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Terrorism, Security, and Environmental Protection

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TERRORISM, SECURITY, AND ENVIRONMENTAL PROTECTION

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INTRODUCTION

Imagine that the Centers for Disease Control (“CDC”) discovered an outbreak of a life-threatening disease, the spread of which could be significantly limited through publicity regarding the manner in which the disease is transmitted, but the CDC withheld information about the outbreak because it was concerned that publicity regarding the outbreak could lead to widespread panic and economic dislocation. Alternatively, imagine that the Occupational Safety and Health Administration (“OSHA”) or the Environmental Protection Agency (“EPA”) learned that the inhalation of certain chemicals caused severe and acute health problems, but the agencies withheld information regarding which companies used those chemicals because they feared that terrorists would discover the location of the chemicals and obtain them for use as weapons. In light of the response of the federal and state governments to the terrorist attacks of September 11, 2001, neither of these scenarios seems as far-fetched as they might have in the past.

Almost two centuries ago, James Madison declared that “[k]nowledge will forever govern ignorance; And a people who mean to be their own Governors, must arm themselves with the power which knowledge gives.”¹ However, since September 11, federal and state governments have significantly reduced public access to environmental, health, and safety information because they fear such information could be used by terrorists to harm citizens of the United States.² These post-September 11 actions

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¹ Letter from James Madison to W.T. Barry (Aug. 4, 1822), in *THE COMPLETE MADISON: HIS BASIC WRITINGS* 337 (Saul K. Padover ed., 1953).

² See OMB Watch, *Access to Government Information Post September 11th*, at

seem to portend an anti-democratic trend toward greater government control of environmental, health, and safety information.

For a decade or more prior to September 11, federal and state governments increasingly addressed environmental problems through market-based programs, instead of traditional command and control programs.³ Information disclosure was an important tool for the government.⁴ The legislature enacted or amended several environmental laws requiring disclosure of health and safety information.⁵ The public, empowered with that information, could then use green consumerism, green investing, negotiation, and lobbying to encourage businesses to reduce activities that presented environmental, health, or safety risks.⁶ However, the

<http://www.ombwatch.org/article/articleview/213/1/1> (last visited Sept. 11, 2004) [hereinafter *Access to Government Information*] (outlining the information removed from government Web sites).

³ For example, EPA's Clean Air Markets Division works towards better air quality through the use of market-based regulatory programs. U.S. Env'tl Prot. Agency, Clean Air Markets, *available at* <http://www.epa.gov/airmarkets/about.html> (last updated Sept. 23, 2004). *See also* Stephen M. Johnson, *Economics v. Equity: Do Market Based Environmental Reforms Exacerbate Environmental Justice?* 56 WASH. & LEE L. REV. 111, 113-14 (1999) (stating that "major types of market-based approaches that have been implemented over the past decade are pollutant trading programs, pollution taxes and subsidies, deposit-refund systems, and regulator waiver or variance programs, such as EPA's Brownfield Project XL or Brownfields Action Agenda") (citations omitted). OMB Watch and the Electronic Frontier Foundation Web sites identify government Web sites that have been removed since September 11. *See Access to Government Information*, *supra* note 2.

⁴ For example, the Toxic Release Inventory ("TRI"), to which facilities report chemicals used and released, allows the public to use the information as leverage to stop or reduce pollution. Adoption of Reporting Elements, Toxic Chemical Release Reporting, Community Right to Know Act ("ECPRA"), 61 Fed. Reg. 51, 322 (proposed Oct. 1, 1997) (codified at 42 U.S.C. § 11003 (2000)).

⁵ *See, e.g.*, The Emergency Planning & Community Right to Know Act of 1986, 42 U.S.C. §§ 11001-11050 (1994) (requiring manufacturing facilities to provide information on use of regulated chemicals released or used to EPA and states); *Id.* § 11023; *see also* 42 U.S.C. §§ 300(g)—3(c) revising the Safe Drinking Water Act ("SDWA") to require water suppliers to give information about effects of contaminants in water.

⁶ U.S. Env'tl Prot. Agency, 2002 Toxics Release Inventory Public Data Release, *at* <http://www.epa.gov/tri> (last visited Nov. 4, 2004).

measures implemented by the federal and state governments in response to September 11 have been a throw-back to the 1970s. Not only have governments significantly reduced disclosure of environmental, health, and safety information, but they have also relied primarily on command and control requirements to reduce security risks to companies that engage in activities that could harm the environment, health, or safety.⁷ This circling of the wagons ignores the lessons learned in environmental regulation over the past decade.

Instead of reducing disclosure of environmental, health, and safety information, governments should expand planning and information disclosure requirements for businesses that engage in activities that could potentially harm the environment, health, and safety. Instead of relying on command and control requirements to harden targets, governments should use September 11 as the impetus for a renewed focus on pollution prevention and toxics use reduction.

Part I of this Article examines the post-September 11 trend of reduced access to environmental, health, and safety information. Part II introduces the tools that governments might use to protect the environment while protecting homeland security, including planning and information disclosure, command and control measures, and pollution prevention measures. Part II also criticizes the reliance on command and control measures as the primary means of addressing the security issues created by businesses that engage in activities that could harm the environment, health, or safety. Part III explores the advantages of planning and information disclosure programs over command and control programs as a means of reducing environmental, health, and safety risks posed by businesses while recognizing security concerns. Finally, Part IV reviews the benefits of pollution prevention and toxics use reduction programs and suggests improvements to existing programs.

⁷ See *infra* notes 24-40, 81-89, and accompanying text.

I. REDUCED ACCESS TO ENVIRONMENTAL, HEALTH, AND SAFETY INFORMATION

Following the terrorist attacks of September 11, federal and state governments have taken numerous steps to reduce public access to environmental, health, and safety information.⁸ Governments have removed information from the Internet, narrowed their interpretation of freedom of information laws, and enacted new laws or reinterpreted administrative regulations to limit disclosure of information.⁹

Almost immediately after the September 11 attacks, government agencies began removing from their Web sites environmental, health, or safety information they believed could, if disclosed, increase risks to public safety.¹⁰ EPA, which had been a leader in using the Internet as a public involvement tool, removed emergency planning information for chemical facilities under the agency's risk management program.¹¹ The agency also reduced the public's ability to search its Envirofacts database, which contains information about pollution and environmental compliance for industrial facilities regulated by the agency.¹² The Nuclear Regulatory Commission removed a map of nuclear reactors from

⁸ See generally *Access to Government Information*, *supra* note 2; Chemical Security Act of 2003, S. 152, 108th Cong. (2003); Wastewater Treatment Works Security and Safety Act, S. 779, 108th Cong. (2003); Public Health Security and Bioterrorism Preparedness and Response Act of 2002, Pub. L. No. 107-481. See also Penn Internet & American Life Project, *One Year Later: September 11 and the Internet*, 8-12, Sept. 5, 2002, at http://www.pewinternet.org/pdfs/PIP_9-11_Report.pdf.

⁹ See *infra* notes 10-77 and accompanying text.

¹⁰ See Joseph A. Siegel, *Terrorism and Environmental Law: Chemical Facility Site Security vs. Right-to-Know?*, 9 WIDENER L. SYMP. J. 339 (2003); Electronic Frontier Foundation, *Chilling Effects of Anti-Terrorism*, at http://www.eff.org/Privacy/Surveillance/Terrorism/antiterrorism_chill.html (last visited Sept. 11, 2004); *Access to Government Information*, *supra* note 2.

¹¹ See Siegel, *supra* note 10, at 339.

¹² U.S. Env't'l Prot. Agency, Envirofacts Data Warehouse, at http://www.epa.gov/enviro/index_java.html (last updated June 30, 2004). See John D. Echeverria & Julie B. Kaplan, *Poisonous Procedural "Reform": In Defense of Environmental Right-to-Know*, 12 KAN. J.L. & PUB. POL'Y 579, 597-98 (2003).

its Web site and temporarily “disabled its entire Web site to prevent review of all material” on the site.¹³ “The U.S. Department of Transportation removed pipeline mapping information from its Web site”¹⁴ New Jersey and Pennsylvania, among other states, removed information from their Web sites regarding the health and environmental effects of chemicals.¹⁵

Shortly after government agencies began purging Web sites of environmental, health, and safety information, the federal government took a more drastic step to limit public access to information when Attorney General John Ashcroft issued a memorandum encouraging agencies to be less liberal in disclosing information under the Freedom of Information Act (“FOIA”).¹⁶ The Attorney General’s memorandum indicated that, although the Administration recognized the important goals of FOIA, the Department of Justice (“DOJ”) and the Bush administration were “equally committed to protecting other fundamental values that are held by our society[,] . . . [including] safeguarding our national security . . . [and] protecting sensitive business information”¹⁷ Accordingly, the Attorney General’s memorandum counseled agencies to “carefully consider” the exemptions from disclosure when deciding whether to release information requested under FOIA.¹⁸ The memorandum stressed that “[a]ny discretionary decision . . . to disclose information . . . should be made only after full and deliberate consideration of the institutional, commercial, and personal privacy interests that could be implicated by disclosure of the information.”¹⁹ It further stated that if agencies decided to withhold records, DOJ would defend the decision “unless [the agencies] lack[ed] a sound legal basis”²⁰

¹³ See Siegel, *supra* note 10, at 340 (footnote omitted).

¹⁴ *Id.* at 339-40.

¹⁵ See *Access to Government Information*, *supra* note 2.

¹⁶ See Memorandum from John Ashcroft to the Heads of All Federal Departments and Agencies (Oct. 12, 2001), available at <http://www.usdoj.gov/04foia/011012.htm>.

¹⁷ *Id.*

¹⁸ *Id.*

¹⁹ *Id.*

²⁰ *Id.*

One year after the Attorney General issued his FOIA memorandum, the White House placed further limits on agencies' discretion in releasing information under FOIA when, at the request of Andrew Card, the President's Chief of Staff, the Information Security Oversight Office and DOJ's Office of Information and Privacy issued a memorandum to agencies regarding classified information and sensitive, *but unclassified*, information.²¹ The memorandum noted that "agencies maintain and control sensitive information related to America's homeland security that might not meet one or more of the standards for classification" as classified information under FOIA and that "[t]he need to protect such sensitive information from inappropriate disclosure should be carefully considered"²² The memorandum stressed that "in taking necessary and appropriate actions to safeguard sensitive but unclassified information related to America's homeland security," federal agencies should process requests for information "in accordance with the Attorney General's FOIA Memorandum of October 12, 2001, by giving full and careful consideration to all applicable FOIA exemptions."²³

Congress also took a strong step toward limiting public access to information when it enacted the Critical Infrastructure Information Act of 2002 ("CIIA"), which created a new FOIA exemption for critical infrastructure information.²⁴ The law requires the Department of Homeland Security ("DHS") "[t]o carry out comprehensive assessments of the vulnerabilities of the key resources and critical infrastructure of the United States" to terrorist attacks, and to prepare a plan to protect those resources and infrastructure from

²¹ See Memorandum from Laura L.S. Kimberly, Acting Director, Information Security Oversight Office, and Richard L. Huff & Daniel J. Metcalfe, Co-Directors, Office of Information and Privacy, DOJ, to Departments and Agencies (March 21, 2002), *available at* <http://www.usdoj.gov/oip/foiapost/2002foiapost10.htm>.

²² *Id.*

²³ *Id.*

²⁴ Critical Infrastructure Information Act of 2002, Pub. L. No. 107-296, §§211–15, 116 Stat. 2150 (2002) (codified at 6 U.S.C. §122 (Supp. 2003)). DHS promulgated regulations to implement the Act on April 15, 2003. See 68 Fed. Reg. 18,523 (Apr. 15, 2003).

attacks.²⁵ Critical infrastructure includes power production, generation, and distribution systems, information technology and telecommunications systems, and similar resources.²⁶ In order to facilitate collection of the information needed by the government to conduct assessments and create emergency plans, the law provides that “critical infrastructure information (including the identity of the submitting person or entity) that is voluntarily²⁷ submitted to a covered Federal agency for use by that agency regarding the security of critical infrastructure” is exempt from disclosure under FOIA.²⁸ The law also provides that critical infrastructure information that is voluntarily submitted cannot be used in any civil action arising under federal or state law, cannot be shared with other federal agencies except for the purposes of CIIA, and cannot be disclosed by state agencies under state disclosure laws if the information is provided to them.²⁹ Further, the law creates criminal sanctions for the disclosure by federal employees of voluntarily submitted critical infrastructure information.³⁰

Supporters of the legislation may argue that CIIA does not significantly limit public access to environmental, health, and safety information because it only protects critical infrastructure information that is voluntarily submitted.³¹ However, “critical infrastructure information” is defined broadly to include “any planned or past operational problem or solution regarding critical infrastructure . . . including repair, recovery, reconstruction, insurance, or continuity, to the extent it is related to such

²⁵ 6 U.S.C.A. § 121 (Supp. 2004).

²⁶ *Id.* The President or Secretary of Homeland Security may designate programs as critical infrastructure protection programs. *Id.* § 132.

²⁷ “Voluntary” submission means the submission “in the absence of [an] agency’s exercise of legal authority to compel access to or submission of such information.” 6 U.S.C.A. § 131(7)(A) (Supp. 2004).

²⁸ *Id.* § 133(a)(1).

²⁹ *Id.*

³⁰ *Id.* § 133(f).

³¹ See generally National Homeland Security and Combating Terrorism Act of 2002, Committee on Governmental Affairs, S. RPT. NO. 107-175, CIS No. 2 CIS S403-9 (June 24, 2002), for the portion of legislative history recommending passage.

interference, compromise, or incapacitation.”³² If a utility thus submitted information to DHS regarding past operational problems, repairs, or reconstruction at electricity generating facilities, that information would be exempt from disclosure under FOIA and state FOIAs.³³ To the extent the information identified a past violation of federal or state environmental laws, it could not be used in a civil enforcement action. In addition, federal employees who discovered violations of environmental laws through the voluntary submissions would face criminal fines and imprisonment if they disclosed those violations to federal or state environmental regulators.³⁴

The 107th Congress enacted another law that requires submission of health and safety information, but prohibits public disclosure of that information. The Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (“PHSBPRA”)³⁵ amended SDWA to require that drinking water providers review: their “water collection, pretreatment, treatment, storage and distribution facilities, . . . and other . . . systems, . . . the use, storage or handling of various chemicals [in

³² 6 U.S.C.A. § 131(3) (Supp. 2004).

³³ 5 U.S.C. § 522(b) (listing the exemptions).

³⁴ Citizens and interest groups concerned with government accountability and public access to information have sharply criticized CIIA. See OMB Watch, *Restore FOIA Bill: An Important Step in Fixing the Homeland Security Act*, at <http://www.ombwatch.org/article/articleview/1378/1/73/> (last visited Sept. 11, 2004). Several Senators have introduced the Restoration of Freedom of Information Act of 2003 to amend the information disclosure provisions of the law. See S. 609, 108th Cong. (2003). A companion bill has also been introduced in the House. See Restoration of Freedom of Information Act of 2003, H.R. 2526, 108th Cong. (2003). The proposed revisions would clarify that CIIA does not protect information that is disclosed under it if the government could have required the submission of the information. *Id.* They would also clarify that the law only protects information submitted to DHS, and would allow federal agencies that receive voluntarily submitted information to share that information with other federal agencies. See *id.* The proposed revisions would also eliminate the civil immunity provisions of CIIA, the criminal penalty provisions that apply to federal employees, including whistleblowers, and the preemption of state and local disclosure laws. *Id.*

³⁵ Pub. L. No. 107-188, 116 Stat. 594 (2002).

their systems], and the operation and maintenance of such system[s]" to determine their vulnerability to intentional acts that could significantly harm public health.³⁶ While drinking-water providers must prepare emergency response plans to address risks identified in the vulnerability assessments,³⁷ the assessments, and any information derived from the assessments, are exempt from disclosure under FOIA and must not be provided to state or local officials unless EPA deems it appropriate.³⁸ Federal employees who disclose the assessments to persons other than those designated by the Administrator of EPA can be fined or imprisoned under the law.³⁹

State legislatures are following the federal government's lead by enacting legislation to limit disclosure of environmental, health, and safety information when disclosure of such information could present security risks. For instance, at least twenty-seven states have enacted legislation to limit disclosure of vulnerability assessments prepared by drinking water suppliers under PHSBPRA.⁴⁰

While federal and state governments have reduced public access to environmental, health, and safety information in the wake of the September 11 attacks, regulated industries had consistently pressed for such reductions prior to September 11.⁴¹ However, these pre-September 11 requests for limits on public access to information were not motivated primarily by security concerns. When businesses sought to limit disclosure of toxic release inventory data, under the EPCRA, pollution prevention plans under state laws, or information regarding environmental "violations discovered through environmental audits,"⁴² their

³⁶ 42 U.S.C.A. § 300i-2(a) (2003).

³⁷ *Id.* § 300i-2(b).

³⁸ *Id.* § 300i-2(a).

³⁹ *Id.*

⁴⁰ *See Majority of States Amending Disclosure Laws to Protect Security-Related Data at Facilities*, 34 ENV'T REP. (BNA) 2128 (Sept. 26, 2003).

⁴¹ *See generally Access to Government Information*, *supra* note 2.

⁴² Steven A. Herman, Statement Before the Environment and Public Works Committee (Oct. 30, 1997), *available at* <http://epw.senate.gov/105th/epa10-30htm>.

motivations were primarily economic.⁴³ Not only did businesses seek to limit disclosure of confidential business information and trade secrets, but they also sought to limit disclosure of information that might portray them as environmentally insensitive or that could subject them to citizen or government lawsuits.⁴⁴

⁴³ Cynical observers might speculate that while regulated industries lobby for reductions in information disclosure based on security concerns, the true motivation for seeking reduced information disclosure continues to be economic.

⁴⁴ See Daniel C. Esty, *Environmental Protection in the Information Age*, 79 N.Y.U. L. REV. 115 (2004). Businesses are not alone in taking advantage of heightened security concerns to lobby for legislative and administrative changes that they previously sought under other guises. Subsequent to the events of September 11, the U.S. military has lobbied strongly for exemptions from environmental laws on the grounds that such exemptions are necessary to facilitate training during this period of heightened security. On March 6, 2003, the Pentagon announced a Readiness and Range Preservation initiative, in which it sought to exempt military training activities from several provisions of the Clean Air Act, the Endangered Species Act, the Resource Conservation and Recovery Act ("RCRA"), Superfund, and the Marine Mammal Protection Act. See Linda Roeder, *Bush Administration to Clarify Proposal Allowing Military Environmental Exemptions*, 34 ENV'T REP. (BNA) 760 (Apr. 4, 2003); Linda Roeder, *Defense Department Proposal Jeopardizes Environmental Laws, House Democrats Say*, 34 ENV'T REP. (BNA) 761 (Apr. 4, 2003). Most of the proposed changes concerned waste disposal because the Defense Department sought to "remove 'explosives, unexploded ordinance, [and] munitions'" from RCRA's definition of "solid waste" and to limit the government's authority to require the military to clean up pollution caused by those materials under RCRA or Superfund. *Id.* at 762. While Congress did not adopt the broad exemptions sought by the Defense Department, it did adopt more modest measures. See *House, Senate OK Defense Authorization Bill Containing Endangered Species Act Changes*, 34 ENV'T REP. (BNA) 1236 (May 20, 2003). For instance, the National Defense Authorization Act for Fiscal Year 2004 prohibits the federal government from designating critical habitat for endangered species on military lands that have adopted Integrated Resources Management Plans for managing fish and wildlife habitats. *Id.* At the same time the Pentagon announced its Readiness and Range Preservation Initiative, Deputy Defense Secretary Paul Wolfowitz sent a memorandum to the Secretaries of the Army, Navy, and Air Force, reminding them "that nine environmental laws authorize the president to exempt military training activities if he determines such action is in the 'paramount interest of the United States' or necessary for 'reasons of national security'" and urging the Secretaries "to abandon their 'past restraint' in pursuing national security exemptions 'in cases where environmental requirements threaten [the] continued ability to properly train and equip the

Professor Daniel C. Esty notes that businesses are often reluctant to disclose information because they see themselves in an adversarial relationship with regulators, they may think their information is a strategic asset and source of competitive advantage, and they fear litigation that could result from disclosure of the information.⁴⁵

Prior to September 11, EPA's Risk Management Program ("RMP") under the Clean Air Act was the only environmental information disclosure program for which security was raised as a significant concern. Section 112 of the Act requires owners and operators of facilities that produce, process, handle, or store hazardous substances that are covered by the Act to prepare RMPs that assess the potential effects of an accidental substance release.⁴⁶ EPA's regulations require RMPs to include an Offsite Consequences Analysis ("OCA") that examines the impacts of a release on the surrounding community, including an analysis of the "worst case scenario."⁴⁷ As part of OCA, facilities are required to describe the location of hazardous substances at the facility, the zone around the facility that would be affected by a release of those substances, and the number of residents, schools, and day care centers that would potentially be affected within the zone.⁴⁸ When EPA issued regulations in 1996 to implement RMP, information disclosure was a central part of the regulations.⁴⁹ EPA developed

men and women of the Armed Forces." Mike Ferullo, *Pentagon Memo Orders Service Chiefs to Seek Environmental Exemption Cases*, 34 ENV'T REP. (BNA) 714 (Mar. 28, 2003).

⁴⁵ See Esty, *supra* note 44, at 207.

⁴⁶ 42 U.S.C.A. § 7412(r)(1) (2003).

⁴⁷ See Accidental Release Prevention Requirements, 61 Fed. Reg. 31,668 (June 20, 1996) (codified at 40 C.F.R. § 68.165).

⁴⁸ *Id.*

⁴⁹ The agency indicated

that information about hazards in a community can and should lead public officials and the general public to work with industry to prevent accidents. . . . EPA intends that officials and the public use this information to understand the chemical hazards in the community and then engage in a dialogue with industry to reduce risk.

Accidental Release Prevention Requirements, 61 Fed. Reg. at 31,670.

an electronic reporting system for RMP information⁵⁰ and announced plans to make the information publicly available through the Internet.⁵¹ FBI and other law enforcement officials criticized EPA's plan to electronically publicize the information, citing national security concerns.⁵² Congress reacted to those concerns by passing the Chemical Safety Information, Site Security, and Fuels Regulatory Relief Act ("CSISSFRR"),⁵³ which imposed a one-year moratorium on public access to any OCA information through the Internet or FOIA and required that the government promulgate regulations allowing public access to the information only after a cost-benefit analysis of disclosure.⁵⁴ Within a year of Congress' enactment of CSISSFRR,⁵⁵ EPA and DOJ promulgated regulations to implement the law.⁵⁶ The rules severely limit public access to OCA information by providing that most OCA information will not be posted on the Internet,⁵⁷ and by requiring citizens

⁵⁰ *Id.*

⁵¹ *Id.* at 31,695.

⁵² Distribution of Offsite Consequence Analysis Information, 65 Fed. Reg. 24,834, 24,835 (Apr. 27, 2000).

⁵³ Pub. L. No. 106-40, 113 Stat. 207 (1999).

⁵⁴ 42 U.S.C.A. § 7412(r)(7)(H) (2003).

⁵⁵ The law provided that the bar on releasing information under FOIA would expire within a year if EPA and DOJ did not issue regulations providing for access to information within that time. *Id.* Because the government issued the regulations within a year, the bar on releasing OCA information under FOIA remains in effect.

⁵⁶ See Distribution of Off-Site Consequence Analysis Information: Final Rule, 65 Fed. Reg. 48,108, 48,126 (Aug. 4, 2000).

⁵⁷ The rule explicitly prohibits the posting of any of the following OCA information on the Internet: the names of chemicals addressed in the OCA, a description of the "worst-case scenario" or "the alternative release scenarios," the quantities of chemicals that would be released in a worst-case scenario or alternative scenario, the chemical release rates for the worst-case and alternative release scenarios, the "duration of the chemical release in the alternative release scenario," the distance to release endpoints, the "endpoint used for flammables for the alternative release scenario," the "residential population within the distance to endpoint," the "public receptors within the distance to endpoint," the "environmental receptors within the distance to end-point," and "[a]ny map or other graphic used to illustrate a scenario." *Id.* at 48,128.

to review most OCA material in agency reading rooms where the material may not be photocopied.⁵⁸

Prior to CSISSFRRA and other post-September 11 measures described above, government limits on access to environmental, health, and safety information were modest. Other than the exemptions to disclosure in FOIA,⁵⁹ the major limits imposed on access to environmental information were the trade secret and confidential business information limits imposed by many of the federal environmental laws.⁶⁰ Historically, those limits have not been absolute, and disclosure has been allowed when

⁵⁸ *Id.* at 48,127. In order to use reading rooms, persons must present a government-issued photo identification and sign in. A person may review up to ten OCAs per month for any facility in the country and can review an unlimited number of OCAs for facilities in their community. *Id.* For the first few years after the regulations were implemented, there were only thirty-three visits to reading rooms to access OCA information, and almost all of those visits were in Washington, D.C. See Jeff Johnson, *The Vanishing Risk Management Plan*, CHEM. & ENG'G NEWS, Feb. 25, 2002, at 27.

The final rules also established a "vulnerable zone indicator system." 65 Fed. Reg. 48,108, 48,127. The system allows persons, by e-mail, phone or mail, "to learn whether a specific address (such as that of a home, school, or place of employment) falls within a reported 'vulnerable zone' (i.e., within any RMP facility's worst-case or alternative release scenario's 'distance to endpoint')" of an accidental release. *Id.*

⁵⁹ FOIA exempts the following information from disclosure: classified information pursuant to criteria in Executive Orders, information "related solely to the internal personnel rules and practices of an agency," information "specifically exempted . . . by statute," "trade secrets and commercial or financial information obtained from a person [that is] privileged or confidential," "inter-agency or intra-agency memorandums or letters which would not be available by law to a party other than an agency in litigation with the agency," "personnel and medical files and similar files the disclosure of which would constitute a clearly unwarranted invasion of personal privacy," "records or information compiled for law enforcement purposes" (if certain criteria are met), certain information regarding "regulation or supervision of financial institutions," and "geological and geophysical information and data . . ." 5 U.S.C. § 552(b) (2000).

⁶⁰ See, e.g., Federal Insecticide, Fungicide, and Rodenticide Act, 7 U.S.C. §§136—136h (2000); Toxic Substances Control Act, 15 U.S.C. §§2601—2613(c) (2000); EPCRA, 42 U.S.C. §§ 11001-50, 11042 (2000).

non-disclosure creates significant risks to human health or the environment.⁶¹

The precautionary approach toward terrorism that has motivated the federal government's post-September 11 limits on information disclosure contrasts sharply with its consistent rejection of the "Precautionary Principle" in domestic and international environmental matters.⁶² The reduced access to environmental, health, and safety information is, however,

⁶¹ The Toxic Substances Control Act authorizes the government to disclose trade secrets "if the Administrator determines it necessary to protect health or the environment against an unreasonable risk of injury to health or the environment." 15 U.S.C. § 2613(a)(3). The Federal Insecticide, Fungicide, and Rodenticide Act also authorizes the release of certain trade secrets or confidential information if "necessary to protect against an unreasonable risk of injury to health or the environment." 7 U.S.C. § 136h(d). EPCRA also allows the government to disclose some trade secrets or confidential information when necessary to inform the public about the adverse health effects of a chemical regulated under the law. 42 U.S.C. § 11042.

The limited protection afforded to trade secrets and confidential information by the environmental laws is consistent with the protection afforded to trade secrets by common law. See Echeverria & Kaplan, *supra* note 12, at 611. Trade secret laws are designed to prevent unjust enrichment and competitive harm from the disclosure of trade secrets, and not to prevent public access to information when disclosure of the information is necessary to protect health or the environment. *Id.* at 612-13. While trade secrets may be property that is protected by the Constitution, courts have upheld federal disclosure of such information when necessary to protect health or the environment so long as the government compensates the property owner for the harm caused by the disclosure of the information. *Id.*

⁶² The United States and Europe have frequently clashed in recent years over the importance of a precautionary approach toward environmental and health matters, including the regulation of genetically modified food, climate change, and hormones in beef. The European Union has incorporated the "Precautionary Principle" into many of its environmental laws and frequently advocates incorporation of the Principle into international environmental treaties. See Jonathan B. Wiener, *Whose Precaution After All? A Comment on the Comparison and Evolution of Risk Regulatory Systems*, 13 DUKE J. COMP. & INT'L L. 207, 210-13 (2003). The United States has relied more heavily on risk assessment and cost-benefit analysis than on the Precautionary Principle in environmental decision-making, but it has taken a precautionary approach toward terrorism and other risks. *Id.* at 239-41.

consistent with a more general pattern of information control within the Executive Branch over the past few years. For instance, EPA has been criticized for removing, allegedly for political reasons, portions of a report that acknowledged the human impact on and environmental consequences of global warming.⁶³ This was just one of the actions discussed in a February, 2004 report of the Union of Concerned Scientists which suggested that scientific findings are routinely being suppressed, distorted, and manipulated by the Executive Branch for political reasons.⁶⁴ EPA was also recently criticized for potentially violating federal law by using an advertising campaign targeting Hispanic voters to win support for the Bush administration's Clear Skies Initiative.⁶⁵ The Executive Branch's attempts to limit public access to information have also spurred Supreme Court litigation. The Sierra Club and Judicial Watch challenged Vice President Richard Cheney's failure to

⁶³ See Andrew C. Revkin & Katherine Q. Seelye, *Report by E.P.A. Leaves Out Data on Climate Change*, N.Y. TIMES, June 19, 2003, at A1. In the spring of 2003, EPA prepared a draft report, obtained by the New York Times, on the state of the environment, which included a discussion of global warming. *Id.* After the document was reviewed by the White House, EPA was asked to remove from the report references to a 2001 National Research Council study, which suggested that smokestack and tailpipe emissions have contributed to global warming problems. *Id.* EPA was also asked to remove a study that suggested that global temperatures have increased sharply in the past decade compared to levels over the previous 1,000 years. *Id.* When the agency was asked to replace those references with references to a study that was financed, in part, by the American Petroleum Institute, which also raised skepticism regarding the causes for, or extent of, global warming, EPA removed the entire global warming discussion from the report. *Id.* See also *NBC Nightly News: White House Censors Global Warming Report* (NBC television broadcast, June 19, 2003).

⁶⁴ See UNION OF CONCERNED SCIENTISTS, *Scientific Integrity in Policymaking*, (Feb. 2004), available at http://www2.ucsusa.org/global_environment/rsi/page.cfm?pageID=1322.

⁶⁵ See Steve Cook, *House Democrats Question EPA Use of Ads to Boost Hispanic Support for 'Clear Skies'*, 34 ENV'T REP. (BNA) 2280 (Oct. 17, 2003). Critics argued that EPA's ad campaign violated provisions of the agency's appropriations law, which bans the use of agency funds for "propaganda purposes," and that it also violated a federal law prohibiting federal officials from engaging in campaigns about pending legislative matters. *Id.* (quoting a letter written by Reps. Henry Waxman (D-Calif.), John Dingell (D-Mich.), and David Obey (D-Wisc.) to Marianne Horinko, Acting EPA Administrator).

disclose information regarding meetings that he had with several energy company representatives, allegedly in violation of the Federal Advisory Committee Act, in order to develop a White House energy policy.⁶⁶

Unfortunately for advocates of open government and public access to information, the events of the past few years have reversed, or at least substantially slowed, a trend that was growing toward greater openness, increased public participation, increased information disclosure, and increased use of the Internet in federal and state government decision-making generally, and in environmental decision-making specifically. In 1996, Congress enacted the Electronic Freedom of Information Act ("E-FOIA") to encourage agencies to use the Internet and new technologies to collect and disseminate information and to protect and expand public access to information collected through those new technologies.⁶⁷ E-FOIA explicitly requires agencies to make an index of frequently requested records available to the public in electronic

⁶⁶ See *In re Cheney*, 334 F.3d 1096 (D.C. Cir. 2003), *vacated and remanded by* 124 U.S. 2576 (2004). The Sierra Club and Judicial Watch filed lawsuits against the Vice President, alleging that he violated the Federal Advisory Committee Act when he held several meetings with energy company representatives to develop the energy policy for the Bush administration in early 2000. *Id.* During discovery, the plaintiffs asked the Vice President to provide documents that identified the persons with whom he met when formulating the Administration's energy policy and the substance of his conversations with those persons. *Id.* When the Vice President refused to produce non-privileged documents and a privilege log, the district court ordered him to produce those documents. *Id.* He appealed the decision to the Supreme Court. *Id.*

⁶⁷ The amendments were enacted to "foster democracy by ensuring public access to agency records and information . . . improve public access to agency records and information" and "maximize the usefulness of agency records and information collected, maintained, used, retained, and disseminated by the Federal Government." Electronic Freedom of Information Act Amendments of 1996, Pub. L. No. 104-231, § 2(b), 110 Stat. 3048, 3048-49 (1996). In the findings for the amendments, Congress stated that "[g]overnment agencies should use new technology to enhance public access to agency records and information." *Id.* § 2(a)(6). The Act amends the FOIA definition of "record" to clarify that electronic data are "records." 5 U.S.C. § 552(f)(2) (2000). It also requires agencies to provide records to citizens who request them in electronic format if the records are readily reproducible in that format. *Id.* § 552(a)(3)(B).

format,⁶⁸ to make records created after November 1, 1996 available by computer or electronic means if those records must be made available to the public under FOIA,⁶⁹ and to make annual reports regarding FOIA compliance accessible by computer.⁷⁰ E-FOIA is just one of several measures instituted in the past decade designed to encourage agencies to increase public access to information through the use of new technologies. In 1996, Congress enacted the Information Technology Management Reform Act of 1996,⁷¹ which created a Chief Information Officer in each executive agency in order to “promot[e] the effective and efficient design and operation of all major information resources management processes for the executive agency”⁷² Also in 1996, President Clinton issued an Executive Order on Federal Information Technology that established the Government Information Technology Services Board to ensure that agencies utilize new technologies to improve access to public information and improve public participation in government decision-making.⁷³ The movement toward greater public access to government information through technology was consistent with the Paperwork Reduction Act of 1995, which requires agencies to “ensure that the public has timely and equitable access to the agency’s public information, including ensuring such access through . . . encouraging a diversity of public and private sources for information based on government public information . . . and agency dissemination of public information in an efficient, effective, and economical manner.”⁷⁴

Before the recent purge, EPA was a leader among federal agencies in making information accessible to the public through the Internet. The agency posted most of its major policies and guidance documents on its Web site and provided citizens with numerous tools to access and map environmental quality data

⁶⁸ *Id.* § 552(a)(2)(E) (2000).

⁶⁹ *Id.* § 552(a)(2).

⁷⁰ *Id.* § 552(e)(2).

⁷¹ Pub. L. No. 104-106, 110 Stat. 679 (1996).

⁷² *Id.* § 5125(b)(3).

⁷³ Exec. Order No. 13,011, 61 Fed. Reg. 37,657 (July 16, 1996).

⁷⁴ 44 U.S.C. § 3506(d)(1) (2000).

about their communities.⁷⁵ Although EPA and the federal government have continued to expand access to some information and increase participation in environmental decision-making through technology⁷⁶ and other means,⁷⁷ legislatures and other agencies

⁷⁵ See U.S. Env't Prot. Agency, *Alphabetical List of Databases and Software*, at <http://www.epa.gov/epahome/abcddata.htm> (last visited Sept. 12, 2004). Some of the more popular tools include TRI Explorer, which provides access to Toxic Release Inventory Data, at <http://www.epa.gov/triexplorer/> (last visited Sept. 12, 2004), and Surf Your Watershed, which allows citizens to obtain information about the water quality of, and pollution sources in, their watershed, at <http://www.epa.gov/enviro/> (last visited Sept. 12, 2004).

⁷⁶ EPA's enforcement and compliance database ("ECHO"), launched in November 2002, handled over one million search requests in its first year. See *Database of Environmental Records Handled 1 Million Searches in First Year*, 34 ENV'T REP. (BNA) 2604 (Nov. 28, 2003). In 2003, EPA also provided public access to a database of over 4,000 scientific studies and research that the agency relies upon in decision-making. See U.S. Env't Prot. Agency, *Science Inventory*, at <http://cfpub.epa.gov/si/> (last visited Sept. 12, 2004). More generally, on January 23, 2003, the federal government launched a Web site, <http://www.regulations.gov>, which allows citizens to access all rulemakings that are open for public comment, and to provide comments on those rules. The Web site is part of a federal "eRulemaking" initiative, which also includes the creation of a single government-wide electronic docket for rulemaking. See Patricia Ware, *Federal Government Launches Internet Site To Allow Greater Participation in Rulemaking*, 34 ENV'T REP. (BNA) 261 (Jan. 31, 2003).

⁷⁷ In June 2003, EPA amended its public involvement policy to involve the public in environmental decision-making at an earlier stage in the process, and to increase opportunities for public involvement. See 68 Fed. Reg. 33,946 (June 6, 2003). The policy identifies the following seven basic steps for effective public involvement:

1. Plan and budget for public involvement activities.
2. Identify the interested and affected public.
3. Consider providing technical or financial assistance to the public to facilitate involvement.
4. Provide information and outreach to the public.
5. Conduct public consultation and involvement activities.
6. Review and use input, and provide feedback to the public.
7. Evaluate public involvement activities.

Id. The policy applies to all EPA activities, but is only a policy and not a regulation. As such, it "is not legally enforceable, and does not confer legal rights or impose legal obligations upon any member of the public, EPA or any other agency. Resource constraints, the need for timely action and other

continue to limit access to any information, the disclosure of which might raise security concerns.

Ironically, the movement in the United States to limit access to information based on security concerns has coincided with an international trend toward increased access to information and public participation in government decision-making. In the past decade, twenty-six countries have enacted laws that guarantee public access to government information.⁷⁸ In Japan, citizens filed more than 4,000 requests for information within the first week that the country's Freedom of Information law became effective.⁷⁹ The movement has been bolstered in part by the United Nations' Convention on Access to Information, Public Participation in Decision-Making and Access to Justice ("Aarhus Convention"), which came into effect in October, 2001.⁸⁰ Incidentally, the United States is not a signatory to the Aarhus Convention.

II. INFORMATION DISCLOSURE, COMMAND AND CONTROL, AND POLLUTION PREVENTION: TOOLS TO PROTECT THE ENVIRONMENT WHILE PROTECTING PUBLIC SAFETY

The terrorist attacks of September 11 have profoundly impacted many aspects of our daily lives. In the wake of those events, the federal and state governments could have taken a variety of approaches to address security concerns in environmental protection programs. The federal and state governments have returned to command and control programs in the wake of September 11, despite moving away from such programs over the past decade. The laws that have been enacted and the programs that have been implemented since September 11 take a command

considerations may affect the appropriate nature and extent of public involvement." *Id.* at 33,948.

⁷⁸ See Thomas Blanton, *The World's Right to Know*, FOREIGN POL'Y, July/Aug. 2002, at 50.

⁷⁹ *Id.*

⁸⁰ UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE, *Introducing the AARHUS Convention*, at <http://www.unece.org/env/pp/welcome.html> (last visited Sept. 12, 2004). A protocol of that treaty has also facilitated the adoption by many countries of Pollution Release and Transfer Registers, such as the United States' Toxic Release Inventory. See Wiener, *supra* note 62, at 244-45.

and control approach and focus primarily on increasing security requirements for critical infrastructure and businesses that could be targets of terrorist attacks, including businesses that store, produce, or use hazardous chemicals.⁸¹ The laws and programs often provide funding for hardening those potential targets of terrorism.⁸² As environmental agencies have increased their focus on preventing terrorism, they have also reduced enforcement of the requirements of traditional environmental laws that do not focus on potential terrorist activity.⁸³ At the same time, many of the new laws have delegated regulatory authority to DHS, rather than environmental agencies, to set security, health, and safety standards.⁸⁴ More importantly, however, the laws and programs

⁸¹ See *supra* notes 24-40 and accompanying text for a description of these laws and programs. The laws generally delegate authority for implementing the enhanced security requirements to DHS, rather than EPA.

⁸² PHSBPRA authorized the appropriation of \$160 million to be used by drinking water systems for security enhancements including:

A) the purchase and installation of equipment for detection of intruders; (B) the purchase and installation of fencing, gating, lighting, or security cameras; (C) the tamper-proofing of manhole covers, fire hydrants, and valve boxes; (D) the rekeying of doors and locks; (E) improvements to electronic, computer, or other automated systems and remote security systems; (F) participation in training programs, and the purchase of training manuals and guidance materials, relating to security against terrorist attacks; (G) improvements in the use, storage, or handling of various chemicals; and (H) security screening of employees or contractor support services.

42 U.S.C.A. § 300i-2(e) (2003).

⁸³ See Mike Ferullo & Steve Cook, *Environmental Group's Survey of EPA Staff Says Priority Has Shifted to Security Needs*, 34 ENV'T REP. (BNA) 1012 (May 2, 2003). Several EPA enforcement agents were transferred to work on security and terrorism cases and were detailed to other agencies to work on such cases after September 11. *Id.* See also Mike Ferullo, *EPA Looks to Improve Criminal Program After Completing Management Review*, 34 ENV'T REP. (BNA) 2764 (Dec. 19, 2003). Even though EPA is recalling many of the agents to focus on traditional environmental violations, DOJ continues to target enforcement actions against persons whose violations of the environmental laws imperil the nation's critical infrastructure. See Bruce Passfield, Remarks at American Bar Association Section on Environment, Energy and Resources Teleconference on Homeland Security and Environmental Enforcement (Jan. 28, 2004).

⁸⁴ The Transportation Security Regulations, 68 Fed. Reg. 14,510 (March 25,

adopted since September 11 frequently limit public access to information about the environmental and health risks posed by businesses that are potential targets of terrorism and by facilities that are part of the nation's critical infrastructure. Limited access is the result of fear that the facilities are more likely to be attacked if terrorists are made aware of their potential health and environmental impacts.⁸⁵ Congress adopted this command and control model with limited information access in laws that address risks caused by harm to critical infrastructure and drinking water systems. It appears poised, through the proposed Chemical Facilities Security Act ("CFSA") of 2003,⁸⁶ to adopt the same model to address risks caused by harm to chemical plants. The proposed legislation requires owners and operators of chemical plants to create vulnerability assessments and security plans, but limits public access to those plans.⁸⁷ While federal and state governments traditionally took the command and control approach when addressing environmental problems, alternative approaches

2003), and the Maritime Security Regulations, 68 Fed. Reg. 60,448 (Oct. 22, 2003), which were recently issued by the Department of Homeland Security, have been criticized by the regulated community as vague, expensive, and confusing. See Mary Ellen Ternes, Remarks at American Bar Association Section on Environment, Energy and Resources Teleconference on Homeland Security and Environmental Enforcement (Jan. 28, 2004). Presidential Directive/Hspd-7 provides that the Department of Homeland Security is the lead agency to ensure protection of most of the country's critical infrastructure, including chemical facilities. See Homeland Security Presidential Directive/Hspd-7 (Dec. 17, 2003), at <http://www.whitehouse.gov/news/releases/2003/12/20031217-5.html> (last visited Sept. 12, 2004). There are a few exceptions to the Department's authority. The Directive delegates to the Energy Department the primary responsibility for energy infrastructure and delegates to EPA the primary responsibility for drinking water and wastewater systems. *Id.*

⁸⁵ See *supra* notes 16-30 and accompanying text.

⁸⁶ S. 994, 108th Cong. (2003).

⁸⁷ *Id.* The proposal also exempts from FOIA the disclosure of any information that the proposal requires businesses to prepare or collect. *Id.* The proposal gives DHS, rather than EPA, primary authority for reviewing the plans and enforcing the law. *Id.* While the proposed legislation requires businesses to prepare plans, it does not require them to submit them to DHS unless the Department requests the plans. *Id.* Although the proposal includes penalty provisions, it does not include a citizen suit provision. *Id.*

have proven to be more effective in addressing a variety of environmental problems in recent years. Information disclosure and planning laws and programs have played a vital role in environmental protection over the past decade, and governments should be increasing, rather than decreasing, the use of those tools in environmental programs in light of security concerns.⁸⁸ While some of the measures adopted to address security concerns after September 11 have included planning requirements, the new programs are fundamentally different from the successful environmental planning laws of the past because they are not transparent and are only reviewed, if at all, by the government.⁸⁹ The public thus plays a limited role in the planning process. In addition to increasing information disclosure and planning requirements in environmental programs, governments should seize this opportunity to invigorate and expand pollution prevention and toxics use programs that will reduce or eliminate the environmental and health hazards posed by chemical facilities, instead of attempting to control the risks after they have been created.

There are several fundamental flaws related to the adoption of a command and control model addressing the environmental, health, and safety risks posed by terrorist activities. Not surprisingly, most of the flaws are those that exist generally for command and control programs. First, the mandatory security measures required by the new laws and programs can be very expensive for businesses.⁹⁰ In many cases, businesses may be able to achieve the

⁸⁸ Other market-based tools, such as tax incentives for security equipment, could also be used to reduce the environmental, health, and safety risks caused by harm to chemical plants. *See* Siegel, *supra* note 10, at 378.

⁸⁹ Both CIIA and PHSBPRA require the preparation of emergency plans, but limit public participation in development of and access to those plans. *See supra* notes 16-29 and accompanying text. Similarly, CSISSFRRA requires DOJ to develop information on the vulnerability of chemical facilities to terrorist and criminal activity and to make recommendations to Congress for reducing that vulnerability. 42 U.S.C. § 7412(r)(7)(H)(xi) (2000). DOJ submitted an interim report to Congress, but the report was not made available to the public because of security concerns. *See* Siegel, *supra* note 10, at 371.

⁹⁰ *See* James T. O'Reilly, *Planning for the Unthinkable: Environmental Disaster Planning Issues in an Age of Terroristic Threats*, 9 WIDENER L. SYMP. J. 261, 275

same reduction in risk, at a lower cost, by changing their processes to eliminate the use, production, or storage of chemicals that could be the target of terrorist acts.⁹¹ The high cost of compliance with mandatory security measures could reduce the domestic and international competitiveness of businesses.⁹² Second, to the extent that new laws and programs impose uniform security requirements, those requirements may be inefficient because they could require businesses to implement more stringent controls than are necessary, based on their unique risks.⁹³ Third, there are limits to the effectiveness of imposing mandatory security measures to harden targets of terrorism. For instance, even the most extreme security measures might not prevent destruction of bridges or other components of critical infrastructure.⁹⁴ In light of those flaws, governments should more closely scrutinize planning, information disclosure, and pollution prevention requirements to reduce environmental, health, and safety risks posed by potential terrorist acts.

III. INFORMATION DISCLOSURE AND PLANNING REQUIREMENTS

Perhaps most importantly, the events of September 11 demonstrated the value and necessity of emergency planning programs and information disclosure. While modern environmental law primarily focuses on preventing long-term harm to the environment and human health, sudden disasters, whether natural or man-made, can cause much greater harm to the environment and health than the incremental damage regulated by most environmental laws.⁹⁵ During the twentieth century, the number of persons killed in industrial accidents far exceeded the number of

(2003).

⁹¹ *Id.*

⁹² Professor O'Reilly suggests that legislation should be enacted to provide financial assistance to businesses to comply with the new mandatory security requirements. *Id.* Without such assistance, he speculates that many businesses will move overseas or cease operations. *Id.* at 274-75.

⁹³ *Id.* at 275.

⁹⁴ *Id.* at 265.

⁹⁵ See Michael B. Gerrard, *Disasters First: Rethinking Environmental Law After September 11*, 9 WIDENER L. SYMP. J. 223, 232-33 (2003).

persons killed by exposure to hazardous substances regulated under Superfund.⁹⁶ Emergency planning is an important part of EPCRA,⁹⁷ the National Environmental Policy Act ("NEPA"),⁹⁸ the Clean Air Act,⁹⁹ and other environmental statutes. However, there are no emergency planning requirements for wastewater treatment facilities and other facilities which could cause harm to the environment or health if attacked by terrorists.¹⁰⁰ Thus, planning provisions in environmental law should be expanded, and planners must carefully consider a wider range of potential risks and harms. Not only must they prepare plans to address the worst-case scenarios of risk and harm, but also all other realistic alternative scenarios.¹⁰¹ Professor Daniel A. Farber describes the importance of planning for catastrophic events in his recent work on complexity theory and power laws.¹⁰² Farber notes that many environmental issues involve complex systems that are often characterized by a statistical distribution called a "power law," rather than a bell

⁹⁶ *Id.* at 224. More than 1,000 persons were killed in just four industrial accidents in the United States during the twentieth century. *Id.*

⁹⁷ 42 U.S.C. § 11003 (2000).

⁹⁸ 42 U.S.C. § 4332 (2000).

⁹⁹ 42 U.S.C. § 7412 (2000).

¹⁰⁰ See *Guide for Small Wastewater Systems Published by West Virginia University*, 34 ENV'T REP. (BNA) 2198 (Oct. 3, 2003). In order to assist small wastewater treatment plants in assessing their vulnerabilities to natural disasters, vandalism, operator error, and terrorism, EPA provided the University of West Virginia with funding to prepare an assessment and planning guide for wastewater plants serving fewer than 10,000 people. *Id.* Congress is also considering legislation that would require, and provide funding for, wastewater treatment plants to conduct vulnerability assessments. *Id.*

¹⁰¹ One way to address some of the limitations of current environmental law would be to expand the scope of the emergency planning requirements of EPCRA. Although the Act does not explicitly require planners to consider worst case scenarios and other realistic alternative scenarios of risk and harm, the law requires them to plan emergency responses to releases of hazardous substances. See 42 U.S.C. § 11003 (2000).

¹⁰² See Daniel A. Farber, *Probabilities Behaving Badly: Complexity Theory and Environmental Uncertainty*, 37 U.C. DAVIS L. REV. 145 (2003).

curve, the normal distribution.¹⁰³ Farber describes the difference between a bell curve and a power law in the following manner:

Even people who have never heard of a bell curve . . . have an intuitive sense of its properties, with most events bunched near the average and extreme outcomes fading away quickly. If the average cat weighs ten pounds, we can expect that most cats will be within a few pounds of the average and we can safely disregard the possibility of a two hundred pound tabby. . . . If feline weight were subject to a power law, we would find that the vast majority of cats were tiny or even microscopic but that one-thousand-pound house cats would cross our paths now and then.¹⁰⁴

The risk of terrorist activity is similarly subject to a power law. As Farber notes, when the government designs a system to stop airline passengers at a security checkpoint, “the large majority of travelers will cause no harm at all while a tiny number of terrorists will cause disastrous outcomes.”¹⁰⁵ For systems that are subject to a power law, it is important to predict and plan for extremely unlikely, but potentially tragic, events. As Farber explains, “it is reasonably foreseeable that non-reasonably foreseeable events will occur from time to time. A planning process that ignores this reality will work satisfactorily nearly all of the time but when failures occur they may be catastrophic.”¹⁰⁶ RMP requires worst-case scenario planning, and NEPA was originally interpreted to require agencies to prepare a worst-case scenario analysis as part of an environmental impact statement.¹⁰⁷ Now, however, the Council for Environmental Quality’s regulations only require agencies to consider “reasonably foreseeable significant adverse effects on the human environment”¹⁰⁸ After Septem-

¹⁰³ *Id.* at 149-50.

¹⁰⁴ *Id.* at 146-47.

¹⁰⁵ *Id.* at 162.

¹⁰⁶ *Id.* at 146.

¹⁰⁷ See *Sierra Club v. Sigler*, 695 F.2d 957 (5th Cir. 1983).

¹⁰⁸ See 40 C.F.R. § 1502.22 (2003). The regulations define “reasonably

ber 11, planning under the environmental laws must be expanded. Before activities that could significantly harm human health and the environment are authorized under those laws, the persons who plan to pursue those activities should predict and plan for a range of worst-case and alternative scenarios of harm to health or the environment, explicitly considering the potential for terrorist actions.

In order for emergency planning to be effective, it must be inclusive.¹⁰⁹ Federal, state, and local officials must work together to coordinate their responses in the event of emergencies.¹¹⁰ The public should play a vital role in emergency planning. If planners do not seek public input in preparing and reviewing emergency response plans, they run the risk of relying on inaccurate assumptions that easily could have been corrected through public comment. In addition, emergency plans can only be implemented effectively if the public knows that the plans exist and understands its responsibilities under the plans.¹¹¹ Ideally, planners will periodically test the effectiveness of the plan with emergency simulations and drills.

The planning provisions of the post-September 11 laws do not envision an inclusive planning process. On the contrary, PHSBPRA does not require vulnerability assessments or emergency response plans to be provided to state or local officials or the public.¹¹² The proposed CFSA similarly would not require

foreseeable" to include impacts "which have catastrophic consequences, even if their probability of occurrence is low, provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason." *Id.* § 1502.22(b)(4). The Supreme Court has held that the new regulation does not require agencies to prepare worst-case scenarios as part of an environmental impact statement. *See Robertson v. Methow Valley Citizens Council*, 490 U.S. 332 (1989).

¹⁰⁹ Prior to the explosion of a BASF chemical plant in Cincinnati, Ohio, the community formed a ninety-two-member emergency planning committee under EPCRA. *See O'Reilly, supra* note 90, at 262-63. The committee included emergency professionals, environmental groups, and the general public, and its planning saved many lives by giving an early alert to firefighters. *Id.*

¹¹⁰ *Id.* at 263-64.

¹¹¹ *Id.* at 266, 268-69. *See also Echeverria & Kaplan, supra* note 12, at 616-17.

¹¹² *See PHSBPRA*, Pub. L. No. 107-188, 116 Stat. 594 (2002). The law does not

public disclosure of plant vulnerabilities or emergency response plans.¹¹³

While transparency and public participation in expanded emergency planning programs are important tools in reducing the risk of harm to the environment or health caused by terrorist acts, public disclosure of environmental and health risks outside of emergency planning should continue to be a principal tool in reducing such risks.¹¹⁴ Information disclosure has been a dominant tool in environmental laws and programs over the past decade,¹¹⁵ which governments should continue to rely on. At the same time, they should maintain some minimal command and control security requirements to address potential terrorist acts.¹¹⁶

allow EPA to analyze information provided in vulnerability assessments, but merely to verify that the assessments were submitted and that they meet criteria established for content. *See EPA Retains Lead in Protecting Utilities Under New Homeland Security Directive*, 35 ENV'T REP. (BNA) 21 (Jan. 2, 2004).

¹¹³ See generally O'Reilly, *supra* note 90 (discussing the different approaches states have taken to protect chemical plants from terrorists).

¹¹⁴ In some extreme cases, the disclosure of potential environmental and health risks could significantly increase the probability that those risks will occur. In those extreme cases, it may be prudent to withhold information regarding the manner in which such risks could occur. However, when disclosure of potential environmental and health risks does not significantly increase the probability that those risks will occur, it seems appropriate to allow the communities that will be directly impacted by those risks to play a significant role in preventing them, instead of leaving the decision regarding the appropriate level of risk to the government and the facilities that pose the risk.

¹¹⁵ According to a recent EPA report, toxic releases that must be reported under EPCRA declined by 45.3% between 1988 and 1998. *See* STEPHEN M. JOHNSON, ECONOMICS, EQUITY, AND THE ENVIRONMENT 211 (2004). Similarly, as a result of California's Proposition 65 labeling law for carcinogens, "[n]early forty manufacturers of glazed ceramicware (china) have agreed to reduce lead levels in their flatware by fifty percent and . . . [m]anufacturers have agreed to reformulate dozens of automobile paints, coatings, adhesives and related products." Clifford Rechtschaffen, *The Warning Game: Evaluating Warnings Under California's Proposition 65*, 23 ECOLOGY L.Q. 303, 341-42 (1996) (citations omitted).

¹¹⁶ Market-based environmental programs have historically been used in the United States "to supplement, rather than replace, command-and-control programs." JOHNSON, *supra* note 115, at 125. Pollution trading programs and pollution fees are usually imposed in addition to technology or health-based

Public disclosure of environmental and health risks provides clear benefits to governments, businesses, and the public. First, when information disclosure requirements replace command and control regimes, governments benefit because the information collection requirements of command and control programs are often time consuming and expensive.¹¹⁷ In addition, because the cost of information disclosure programs for the regulated community is usually quite low, the programs can be "appl[ie]d to a much broader community than command-and-control programs."¹¹⁸ Those benefits may not be realized in the context of laws to reduce environmental or health risks from terrorist acts because governments are unlikely to abandon command and control security requirements as a tool to address those risks.

However, governments receive additional benefits from information disclosure programs when they are coupled with existing environmental command and control programs. As more detailed information regarding environmental and health risks is disclosed, the public can provide broader and more specific comments to assist the government in environmental decision-making. To the extent that the quality of information that governments receive through public comment improves, their ultimate decisions will be more rational and more likely to reduce environmental and health risks.¹¹⁹ By empowering communities and local citizens, information disclosure laws promote democratic decision-making and "promote individual and community autonomy in decisionmaking."¹²⁰ Information disclosure laws also promote cooperative federalism because they bring regional and

pollution standards. *Id.* at 125-26. Similarly, information disclosure provisions in environmental laws usually generate information that could be used in enforcing command and control requirements of environmental laws. *Id.*

¹¹⁷ *Id.* at 214.

¹¹⁸ *Id.*

¹¹⁹ See Stephen M. Johnson, *The Internet Changes Everything: Revolutionizing Public Participation and Access to Government Information Through the Internet*, 50 ADMIN. L. REV. 277, 315 (1998) [hereinafter *The Internet Changes Everything*].

¹²⁰ See Cass R. Sunstein, *Informing America: Risk, Disclosure and the First Amendment*, 20 FLA. ST. U. L. REV. 653, 657 (1993). See also JOHNSON, *supra* note 115, at 211.

local environmental problems to the attention of regional and local authorities, and do not require national responses to those problems.¹²¹

Information disclosure laws also provide clear benefits to the public. Informed citizens have a variety of means at their disposal to encourage businesses to reduce health and environmental risks posed by their business activities.¹²² First, consumers can encourage businesses to reduce dangerous activities by boycotting products and services that increase risks.¹²³ Consumers can also apply pressure to businesses by purchasing stock in companies that reduce environmental and health risks to their communities and selling their stock in companies that do not.¹²⁴ Citizens can use the information received through information disclosure laws to negotiate more directly the means of risk reduction with businesses in their communities or to lobby legislators or government agencies to enact risk-reducing regulations.¹²⁵

Finally, information disclosure provisions can play an important role in reducing environmental injustice. Chemical plants and businesses that release the greatest amount of pollution, according to TRI, are disproportionately sited in low income and minority

¹²¹ See JOHNSON, *supra* note 115, at 214. Information disclosure requirements also provide government regulators with information about high levels of risk or "high incidences of legal violations that can be used . . . to identify enforcement priorities, regulatory development, or legislative initiatives." *Id.* For instance, several provisions of the 1990 Clean Air Act amendments were prompted by the disclosure of information under EPCRA. *Id.*

¹²² The laws facilitate market-based reductions in environmental and health risks by reducing information deficits, a market failure. *Id.* at 209.

¹²³ *Id.* at 210.

¹²⁴ *Id.*

¹²⁵ *Id.* See also Esty, *supra* note 44, at 54. Professor Esty argues that "easier access to 'technical' information could facilitate the revival of a property-rights-based environmental protection regime." *Id.* at 54. Even under the existing regime, however, information disclosure requirements are empowering communities to bargain for environmental and health risk reduction. *Id.* As described below, public disclosure of information about the hazards created by the storage of liquid chlorine at a wastewater treatment facility in Washington, D.C. prompted community action that resulted in the substitution of safer chemicals for chlorine. See Echeverria & Kaplan, *supra* note 12, at 616.

communities.¹²⁶ Because most of those facilities store, produce or use hazardous chemicals, and many of them are located in densely populated urban areas, the facilities could be prime targets of terrorists. To the extent that information disclosure provisions empower citizens and communities in the manner described above, they thus reduce the risk of harm to the environment and health in low income and minority communities. Furthermore, because most environmental justice battles are won at the local, rather than national level,¹²⁷ information disclosure provisions that empower community activists and spur local decision-making reduce the potential for environmental injustice by shifting the battleground from the national to the local level.

Information disclosure laws provide benefits to businesses as well. These laws are more efficient than command and control laws because they allow businesses to determine the degree to which they will reduce environment and health risks, instead of following government-mandated levels.¹²⁸ The laws also increase businesses' awareness of the risks imposed by their own activities

¹²⁶ See, e.g., Andrew Szasz & Michael Meuser, *Unintended, Inexorable: The Production of Environmental Inequalities in Santa Clara County, California*, 43 AM. BEHAV. SCIENTIST 602 (2000); UNITED CHURCH OF CHRIST COMMISSION FOR RACIAL JUSTICE, *From Plantations to Plants: Report of the Emergency National Commission on Environmental and Economic Justice in St. James Parish, Louisiana* 6-8 (Sept. 15, 1998), available at http://web.archive.org/web/20040310133238/www.ejrc.cau.edu/convent_report.html (last visited Sept. 12, 2004); Evan J. Ringquist, *Equity and the Distribution of Environmental Risk: The Case of TRI Facilities*, 78 SOC. SCI. Q. 811 (1997); Andrew Szasz & Michael Meuser, *Environmental Inequalities: Literature Review and Proposals for New Directions in Research and Theory*, 45 CURRENT SOCIOLOGY 99, 105-11 (1997); *EPA Region II Plans Full-Bore Assault on Problems in Specific Communities*, PESTICIDE & TOXIC CHEM. NEWS, Feb. 28, 1996.

¹²⁷ See, e.g., Sheila Foster, *Justice from the Ground Up: Distributive Inequities, Grassroots Resistance, and the Transformative Politics of the Environmental Justice Movement*, 86 CAL. L. REV. 775 (1998); Luke W. Cole, *Empowerment as the Key to Environmental Protection: The Need for Environmental Poverty Law*, 19 ECOLOGY L.Q. 619, 674-79 (1992).

¹²⁸ See JOHNSON, *supra* note 115, at 212-13. Once again, however, this benefit is likely to be reduced in the context of laws to prevent risks from potential terrorist acts because governments are unlikely to abandon some minimal command and control security requirements.

and allow them to compare those risks to those of their competitors. "This is a hallmark of reflexive environmental law."¹²⁹ As businesses identify the risks posed by their activities and determine that the public may view those risks as unacceptable when compared to the activities of their competitors, businesses will voluntarily implement programs to reduce those risks.

Information disclosure laws and programs are only effective in reducing environmental and health risks when the disclosed information reaches persons who can use the information to force businesses to reduce those risks. The Internet plays a vital role in making that information accessible to communities that are at risk from harm caused by terrorist acts.¹³⁰ The Internet allows citizens to access and search vast quantities of data at a low cost and coordinate community efforts to reduce risks posed by facilities.¹³¹ It also increases opportunities for public participation, thus democratizing government decision-making.¹³² Although the Internet increases community awareness and the potential for risk prevention, it could also increase terrorist awareness and potential for terrorists' exploitation of those risks. In light of such concerns, governments have reduced disclosure of information on the Internet, preferring to make the data available in reading rooms of regional government offices, or to make summaries of the data, rather than the raw data, available.¹³³ These alternative methods of information disclosure have, however, limited public access to

¹²⁹ *Id.* at 212; See Esty, *supra* note 44, at 9; Bradley Karkkainen, *Information as Environmental Regulation*, 89 GEO. L.J. 257, 261 (2001).

¹³⁰ See JOHNSON, *supra* note 115, at 226-27. See also Esty, *supra* note 44, at 48-50.

¹³¹ See Esty, *supra* note 44, at 48-50.

¹³² *Id.* "If the Internet is the primary vehicle for delivery of information," however, "the digital divide between the technology 'haves' and 'have nots' could further marginalize poor communities." JOHNSON, *supra* note 115, at 223 (referencing *The Internet Changes Everything*, *supra* note 119, at 305-10). But, this concern is reduced by the manner in which information is a public good; only a small group of motivated persons actually needs to use the information provided through information disclosure programs to reduce environmental and health risks for entire communities or large segments of the public. *Id.* See also Rechtschaffen, *supra* note 115, at 318.

¹³³ See *supra* notes 10-15 and accompanying text.

important risk information and have limited the effectiveness of information disclosure programs.¹³⁴ Furthermore, in many cases, the information that governments have sought to remove from the Internet is accessible to terrorists in a variety of other forms.¹³⁵ Therefore, unless Internet disclosure of information regarding environmental and health risks would significantly increase the likelihood that terrorists will access and use the information, governments should continue to use the Internet to make this important risk information available to the public.

Despite all of the benefits discussed above, information disclosure laws and programs have generally been criticized on several grounds. The most common criticism is that information provided through the laws can be incomplete, inaccurate, and confusing.¹³⁶ Because information "disclosure laws are designed to

¹³⁴ EPA and DOJ conducted a cost-benefit analysis to determine how to make information from the Clean Air Act's Risk Management Program available to the public. The agencies noted that the public was at least 250 times more likely to access toxic release data under EPCRA on the Internet than to obtain it from local emergency planning committees. See Siegel, *supra* note 10, at 360.

¹³⁵ See *id.* at 364. The information that EPA removed from its Web site regarding offsite consequences analyses under the Clean Air Act's Risk Management Program is available on RTK. NET, an Internet database provided by a public interest group that focuses on government accountability. See OMB Watch, *RTK Net: The Right-to-Know Network*, at <http://www.rtknet.org/> (last visited Sept. 27, 2004). As Joseph Siegel notes,

[e]ven a terrorist lacking resources and expertise could easily search for the location of chemical facilities in trade journals, on the Internet, and even in the local telephone book. Indeed, a road trip down many of our Nation's highways is all that would be necessary to identify some industrial targets. Only a minimum amount of knowledge would be necessary to understand which processes would be likely to produce the most devastating effects if compromised.

Siegel, *supra* note 10, at 365.

¹³⁶ See JOHNSON, *supra* note 115, at 214. William Pedersen describes the problem in the context of the toxic release inventory under EPCRA as follows:

TRI fails to inform the public the true extent of either toxic releases or the toxic risks that they face. . . . According to an early, imperfect estimate, the sources covered by the legislative TRI specifications account for less than five percent of the environmental releases of the legislatively listed chemicals. . . . TRI is

remedy market failures caused by incomplete information”, the “market will continue to be an inefficient mechanism” to reduce risks if the “information provided through [disclosure programs is] incomplete, inaccurate, or confusing.”¹³⁷ Information disclosure laws and programs are also frequently criticized because the public has limited capacity to process and understand the information they provide.¹³⁸ Even if information provided through information

intended to give the public a full picture of releases of environmentally hazardous chemicals. . . . From a wholesale perspective, however, TRI covers only a fraction of chemicals. Moreover, EPA has been unable to extend TRI coverage to the hazardous substances released in the greatest quantities. . . . TRI by itself provides nothing more than a quantitative list of various chemical releases. Even if that list included all releases of all chemicals above some designated hazard level, it would not accurately inform communities of the risks those releases pose. . . . In the absence of characterization, TRI may mislead its users. Simple reporting of the number of pounds of “toxic chemicals” released conveys an implicit message that the total presents a significant risk—otherwise why would it be reported at all?

William F. Pedersen, *Regulation and Information Disclosure: Parallel Universes and Beyond*, 25 HARV. ENVTL. L. REV. 151, 164-72 (2001) (footnotes omitted). In addition, Professor Daniel Esty notes that “[l]ower cost information access may mean more disinformation circulates through the policymaking process. . . . [T]he shift towards a digitized world . . . may increase the opportunities for special interest manipulation of the policy process as well as the risk of public distraction and citizen disengagement from policymaking.” See Esty, *supra* note 44, at 4.

¹³⁷ JOHNSON, *supra* note 115, at 214.

¹³⁸ *Id.* at 219; see also Esty, *supra* note 44, at 30-32; CASS R. SUNSTEIN, *FREE MARKETS AND SOCIAL JUSTICE* 337-39 (1997). Professor Sunstein elaborates on these criticisms as follows:

1. *Information-processing.* People have limited ability to process information They have a notoriously difficult time in thinking about low-probability events. Sometimes they discount such events to zero; sometimes they treat them as much more dangerous than they actually are. . . .
2. *Heuristics.* The problem is aggravated by the fact that people tend to use heuristic devices that produce systemic errors. . . . There is a good deal of evidence that people overestimate risks from highly visible or sensational causes, but underestimate risks from less dramatic ones. . . .
3. *Motivational distortions.* People often

disclosure laws and programs is accurate, complete, and understandable, the public thus may not use the information effectively. Finally, critics point out that information disclosure laws and programs will not be effective if citizens are unwilling to incur the cost of discovering information, prefer to free ride on the efforts of others, and those others do not take the initiative to discover and use the information to force businesses to reduce risks.¹³⁹

While those concerns are valid criticisms of information disclosure programs in general, they may be less problematic in the context of information disclosure programs designed to reduce environmental and health risks caused by terrorist acts. First, it is unlikely that citizens will be unwilling to incur the relatively low cost of discovering information about risks caused by terrorist acts, because the events of September 11 have increased the public's perception of the likelihood and magnitude of such risks.¹⁴⁰ Furthermore, it is unlikely that the information will be confusing or that the volume of information will overwhelm the public's capacity to comprehend it. While much of the information that agencies evaluate in making environmental policy decisions is in fact confusing or overwhelming, information regarding the environmental or health risks of terrorist acts should be much more straightforward. Instead of focusing on whether exposure to

believe themselves to be immune from risks that they acknowledge are significant and real with respect to others. . . .

4. *Dissonance reduction*. The desire to reduce cognitive dissonance may prevent people from recognizing that risks are real even when information is provided. . . . 5. *Frustration from uncertainty*. Often people feel frustrated greatly prefer a certain answer. . . . 6. *Overload*. People face a pervasive risk of information overload, causing consumers to treat a large amount of information as equivalent to no information at all. . . . 7. *Tenacity of initial beliefs*. Initially held beliefs are not easy to modify. This is so even when new information, undermining those beliefs, has been presented.

Id.

¹³⁹ JOHNSON, *supra* note 115, at 222-24.

¹⁴⁰ Businesses, on the other hand, may have a greater incentive to avoid disclosing this information than they would have to avoid disclosing many other types of information.

a specific level of a pollutant in the air over twenty years will increase the potential for lung cancer by 0.01%, citizens might be focusing on whether additional security guards or a change in a business's process might prevent a leak in a chemical storage tank. Criticism should thus not prevent governments from expanding emergency planning requirements of environmental laws and utilizing information disclosure to reduce the environmental and health risks of terrorist acts.

IV. POLLUTION PREVENTION AND TOXICS USE REDUCTION

Although emergency planning requirements and information disclosure requirements are important tools to reduce the potential environmental and health risks of terrorist acts, stronger pollution prevention legislation, with a specific focus on toxics use reduction, should be a primary component of government programs to reduce those risks. In 1990, Congress enacted the Pollution Prevention Act ("PPA")¹⁴¹ to encourage businesses to voluntarily adopt pollution prevention practices. Congress rejected the concept of mandatory pollution prevention standards and most other mandatory pollution prevention requirements when it enacted the law.¹⁴² Congress felt that businesses would voluntarily adopt pollution prevention practices if they were aware of the economic benefits of those practices.¹⁴³ Unfortunately, the law has not stimulated a revolution in pollution prevention. In response to the September 11 attacks, there has been a renewed push in Congress to adopt mandatory pollution prevention standards. Many legislators recognize that the environmental and health risks posed by terrorist acts are reduced significantly when businesses reduce their production, use, or storage of hazardous and toxic chemicals. While it is unlikely that Congress will adopt mandatory pollution prevention standards, the events of Septem-

¹⁴¹ 42 U.S.C. § 11023 (2000).

¹⁴² See Stephen M. Johnson, *From Reaction to Proaction: The 1990 Pollution Prevention Act*, 17 COLUM. J. ENVTL. L. 153, 159 (1992) [hereinafter *From Reaction to Proaction*].

¹⁴³ *Id.*

ber 11 should be the impetus for more moderate amendments to PPA, with special emphasis on toxics use reduction. Specifically, Congress should require mandatory pollution prevention planning, broader and more detailed reporting and disclosure of pollution prevention activities, and increased financial assistance for pollution prevention activities.

Pollution prevention has several clear benefits for industry, government, and the public. For businesses, pollution prevention provides substantial economic benefits.¹⁴⁴ The cost of controlling pollution after it has been generated has increased dramatically over the past few decades, and businesses recognize that pollution prevention is significantly less expensive than pollution control. Pollution control costs for businesses have increased as governments have imposed broad command and control requirements on polluters.¹⁴⁵ Potential liability for harm to the environment and health caused by pollution has also increased, providing additional stimulus for pollution prevention by businesses.¹⁴⁶ Businesses are also increasingly adopting pollution prevention practices in order to maintain or improve their reputation among consumers, who are examining the environmental practices of businesses more closely when making purchasing choices.¹⁴⁷

¹⁴⁴ *Id.* Economic benefits are often cited as the primary pollution prevention incentive for businesses. Chevron's pollution prevention program saved the company \$3.8 million in a single year, while 3M's totaled more than \$300 million over ten years. *Id.* at 162 n. 44. A Dow Chemical study found that companies receive a fifty percent return on their investments in pollution prevention programs, compared to a thirteen percent return on investment in technologies for pollution control compliance. See Kurt A. Strasser, *Preventing Pollution*, 8 FORDHAM ENVTL. L.J. 1, 9 (1996).

¹⁴⁵ See *From Reaction to Proaction*, *supra* note 142, at 159. The cost of the technologies required to comply with the pollution control requirements, and the administrative cost of complying with the requirements, has increased significantly as the requirements have increased. *Id.*

¹⁴⁶ *Id.* at 160. Businesses' concerns regarding liability have increased as pollution insurance has become more expensive, if it is even available. *Id.*

¹⁴⁷ *Id.* Pollution prevention operates as both a sword and a shield for businesses. It enhances a company's environmental reputation, bolstering marketing efforts, and also deflects public scorn and retaliation that would exist if the company emitted excessive amounts of pollution. *Id.*

Pollution prevention practices also generate economic benefits by increasing the efficiency of industrial processes.¹⁴⁸ Finally, businesses can reduce their appeal as terrorist targets and the magnitude of harm to the environment and health if an attack were to occur by reducing the toxicity of chemicals that they produce, use, or store. September 11 should provide significant motivation for businesses to employ pollution prevention practices.

While economic factors generally encourage businesses to explore and implement pollution prevention opportunities, the public supports pollution prevention because it generally reduces: “(1) the amount of toxic substances present in the environment; (2) worker exposure to toxic substances; (3) the potential for accidents and spills in transporting toxic substances; and (4) the amount of toxic substances present in consumer products.”¹⁴⁹ After September 11, the reduced potential for terrorist acts at a facility is also a clear benefit of pollution prevention practices for consumers as well as businesses.

Governments generally support pollution prevention practices because they can provide greater environmental protection than command and control requirements and can reduce government expenses for implementing regulatory pollution control programs.¹⁵⁰ Because pollution prevention can result in increased industrial efficiency, it can also prompt increased tax revenue for governments.¹⁵¹ Finally, the reduced potential for terrorist acts and the reduced magnitude of harm to the environment and health caused by terrorist acts are clear benefits for government, as well as for businesses and the public.

Although pollution prevention provides benefits to businesses, government, and the public, many businesses have not implemented pollution prevention practices. When Congress enacted PPA in 1990, legislators assumed that businesses were not adopting pollution prevention because they were not aware of the opportunities that existed, or they were not aware of the cost

¹⁴⁸ *From Reaction to Proaction*, *supra* note 142, at 161.

¹⁴⁹ *Id.* at 162.

¹⁵⁰ *Id.* at 163.

¹⁵¹ *Id.*

savings provided by those opportunities.¹⁵² Legislators also assumed that once businesses became aware of the opportunities and the cost savings, they would implement pollution prevention voluntarily.¹⁵³ PPA thus includes several provisions to spur voluntary pollution prevention, but few mandatory requirements. Specifically, the law requires EPA to create an information clearinghouse to provide businesses with information regarding pollution prevention opportunities.¹⁵⁴ It also creates a grant program to enable businesses to implement pollution prevention practices.¹⁵⁵ The law further focuses on promoting pollution prevention generally,¹⁵⁶ while many state laws instead focus on promoting toxics use reduction, a narrower category of pollution prevention.¹⁵⁷ While the toxics use reduction focus of some state laws is narrower than PPA, after September 11 it is clear that more pollution prevention efforts should be targeted at toxics use

¹⁵² *From Reaction to Proaction*, *supra* note 142, at 183.

¹⁵³ *Id.*

¹⁵⁴ 42 U.S.C. § 13103(b)(5) (2000). Congress was also concerned that businesses might not adopt pollution prevention practices because of the difficulty in measuring pollution prevention. Accordingly, the law requires EPA to establish standard methods of measuring source reduction. *Id.* § 13103(b)(1).

¹⁵⁵ *Id.* § 13104. While pollution prevention technologies may save businesses money over time, initial implementation of such technologies may often require substantial financial investments. *From Reaction to Proaction*, *supra* note 142, at 164.

¹⁵⁶ PPA focuses on encouraging "source reduction," defined as

any practice which -

(i) reduces the amount of any hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released into the environment . . . prior to recycling, treatment, or disposal, and

(ii) reduces the hazards to public health and the environment associated with the release of such substances, pollutants, or contaminants.

Id. § 13102(5)(A). Prior to the law, EPA's pollution prevention efforts focused more broadly on "waste minimization," which includes practices designed to eliminate the generation of waste or recycle or treat waste after it is produced. *From Reaction to Proaction*, *supra* note 142, at 164.

¹⁵⁷ See, e.g., ME. REV. STAT. ANN. tit. 38, §§ 2301-02 (West Supp. 1990); MASS. GEN. LAWS ANN. ch. 21I, § 2 (West 2002); OR. REV. STAT. § 465.003(13) (2001).

reduction, which would have the greatest impact on reducing the potential for environmental and health risks caused by terrorist acts.

The only significant mandatory requirement in PPA is a reporting requirement.¹⁵⁸ Businesses that are required to submit toxic release inventory data under EPCRA must include general information about their pollution prevention practices.¹⁵⁹ EPA has established numerous programs to encourage voluntary pollution prevention,¹⁶⁰ including the 33/50 Initiative,¹⁶¹ the WasteWise

¹⁵⁸ 42 U.S.C. § 13106 (2000).

¹⁵⁹ *Id.* The law only requires businesses to identify, in very general categories, the type of pollution prevention actions they have taken regarding the chemicals for which reporting is required under EPCRA. *Id.*

¹⁶⁰ EPA's Partners for the Environment program encompasses more than forty voluntary programs that the agency has developed to improve environmental compliance. See U.S. Env'tl Prot. Agency, *Partners for the Environment: About Us*, at <http://www.epa.gov/partners/about/index.htm> (last visited Sept. 12, 2004). More than 11,000 companies have participated in those programs, and EPA claims that the programs have saved participants \$5.9 billion, 603 million gallons of water, 768.8 trillion BTUs of energy, and have reduced emissions of nitrogen oxides by 158,000 tons and sulfur dioxide by 288,000 tons. *Id.* The increased adoption of pollution prevention practices parallels an increased adoption, by businesses, of environmental management systems ("EMS"). These systems include company-wide environmental policies, identifying the environmental impacts of the company's actions (often through an environmental audit), identifying targets and objectives to reduce negative environmental impacts, and establishing tools to measure the company's ability to meet those targets and objectives. See U.S. GEN. ACCOUNTING OFFICE, GAO-01-283, EPA SHOULD STRENGTHEN ITS EFFORTS TO MEASURE AND ENCOURAGE POLLUTION PREVENTION 31-32 (2001). Although EMS is not adopted to promote pollution prevention, the reflexive nature of the EMS development process creates an atmosphere in which pollution prevention often thrives.

¹⁶¹ See OFFICE OF POLLUTION PREVENTION AND TOXICS, U.S. ENVT'L. PROT. AGENCY, EPA-745-R-99-004, 33/50 PROGRAM: THE FINAL RECORD (1999), available at <http://www.epa.gov/opptintr/3350/index.html>. The initiative was one of the agency's earliest voluntary pollution prevention programs and was implemented between 1992 and 1995. *Id.* Through the program, EPA identified seventeen toxic chemicals and asked participating companies to voluntarily reduce their emissions of those chemicals by 33% by 1992 and 50% by 1995. *Id.* More than 1,200 companies, responsible for 62% of the emissions of the chemicals covered by the program, participated in the program and reduced their emissions by the targeted 50% a year before the 1995 deadline. See U.S.

program,¹⁶² the water Alliances for Voluntary Efficiency program,¹⁶³ the Energy Star programs,¹⁶⁴ the Design for the Environment program,¹⁶⁵ and the Environmental Accounting Pro-

GEN. ACCOUNTING OFFICE, GAO/RECD-94-93, EPA NEEDS MORE RELIABLE SOURCE REDUCTION DATA AND PROGRESS MEASURES (1994), *available at* <http://161.203.16.4/t2pbat2/152793.pdf>; OFFICE OF POLLUTION PREVENTION AND TOXICS, U.S. ENTL. PROT. AGENCY, POLLUTION PREVENTION 1997: A NATIONAL PROGRESS REPORT 4 (1997), *available at* http://www.epa.gov/opptintr/p2_97/execsumm.pdf [hereinafter POLLUTION PREVENTION 1997].

¹⁶² The WasteWise program is designed to encourage businesses to reduce solid waste through prevention, reuse, or recycling. See U.S. Env'tl Prot. Agency, *About WasteWise*, at <http://www.epa.gov/epaoswer/non-hw/reduce/wstewise/about/index.htm> (last visited Sept. 12, 2004). More than 1,100 organizations had participated in the program as of 2002. Through the program, companies assess their waste generation, identify waste reduction goals, and measure and report progress toward those goals. In 1998, program participants reduced waste generation by 7.8 million tons and saved \$280 million. See U.S. ENVTL. PROT. AGENCY, NAT. CTR. FOR ENVTL. ECON., *EPA-240-R-01-001*, THE UNITED STATES EXPERIENCE WITH ECONOMIC INCENTIVES FOR PROTECTING THE ENVIRONMENT § 10.2.4 (2001) [hereinafter NAT. CTR. FOR ENVTL. ECON.].

¹⁶³ See U.S. Env'tl Prot. Agency, *Water Use Efficiency Program*, at <http://www.epa.gov/owm/water-efficiency/index.htm> (last visited Sept. 12, 2004).

¹⁶⁴ The Energy Star Partnership Program is an energy conservation program for homes, schools, businesses, and governments. See U.S. Env'tl Prot. Agency, *Energy Star*, at <http://www.energystar.gov/> (last visited Sept. 12, 2004). By 1999, more than 5,500 organizations were participating in the Energy Star Buildings Program, reducing energy use by more than 108 billion kilowatt hours. See NAT. CTR. FOR ENVTL. ECON., *supra* note 163, § 10.2.2.1. EPA and the Department of Energy also sponsor an Energy Star Homes program. Builders in the voluntary program construct homes that are thirty percent more energy efficient than guidelines of the Model Energy Code, and the program "encourages lenders to provide Energy-Efficient Mortgages, which offer lower interest rates[,] . . . lower closing costs," and other benefits. *Id.* § 10.2.2.3.

¹⁶⁵ See U.S. Env'tl Prot. Agency, *Design for the Environment (DfE)*, at <http://www.epa.gov/dfe/> (last visited Sept. 12, 2004). As EPA suggests,

[t]he process systematically: Identifies the array of technologies, products, and processes that can be used to perform a particular function within an industry and related pollution prevention opportunities. Evaluates and compares the risk, performance, and cost tradeoffs of the alternatives. Disseminates this information to the entire industry community. Encourages and enables use of this information by providing

ject ("EAP").¹⁶⁶ While those voluntary programs have prompted many businesses to adopt pollution prevention practices, significant opportunities for pollution prevention remain untapped.

Although the events of September 11 have not yet prompted proposals to broaden federal pollution prevention efforts through amendment of PPA, they have prompted legislators to consider narrower legislation that encourages businesses to implement inherently safer technologies.¹⁶⁷ Implementation of inherently safer technologies would provide many of the same benefits to businesses, government, and the public as pollution prevention. A business could implement inherently safer technologies by using fewer hazardous chemicals in its production process, using less hazardous chemicals, or using chemicals in a less hazardous

mechanisms and incentives to institutionalize continuous environmental improvement.

U.S. Env'tl Prot. Agency, *About DfE*, at <http://www.epa.gov/dfe/about/index.htm> (last visited Sept. 12, 2004).

¹⁶⁶ The project, initiated in 1992, encourages businesses to understand the full environmental costs of their actions, and to integrate those costs into their decision-making. The National Center for Environmental Economics described the project as follows:

The EAP encourages businesses to focus on energy costs, capital and operating costs of equipment that controls pollution, remediation efforts, salaries of environmental managers, public relations outlays, and other costs associated with the environment. Closer tracking of these costs enables businesses to identify opportunities to reduce or eliminate various elements of these costs. Companies can improve their environmental performance, gain a competitive advantage, and achieve cost savings or increased revenues. EPA maintains a network of over 800 members of the EAP who share information and ideas. EAP has prepared several guidebooks for implementing these concepts, and it has developed a number of case studies that illustrate the gains that can be achieved.

NAT. CTR. FOR ENVTL. ECON., *supra* note 162, § 10.3.3. EPA currently works with the Tellus Institute to maintain and develop further information on environmental accounting. See EMARIC, *Environmental Management Accounting International Website*, at <http://www.emawebsite.org> (last visited Sept. 12, 2004).

¹⁶⁷ See *infra* notes 178-184 and accompanying text.

manner.¹⁶⁸ To the extent that the new processes are safer, they will reduce the risk of harm to health and the environment posed by business activities and benefitting the public, governments, and the business.¹⁶⁹ While the implementation of inherently safer technologies reduces businesses' potential liability for harm, it may also reduce their production costs if the shift to an inherently safer technology reduces the regulatory controls imposed on the production process by government environmental agencies.¹⁷⁰ As

¹⁶⁸ Many process or materials changes are relatively easy and inexpensive. Kenneth Geiser notes that "[d]ecreasing the amounts of hazardous chemicals stored onsite through just-in-time delivery is fairly cost-effective On-site generation of chemical intermediates has reduced the need to transport and store such substances. Substituting chemicals is often the most direct route to risk reduction." Kenneth Geiser, *Primary Measures Safer, Cheaper, Better*, ENVTL. FORUM, Jan./Feb. 2004, at 49.

¹⁶⁹ Inherent safety measures reduce the likelihood of fire and explosions at facilities, minimize the creation of toxic or hazardous waste products, reduce or eliminate workplace hazards, produce safer products, and can reduce the need to transport hazardous chemicals. *Id.* at 49. For instance, a report of the Environmental Defense Fund noted that wastewater treatment plants that use chlorine as a disinfectant pose risks to nineteen million Americans. See CAROL ANDRESS, *ELIMINATING HOMETOWN HAZARDS: CUTTING CHEMICAL RISKS AT WASTEWATER TREATMENT FACILITIES* 3 (2003), available at http://www.fcan.org/Press/wastewater_04.pdf. However, as many plants have already done, those plants could replace chlorine with sodium hypochlorite or ultraviolet light and significantly reduce the environmental and health risks posed to communities. *Id.* at 4-7. Since 1999, twelve wastewater plants, including the primary sewage treatment plant for Washington, D.C., replaced chlorine in their processes with inherently safer alternatives. See Rick Hind, *Chemical Safety Cannot Be Optional*, ENVTL. FORUM, Jan./Feb. 2004, at 50-51. Companies have found ways to reduce the use of chlorine in other processes as well. In 2001, Cargill-Dow began using vegetable matter, instead of chlorine, in a new plastic manufacturing plant. *Id.* Many paper mills have eliminated chlorine from their bleaching processes, and EPA and the military have developed, and are promoting, chlorine-free solvents for use in other chemical processes. *Id.* at 51. While many of these reductions have been achieved through voluntary measures, New Jersey's Toxic Catastrophe Prevention Act has prompted most of the water treatment facilities in the state to eliminate or reduce the use of chlorine. See Siegel, *supra* note 10, at 380-81.

¹⁷⁰ See Stephen R. Dujack, *Should Government Mandate Safer Technologies for the Chemical Industry?*, ENVTL. FORUM, Jan./Feb. 2004, at 46.

noted earlier, the public also receives clear benefits because inherently safer technologies can eliminate the risk of harm to the environment and health caused by terrorist acts, whereas government efforts to harden targets of potential terrorist activity can only reduce, and rarely eliminate, the risks to the public.¹⁷¹ Businesses have examined and implemented inherently safer technologies voluntarily for several decades, just as they have implemented pollution prevention voluntarily.¹⁷² However, just as businesses have opposed mandatory pollution prevention requirements, they have lobbied heavily against legislation or government programs that would require the use of inherently safer technologies.¹⁷³ Industries argue that governments will never have the

¹⁷¹ See Geiser, *supra* note 168, at 49. "The Coast Guard's National Response Center has identified over 3,000 major chemical accidents at industrial facilities over the past 15 years." *Id.* After September 11, the potential for accidents at industrial facilities is greater, and even the most drastic measures to harden potential targets of terrorism may be ineffective against aircraft or missile attack. *Id.* See also Hind, *supra* note 169, at 50. Shortly after the September 11 attacks, 400 pounds of methyl bromide were stolen from a chemical wholesale warehouse in Florida, despite voluntary measures implemented by the warehouse to increase security in response to the attacks. See Siegel, *supra* note 10, at 368-69. The Naval Research Laboratory has estimated that more than 100,000 people could be at risk within the first thirty minutes of an attack or accident involving industrial chemicals. See Hind, *supra* note 169, at 50. Because more than 85% of the country's critical infrastructure is owned and managed by the private sector, the public currently relies heavily on voluntary decisions by businesses regarding the utility or efficiency of hardening targets against terrorism. See Robert P. Licouski, *DHS is not Waiting for Legislation*, ENVTL. FORUM, Jan./Feb. 2004, at 53.

¹⁷² See Geiser, *supra* note 168, at 49; Marty Durbin, *Inherent Safety Doesn't Lend to Gov't. Mandate*, ENVTL. FORUM, Jan./Feb. 2004, at 48. The American Chemistry Council has encouraged business to adopt inherently safer technologies as part of its Responsible Care program for more than a decade. See American Chemistry Council, Responsible Care, Practitioner's Site at <http://www.americanchemistry.com/rc.nsf/secondaryprofilesid/lsgs-4dnmdz?opendocument> (last visited Sept. 12, 2004).

¹⁷³ See Durbin, *supra* note 172, at 48. After September 11, the American Chemistry Council drafted a Responsible Care Security Code requiring "members [of the Council] to develop and implement security measures . . . , taking into account inherently safer approaches to process design." *Id.* However, the Code is a voluntary industry initiative and not a binding government

expertise to identify appropriate technologies and that the mandatory requirements will stifle innovation or interfere with industrial productivity.¹⁷⁴ Businesses argue that they should be allowed to conduct a cost-benefit analysis to determine whether the cost of adopting alternative technologies is justified by the environmental, health, and security risks posed by failure to adopt the alternative technologies.¹⁷⁵ Critics of mandatory inherent safety requirements point out that many inherent safety approaches reduce some risks but increase others.¹⁷⁶ Mandatory requirements can thus have unintended consequences for government regulators.¹⁷⁷ Critics are raising these concerns as Congress considers two bills that take very different approaches toward inherent safety requirements.

The Chemical Security Act ("CSA"),¹⁷⁸ introduced in 2001 and reintroduced in 2003 by Senator John Corzine of New Jersey, would require EPA to identify categories of chemical sources that might be priority targets of terrorist acts.¹⁷⁹ Businesses in those categories would be required to prepare vulnerability assessments

mandate. *Id.* Several other industry associations have also developed security guidelines for their members. See AM. SOC'Y OF SAFETY ENG'RS, PROVIDING SECURE TRUCK OPERATIONS: SAFETY RECOMMENDATIONS FOR THE COMMERCIAL VEHICLE OPERATOR (2002); ASS'N OF METRO. SEWERAGE AGENCIES, PROTECTING WASTEWATER INFRASTRUCTURE ASSETS: LEGAL ISSUES IN A TIME OF CRISIS CHECKLIST (2002), available at <http://www.amsa-cleanwater.org/private/legalalerts/leg02.2.cfm>.

¹⁷⁴ See James M. Inhofe, *Complex Risks: Best Judged By The Industry*, ENVTL. FORUM Jan./Feb. 2004, at 52. See also Durbin, *supra* note 172, at 49; Hind, *supra* note 169, at 51.

¹⁷⁵ See Durbin, *supra* note 172, at 48.

¹⁷⁶ For instance, Marty Durbin, security team leader for the American Chemistry Council, notes that "[b]y reducing [onsite] inventories [of hazardous chemicals] . . . a facility may increase the number of truck shipments through the plant's neighborhood. Similarly, replacing a low temperature, low pressure process that uses a toxic chemical with a process that uses a less toxic chemical, but operates at higher temperatures and pressure, could endanger workers." *Id.*

¹⁷⁷ Durbin argues that chlorofluorocarbons, underground storage tanks, and PCBs were all originally seen as inherently safer materials than the materials they replaced because they reduced the risk of fire or explosions. *Id.* at 49.

¹⁷⁸ S. 157, 108th Cong. (2003).

¹⁷⁹ *Id.* § 4(a).

and to prepare prevention, preparedness, and emergency response plans.¹⁸⁰ The plans would include “actions and procedures, including safer design and maintenance of the chemical source, to eliminate or significantly lessen the potential consequences of an unauthorized release” of chemicals regulated by the law.¹⁸¹ While the information in the plans would be exempt from disclosure under FOIA,¹⁸² companies would be required to provide the plans and assessments to EPA,¹⁸³ and the agency could review the plans and order companies to implement measures in the plans.¹⁸⁴

The Chemical Facilities Security Act, (“CFSA”)¹⁸⁵ introduced by Senators Zell Miller of Georgia and James Inhofe of Oklahoma, takes a fundamentally different approach to the environmental

¹⁸⁰ *Id.* § 4(a)(3).

¹⁸¹ *Id.* § 4(a)(3)(B). The legislation would define “use of an inherently safer technology” as

use of a technology, product, raw material, or practice that, as compared with the technologies, products, raw materials, or practices currently in use—

(i) reduces or eliminates the possibility of a release of a substance of concern from the chemical source prior to secondary containment, control, or mitigation; and

(ii) reduces or eliminates the threats to public health and the environment associated with a release or potential release of a substance of concern from the chemical source.

(B) INCLUSIONS.—The term “use of inherently safer technology” includes input substitution, catalyst or carrier substitution, process redesign (including reuse or recycling of a substance of concern), product reformulation, procedure simplification, and technology modification so as to -

(i) use less hazardous substances or benign substances; (ii) use a smaller quantity of covered substances of concern; (iii) reduce hazardous pressures or temperatures; (iv) reduce the possibility and potential consequences of equipment failure and human error; (v) improve inventory control and chemical use efficiency; and (vi) reduce or eliminate storage, transportation, handling, disposal, and discharge of substances of concern.

Id. §3 (11).

¹⁸² *Id.* § 4(b)(4).

¹⁸³ Chemical Security Act, S. 157, 108th Cong. § 4(b) (2003).

¹⁸⁴ *Id.* § 5.

¹⁸⁵ S. 994, 108th Cong. (2003).

and health risks posed by terrorist acts. Although the bill would also require businesses in priority industrial, it would require site security plans, rather than prevention, preparedness, and emergency response plans.¹⁸⁶ The security plans would focus on security measures to harden the targets of potential terrorist acts, rather than on process changes or implementation of inherently safer technology, that could reduce the ultimate risks of harm to the environment or health.¹⁸⁷ In addition, businesses would not be required to disclose the assessments and plans to the government unless requested to do so.¹⁸⁸ In light of industry's strong opposition to mandatory inherent safety requirements, it is likely that CFSA has a much better chance of passage than CSA.

Between the mandatory inherent safety requirements of CSA, and the laissez-faire approach to inherent safety adopted by CFSA, there is a middle ground that could vastly reduce, in an economically efficient manner, the potential environmental and health risks of terrorist acts. Instead of battling over whether inherent safety requirements should be imposed by government, Congress should amend PPA to address weaknesses in the law that have limited its effectiveness in prompting businesses to adopt pollution prevention practices. First, additional funds could be provided for pollution prevention grant and loan programs,¹⁸⁹

¹⁸⁶ *Id.* § 4.

¹⁸⁷ *Id.* § 4(a)(3).

¹⁸⁸ *Id.* § 4(a)(1)(c).

¹⁸⁹ EPA's Office of Pollution Prevention sponsors a Pollution Prevention Grant Program, a Pollution Prevention Information Network Grant Competition, and a Source Reduction Grant Program. See U.S. Evt'l Prot. Agency, *P2 Grants*, at <http://www.epa.gov/oppt/p2home/grants/index.htm> (last visited Sept. 12, 2004). While the Office sponsored an Environmental Justice Through Pollution Prevention Grant Program in the past, it has not funded the program since 2001. See U.S. Evt'l Prot. Agency, *Environmental Justice Through Pollution Prevention Program*, at <http://www.epa.gov/opptintr/ejp2/> (last visited Sept. 12, 2004). The agency has also supported pollution prevention through several other grant programs, including: the National Industrial Competitiveness through Efficiency: Energy, Environment and Economics ("NICE3") program, the Agriculture in Concert with the Environment ("ACE") program, the Risk Reduction Through Pollution Prevention ("R2P2") program, the Municipal Water Pollution Prevention ("MWPP") grant program, and media-specific pro-

and the programs could be reformed to ensure that the funds assist businesses in adopting pollution prevention programs and that information regarding the funded programs is shared with other businesses.¹⁹⁰ While EPA relies on general appropriations to fund the federal pollution prevention grant and loan programs, funding has been consistently inadequate to promote broad pollution prevention.¹⁹¹ Many states impose fees or taxes on toxics use, waste generation, or releases of toxic pollutants to fund pollution prevention programs instead of relying on general appropriations,

grams. See U.S. ENVTL. PROT. AGENCY, POLLUTION PREVENTION INCENTIVES FOR STATES (PPIS) GRANT PROGRAM ASSESSMENT STUDY, EPA742-R-96-006 8 (1996) [hereinafter POLLUTION PREVENTION INCENTIVES].

¹⁹⁰ See Geiser, *supra* note 168, at 50. The cost of pollution prevention has been a significant impediment for many businesses. See JOHNSON, *supra* note 115, at 16-17. In 1994, the General Accounting Office criticized EPA's program for providing pollution prevention grants to states on the grounds that many of the initiatives funded by the program did not involve pollution prevention, and many of the state proposals did not demonstrate that the state programs would become self-sufficient without EPA funding. See U.S. GEN. ACCOUNTING OFFICE, GAO/PEMD-94-8, EPA SHOULD REEXAMINE THE OBJECTIVES AND SUSTAINABILITY OF STATE PROGRAMS 3 (1994). EPA has addressed many of these concerns, but has found it difficult to measure the effectiveness of the state grant program. See POLLUTION PREVENTION INCENTIVES, *supra* note 189, at 29-30. In traditional grant programs for environmental permitting and enforcement, EPA evaluates the effectiveness of the program by examining the number of permits issued, inspections conducted, or enforcement actions commenced. *Id.* at 30. This approach does not work for pollution prevention programs, although some states attempt to measure the effectiveness of their pollution prevention programs by counting the number of assessments conducted, the number of people who attend workshops, and the number of people who use clearinghouses. *Id.* at 29-30. Some states measure the effectiveness of their programs by conducting follow-up visits, interviews or surveys of businesses that receive pollution prevention assistance to determine their satisfaction, the rate at which they are implementing government recommendations, and the amount of pollution prevention achieved by those businesses. *Id.* at 34. However, it is time consuming and expensive to conduct that level of evaluation, and many businesses are reluctant to provide information to governments regarding which pollution prevention measures were implemented and the success of those measures. *Id.* at 35.

¹⁹¹ See JOHNSON, *supra* note 115, at 17-18.

and it may be appropriate for Congress to consider adopting similar funding mechanisms for pollution prevention grant and loan programs.¹⁹²

Taxes or fees could be used to discourage the use or release of toxics or the generation of wastes, but could also be used to encourage pollution prevention. Congress could achieve that goal by broadening the tax incentives available for pollution prevention activities or pollution prevention planning.

Congress could also amend PPA to include additional mandatory pollution prevention provisions, instead of relying primarily on voluntary actions by businesses. While mandatory pollution prevention performance standards or throughput requirements are undesirable for the same reasons that mandatory inherent safety requirements are undesirable,¹⁹³ PPA should be amended to provide for mandatory planning requirements and additional reporting requirements. The benefits of planning and reporting requirements in reducing environmental and health risks were outlined above.

Many states have adopted laws or programs that require mandatory pollution prevention planning.¹⁹⁴ Supporters of such programs argue that mandatory planning forces businesses to examine pollution prevention opportunities and their economic benefits, which the businesses might not have considered if they

¹⁹² *Id.* at 17-18, 39-44.

¹⁹³ See Strasser, *supra* note 144, at 35-40; *From Reaction to Proaction*, *supra* note 143, at 184-85. Furthermore, establishment of mandatory pollution prevention standards would be very expensive and time consuming for the government. See JOHNSON, *supra* note 115, at 352-55.

¹⁹⁴ By 1997, thirty states had adopted pollution prevention planning requirements. See POLLUTION PREVENTION 1997, *supra* note 161, at 7. Since PPA was enacted, Congress has considered, but rejected, several legislative proposals to require mandatory pollution prevention planning. See, e.g., Clean Water Enforcement and Compliance Improvement Act of 2003, H.R. 1624, 108th Cong. (2003); Right-to-Know-More and Pollution Prevention Act of 1997, S. 769, 105th Cong. (1997); Hazardous Pollution Prevention Planning Act of 1993, S. 980, 103d Cong. (1993); Resource Conservation and Recovery Act Amendments of 1991, S. 976, 102d Cong. (1991); Hazardous Pollution Prevention Planning Act of 1991, S. 761, 102d Cong. (1991).

were not required to prepare a plan.¹⁹⁵ As with planning laws like NEPA, supporters of pollution prevention planning requirements envision that once businesses identify available pollution prevention opportunities and understand their economic benefits, they will adopt pollution prevention measures even though they are not required to do so by law.¹⁹⁶ If Congress were to require businesses to prepare pollution prevention plans, it would have to address several important issues that states have encountered when implementing mandatory planning programs. Specifically, Congress would have to determine whether plans should be reviewed and approved by the government, whether the government can require businesses to implement measures identified in their plans, and whether the information in the plans should be disclosed to the public.¹⁹⁷ Most states allow businesses to maintain their plans at their place of business, but also allow the government to review and approve or disapprove of the plans.¹⁹⁸ With regard to enforcement, there are obvious problems created by allowing the government to require businesses to implement their plans, refusing to allow the government to mandate the implementation of plans, or by forbidding such mandates. As has been apparent in state programs, to the extent that pollution prevention plans are enforceable, businesses have an incentive to avoid stringent pollution prevention measures and to adopt modest pollution prevention opportunities in their plan. On the other hand, if pollution prevention plans were not enforceable, businesses might adopt more aggressive pollution prevention mea-

¹⁹⁵ See JOHNSON, *supra* note 115, at 354-55.

¹⁹⁶ *Id.* Critics of mandatory planning assert that "planning requirements can be expensive, c[an] divert resources from implementation of pollution prevention, and c[an] create hostility in businesses toward pollution prevention." *Id.* at 355.

¹⁹⁷ In addition, Congress would have to determine which substances would be covered by planning requirements and which businesses would be required to prepare plans.

¹⁹⁸ See CAL. HEALTH & SAFETY § 25244.21 (West 1997); MASS. GEN. LAWS ANN. ch. 21I, § 11 (West 2002); MINN. STAT. ANN. § 115D.07 (West 1997); OR. REV. STAT. § 465.018 (2001); TENN. CODE ANN. § 68-46-304 (2001); WASH. REV. CODE ANN. § 70.95C.220 (West 2002).

asures in their plans. However, there is no guarantee that the measures would ever be implemented.

Congress should also increase PPA's mandatory reporting requirements, which are currently minimal. The law merely requires businesses that submit toxic chemical release forms under EPCRA to state the amount of chemicals covered by the law that they recycle, treat, release, or use for energy recovery.¹⁹⁹ Businesses that do not have to submit toxic chemical release forms do not have any pollution prevention reporting requirements, and businesses that are required to submit toxic chemical release forms are not required to provide any information regarding chemicals other than those covered by EPCRA. Furthermore, the pollution prevention information that businesses are required to submit, when they are required to do so, is minimal. Businesses do not have to describe the specific actions that they are taking to prevent pollution. Instead, they need only identify the type of actions that they are taking as within one of four broad categories.²⁰⁰ PPA should be amended to address those limitations. Specifically, the scope of pollutants for which reporting is required should be expanded, and pollution prevention activities should be described more specifically in reporting, "on a process-specific basis, rather than a facility-wide basis."²⁰¹ These amendments would provide EPA and state governments with broader information regarding available pollution prevention opportunities and their economic value. The government should disseminate that information through clearinghouses and compliance assistance programs to promote pollution prevention.²⁰² Broader pollution

¹⁹⁹ 42 U.S.C. § 13106(b) (2000).

²⁰⁰ The four categories are: (1) equipment, technology, process or procedure modifications; (2) reformulation or redesign of products; (3) substitution of raw materials; and (4) improvement in management, training, inventory control, materials handling, or other general operational phases. *Id.*

²⁰¹ See JOHNSON, *supra* note 115, at 356. While more than "70,000 chemicals are used commercially in the United States, . . . only 700 chemicals" are subject to reporting under EPCRA and PPA. *Id.*

²⁰² *Id.* In addition, the government needs to rely more heavily on the Internet as a tool to collect and disseminate pollution prevention information. Professor Daniel Esty describes the power of the Internet as a tool to facilitate recycling

prevention reporting would also provide governments with more accurate data regarding the success or failure of available pollution prevention measures. Finally, broader reporting would also force “businesses [to be] more accountable for implementing pollution prevention techniques and measures and achieving actual reduction [of] pollution generation.”²⁰³

CONCLUSION

These modest amendments to PPA should stimulate significant pollution prevention. More importantly, however, by adopting the amendments, Congress would acknowledge that the command and control approach adopted by governments in response to September 11 is ultimately flawed. Mandatory security requirements to harden businesses and critical infrastructure targets will never eliminate the environmental and health risks posed by those targets. Toxics use reduction measures could be much more effective, and, in many cases, less costly than mandatory security requirements. While the events of September 11 fundamentally changed our country in many ways, many things remain the same. Governments were increasingly relying on pollution prevention, information disclosure, and emergency and environmental plan-

as follows:

The market-making capacity at the Internet has various environmental applications. Most notably, more “waste” can be re-used and recycled. The re-use opportunity emerges where one company’s waste or by-products serve as another’s raw material. Historically the cost to the waste generator of finding a synergistic partner would often have been unduly high. As a result, byproducts were discarded. With the Internet, match-making costs go down dramatically. In fact, Internet-driven re-use/recycling relationships are multiplying at a very rapid pace.

Esty, *supra* note 44, at 53 (footnotes omitted).

²⁰³ Congress has been reluctant to broaden the reporting requirements of the Pollution Prevention Act because businesses have asserted that the additional reporting requirements would be expensive and time consuming, and could require the “disclosure of confidential information or trade secrets.” JOHNSON *supra* note 115, at 357.

ning programs to reduce environmental and health risks prior to September 11. Those programs still have the same advantages over command and control regulation today that they had on September 10, 2001. While some mandatory security requirements are necessary, governments should shift their focus back toward the programs that were proving to be successful prior to September 11 and should not ignore the lessons learned in environmental regulation in the last decade.