from a single source category – power plants.[84] Amid controversies and challenges, the Agency took about 15 years[85]

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[73] *Federal Register*, Environmental Protection Agency, 40 CFR Parts 86 and 600, Department of Transportation – National Highway Traffic Safety Administration, 49 CFR Parts 531, 533, 537, et al., *Proposed Rulemaking to Establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards, Proposed Rule,* September 28, 2009.
[74] *Federal Register*, Environmental Protection Agency, 40 CFR Parts 51, 52, 70, and 71, *Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, Proposed Rule*, September 30, 2009.
[75] U.S. EPA Administrator's February 22, 2010 letter to Senator Rockefeller concerning EPA's work to comply with the Supreme Court's decision in *Massachusetts v. EPA.*
[76] *Federal Register*, Environmental Protection Agency, 40 CFR Chapter I, *Regulating Greenhouse Gas Emissions Under the Clean Air Act, Proposed Rule,* July 30, 2008.
[77] Supreme Court of the United States, Syllabus, *Massachusetts et al. v. Environmental Protection Agency et al.*, Case No. 05-1120, Certiorari to the United States Court of Appeals for the District of Columbia Circuit, Argued November 29, 2006, Decided April 2, 2007.
[78] *Federal Register*, Environmental Protection Agency, 40 CFR Chapter I, *Regulating Greenhouse Gas Emissions Under the Clean Air Act, Proposed Rule,* July 30, 2008; and *Federal Register*, Environmental Protection Agency, 40 CFR Parts 51, 52, 70, and 71, *Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, Proposed Rule,* September 30, 2009.
[79] *Federal Register*, Environmental Protection Agency, 40 CFR Chapter I, *Regulating Greenhouse Gas Emissions Under the Clean Air Act, Proposed Rule,* July 30, 2008.
[80] Bravender, Robin, "16 'Endangerment' Lawsuits Filed Against EPA Before Deadline," *New York Times*, February 17, 2010.
[81] Berger, Matthew, "GOP Protest Builds Against EPA Regulating Greenhouse Gases," *Solve Climate Blog*, December 30, 2009.
[82] *Federal Register*, Environmental Protection Agency, 40 CFR Chapter I, *Regulating Greenhouse Gas Emissions Under the Clean Air Act, Proposed Rule,* July 30, 2008.
[83] EPA-OIG, *Additional Analyses of Mercury Emissions Needed Before EPA Finalizes Rules for Coal-Fired Electric Utilities*, Report No. 2005-P-00003, February 3, 2005; EPA-OIG, *Monitoring Needed to Assess Impact of EPA's Clean Air Mercury Rule on Potential Hotspots*, Report No. 2006-P-00025, May 15, 2006; U.S. EPA Website, information on Agency's efforts to research and control mercury from power plants.
[84] Clean Air Act Amendments of 1990, Section 112(n)(1).

to issue mercury regulations for coal-fired power plants, which were subsequently vacated by the court in 2008.[86] To control the six GHGs, EPA will not only have to address power plants, but also new source categories.[87] According to the Administrator, efforts to reduce GHGs will touch practically every part of the U.S. economy.[88] The economic challenges of controlling GHG emissions sector by sector through regulations will mean that innovation and new technologies beyond EPA's direct control will be needed.[89]

In addition to regulations, EPA is relying on voluntary programs to reduce 45 million metric tons of carbon equivalents annually from the buildings, industry, and transportation sectors,[90] but some voluntary programs present challenges.[91] For example, three key voluntary programs (ENERGY STAR, Climate Leaders, and Clean Energy-Environment State Partnership) are joint partnerships between EPA, other federal/State/local agencies, and/or industries.[92] A major challenge with voluntary programs has been weaknesses in data collection and reporting systems.[93] These systems are neither transparent nor verifiable, and are limited by anonymous reporting and the use of third-party industry data. Some of the reported reductions from voluntary programs may be based on unreliable data, and are not within EPA's direct control.

EPA is relying on two multiagency research and development programs (U.S. Global Change Research Program (USGCRP) and the Climate Change Technology Program (CCTP) to better understand the effects and risks of climate change, and to develop new technologies to reduce GHG emissions.[94] Important questions remain about the degree to which climate change will occur, how fast it will occur, and how the changes will affect the rest of the climate system.[95] EPA is part of the 13-agency USGCRP[96] effort to improve understanding of the science of climate change and its potential impacts.[97] EPA fulfills its USGCRP role through the Agency's Global Change Research Program (GCRP), whose primary emphasis is to understand the potential consequences of climate variability and change on human health, ecosystems, and

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[85] EPA-OIG, *Additional Analyses of Mercury Emissions Needed Before EPA Finalizes Rules for Coal-Fired Electric Utilities,* Report No. 2005-P-00003, February 3, 2005; EPA-OIG, *Monitoring Needed to Assess Impact of EPA's Clean Air Mercury Rule on Potential Hotspots*, Report No. 2006-P-00025, May 15, 2006; and U.S. EPA Website, information on the Agency's efforts to research and control mercury from power plants.
[86] U.S. EPA Website, information on the Clean Air Mercury Rule.
[87] *Federal Register*, Environmental Protection Agency, 40 CFR Chapter I, *Regulating Greenhouse Gas Emissions Under the Clean Air Act, Proposed Rule,* July 30, 2008.
[88] *C-Span* video archives, EPA Administrator's Address to the National Press Club on the Agency's Key Priorities, March 8, 2010, at 00:32:38.
[89] *Federal Register*, Environmental Protection Agency, 40 CFR Chapter I, *Regulating Greenhouse Gas Emissions Under the Clean Air Act, Proposed Rule,* July 30, 2008.
[90] U.S. EPA, *Performance and Accountability Report for Fiscal Year 2009,* November 16, 2009.
[91] EPA-OIG, *Voluntary Greenhouse Gas Reduction Programs Have Limited Potential,* Report No. 08-P-0206, July 23, 2008.
[92] U.S. EPA Website, *Current and Near-Term Greenhouse Gas Reduction Initiatives*.
[93] EPA-OIG, *Voluntary Greenhouse Gas Reduction Programs Have Limited Potential,* Report No. 08-P-0206, July 23, 2008.
[94] U.S. EPA Website, information on U.S. and EPA change regulatory initiatives, policies, and actions; U.S. EPA, *Performance and Accountability Report for Fiscal Year 2009*, November 16, 2009.
[95] U.S. EPA, *Performance and Accountability Report for Fiscal Year 2009,* November 16, 2009, page II-6.
[96] U.S. Global Change Research Program Website, *Participating Departments and Agencies in USGCRP*.
[97] U.S. Global Change Research Program Website, "About/Program Overview."

socioeconomic systems in the United States.[98] EPA regions and State/local agencies rely on GCRP and USGCRP for information and tools to help them fulfill their regulatory responsibilities.[99] Whether the regions and State/local agencies get the information and tools they need in a timely manner is not fully within their control. The CCTP, a multiagency effort led by the U.S. Department of Energy (DOE), is supposed to accelerate the development of new and advanced technologies to address climate change.[100] Some climate-change-related technologies being explored within CCTP are terrestrial sequestration (U.S. Department of the Interior), biofuels (DOE), fuel cells (U.S. Department of Defense), and ENERGY STAR products (EPA). EPA recognizes that creativity and innovation, among other things, will be needed to meet these challenges.[101] Such innovations are beyond EPA's direct control.[102]

EPA's Framework for Assessing and Managing Chemical Risks

EPA's framework for assessing and managing chemical risks has not yet achieved the goal of protecting human health and the environment. In 1976, Congress passed the Toxic Substances Control Act (TSCA) authorizing EPA to collect information on, and to regulate the production and distribution of, chemicals. TSCA required EPA to (1) create an inventory of "existing chemicals" already in commerce, (2) regulate unreasonable risk from "new chemicals" introduced into commerce subsequent to the Act, and (3) make health and safety information available for examination while protecting manufacturers' confidential business information. We recently reported that EPA's New Chemicals Program had limitations in three processes intended to identify and mitigate new risks – assessment, oversight, and transparency.[103] Moreover EPA's performance measures for managing risks from new chemicals do not accurately reflect program performance in preventing risk, nor do they assure compliance.

EPA's effectiveness in assessing and managing chemical risks is hampered in part by limitations on the Agency's authority to regulate chemicals under TSCA. When TSCA was enacted, it authorized the manufacture and use, without any evaluation, of all chemicals that were produced for commercial purposes in 1976 or earlier years. Thus, manufacturers of these grandfathered chemicals were not required to develop and produce data on toxicity and exposure, which are needed to properly and fully assess potential risks. Further compounding this problem, the statute never provided adequate authority for EPA to evaluate existing chemicals as new concerns arose or as new scientific information became available. Enforcement is also critical to ensuring environmental protection, but TSCA lacks the broad information-gathering and enforcement provisions found in other major environmental protection statutes. For example,

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[98] U.S. EPA Website, information on EPA's Global Change Research Program.
[99] EPA-OIG, *EPA Needs a Comprehensive Research Plan and Policies to Fulfill its Emerging Climate Change Role,* Report No. 09-P-0089, February 2, 2009; Pielke, Roger A., Jr., "Scientific Information and Global Change Policymaking," *Climate Change* 28: 315-19, 1994.
[100] DOE, U.S. Climate Change Technology Program, *Vision and Framework for Strategy and Planning,* Report No. DOE/PI-0005, September 2006.
[101] *C-Span* video archives, EPA Administrator's Address to the National Press Club on the Agency's Key Priorities, March 8, 2010, at 00:24:04 and 00:25:48.
[102] DOE, U.S. Climate Change Technology Program, *Vision and Framework for Strategy and Planning,* Report No. DOE/PI-0005, September 2006.
[103] EPA-OIG, *EPA Needs a Coordinated Plan to Oversee its Toxic Substances Control Act Activities 10-P-0066,* February 17, 2009.

TSCA lacks the administrative authority to seek injunctive relief, issue administrative orders, collect samples, and quarantine and release chemical stocks, among other key authorities.

On September 29, 2009, the Administration outlined core principles to strengthen U.S. chemical management laws.[104] Administrator Jackson testified before Congress on December 2, 2009,[105] on the need to revise and modernize TSCA, but the Agency's toxics chief recently indicated that TSCA reform is "unlikely" this congressional session.[106] However, in the absence of new legislation, we found EPA could better manage existing authorities. EPA does not have integrated procedures and measures in place to ensure that new chemicals entering commerce do not pose an unreasonable risk to human health and the environment. Oversight of regulatory actions designed to reduce known risks is a low priority, and the resources allocated by EPA are not commensurate with the scope of monitoring and oversight work. In addition, EPA's procedures for handling confidential business information requests are predisposed to protect industry information rather than to provide public access to health and safety studies.

EPA's framework for assessing and managing chemical risks from endocrine disruptors is also failing to show results. In August 1996, Congress passed both the Food Quality Protection Act and amendments to the SDWA, calling for the screening and testing of chemicals and pesticides for possible endocrine-disrupting effects (i.e., adverse effects on the development of the brain and nervous system, the growth and function of the reproductive system, as well as the metabolism and blood sugar levels). EPA established the Endocrine Disruption Screening Program (EDSP) in 1998.[107] The EDSP was mandated to use validated methods for the screening and testing of chemicals to identify potential endocrine disruptors. In 2000, EPA estimated that approximately 87,000 chemicals would need to be screened for potential endocrine-disrupting effects. As of February 25, 2010, EPA issued test orders to industry for 67 pesticide active ingredients and high-production volume chemicals with some pesticide inert uses. Thus, 14 years after the passage of the Food Quality Protection Act and amendments to the SDWA, EPA has yet to regulate the endocrine-disrupting effects of any chemicals.

[104] U.S. EPA, *Essential Principles for Reform of Chemicals Management Legislation*, September 29, 2009.
[105] U.S. Senate, Committee on Environment and Public Works, Oversight Hearing on the Federal Toxic Substances Control Act, December 2, 2009.
[106] EPA Toxics Chief, Steve Owens, made these remarks during the Environmental Council of States' spring meeting on March 24, 2010. However, on April 15, 2010, two members of Congress (Sen. Lautenberg and Rep. Waxman) introduced legislation in their respective chambers to overhaul TSCA, though activists and others note that extensive stakeholder discussions on each bill could delay passage of TSCA reform legislation until next year.
[107] *Federal Register*, Environmental Protection Agency, *Endocrine Disruptor Screening Program*, August 11, 1998.