Environmental Auditing and Environmental Management: The Implicit and Explicit Federal Regulatory Mandate

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ENVIRONMENTAL AUDITING AND ENVIRONMENTAL MANAGEMENT: THE IMPLICIT AND EXPLICIT FEDERAL REGULATORY MANDATE

Michael Herz*

I. INTRODUCTION

No chapter of the United States Code, nor any part of the Code of Federal Regulations, is entitled “Environmental Auditing.” There is no Federal Environmental Auditing Act, nor are there any direct environmental audit requirements. While the Environmental Protection Agency (EPA) has issued an Environmental Auditing Policy Statement, it is carefully limited to the precatory rather than the mandatory. Environmental auditing is, then, voluntary and unregulated. Yet it is also inescapably linked to and driven by the regulatory scheme. Wholly apart from the continuing debate over whether environmental regulations are too lax or too stringent, their very existence compels corporate environmental self-assessments. I will discuss the direct and indirect ways in which the present regulatory scheme requires rigorous environmental self-assessment in particular and committed environmental management in general.

In part, I address routine environmental audits: “systematic, documented, periodic and objective review[s] by regulated entities of facility operations and practices related to meeting environmental requirements.” But I take environmental auditing to consist of more than simply compliance auditing; rather, it is the whole range of environmental information-gathering efforts. Moreover, the ultimate concern is not self-assessment but environmental management, or, to put it plainly, “Now that we have all this information, what are we going to do with it?” Information is a necessary but not sufficient predicate of effective environmental management. Such management does not

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3 EPA Auditing Policy, supra note 1, at 25,006.

4 Frank Friedman explains:

Auditing is only one aspect of [environmental] management, but it has received considerable attention as a means of reducing EPA inspections and ensuring legal
merely ignore or scramble to keep up with regulatory requirements. It anticipates, helps shape, takes advantage of, and goes beyond those requirements. The current regulatory scheme rewards such management, and the rewards will only grow in the future.

When EPA proposed its environmental auditing policy, less than five years ago, it received a scant thirteen written comments: eight from private industry, two from trade associations, and one each from a federal agency, a consulting firm, and a law firm. Times have changed—there now exist an Institute for Environmental Auditing, an Environmental Auditing Roundtable, a half-dozen book-length treatments of the subject, and a constantly growing cadre of professional auditors. It seems that another seminar, conference, or how-to session is held every week. One’s initial assumption would be that this sudden exponential growth reflects some recent regulatory development. Yet most of the basic regulatory requirements have been in place for a decade or more. The more recent emphasis on comprehensive environmental self-assessment is thus not simply a response to thorough regulation, which predates it.

This focus on auditing alone, without other strong programs and procedures, is misplaced. Auditing can provide only limited control and awareness of potential issues. An audit is merely a “snapshot” of existing controls at a facility. Without other management systems, the audit is a very limited part of modern environmental management.

F. FRIEDMAN, PRACTICAL GUIDE TO ENVIRONMENTAL MANAGEMENT 63 (2d ed. 1990) (footnote omitted).

5 EPA Auditing Policy, supra note 1, at 25,004.


9 The delay between the enactment of thoroughgoing command and control schemes and the corporate reaction is partially due to the lag time in getting both governmental and private
To some extent, the new interest is attributable to a significant increase in the number and size of the penalties, both financial and personal, for noncompliance. This rise reflects no underlying legal change, but a more serious enforcement effort coupled with steadily expanding tort liability. 10 Similarly, it took a while for it to become clear that Superfund imposes liabilities quite as expansive, and expensive, as we now know it does.

Perhaps the more important forces, however, have not involved compliance issues. There has been increasing appreciation of the benefits of environmental management other than compliance with a complicated set of regulations: improved risk management, lower premiums or more readily available insurance, good public relations, better operating performance, sounder planning, and reduced costs through recycling, waste minimization, and material substitutions, the opportunity for which would otherwise have gone unnoticed. 11 In particular, the 1986 Emergency Planning and Community Right-to-Know Act (EPCRA) 12 and its attendant publicity have significantly changed the climate in which corporations operate. Without imposing any substantive requirements limiting discharges, the right-to-know provisions gave a huge boost to the perceived need for thorough information on risk and potential health, safety, and environmental harms. Thus, by focusing on the regulatory scheme, I do not wish to slight the important factors other than concerns about liability that are equally or more important spurs to committed environmental management.

For example, the past year saw a record $32 million in civil penalties go to the federal government. EPA recently announced a tougher RCRA enforcement policy, with more fines at the $25,000 maximum and insistence on each day being a separate violation. 21 Env't Rep. (BNA) 1129 (Oct. 5, 1990). The Department of Justice (DOJ) obtained 134 criminal indictments in 1990, the most ever. Id. at 1397 (Nov. 23, 1990). Although still a drop in the bucket, this marks a critical change from the not-so-distant past when criminal liability for corporate managers under the environmental laws was a wholly theoretical possibility. On increased tort liability, see Kannar, The Expansions of Tort Liability for Corporations and Corporate Managers, 12 CARDOZO L. REV. 1265 (1991).


One other point at the outset. Environmental self-assessments and comprehensive environmental management are not merely responses to the environmental regulatory scheme. They are also critical to shaping regulatory requirements. To be effective in lobbying, commenting on regulatory proposals, applying for permits, and participating in the less formal back and forth between regulators and those they regulate, managers must have a thorough and sophisticated knowledge of their company's impacts on the environment and how and to what extent they can be reduced. It is impossible to head something off at the pass unless you know (1) that it's coming, (2) what burdens it will place on your industry generally and your firm specifically, and (3) in what ways it over- or understates appropriate requirements. In short, while my topic concerns the ways in which the regulatory scheme shapes environmental management, firms should also be thinking of the ways in which environmental management can shape the regulatory scheme.13

II. COMPLIANCE AND ENFORCEMENT

Environmental regulations are nothing if not far-reaching. Essentially every type of discharge is subject to generally applicable standards and/or specific permit requirements. Any manufacturing operation will have to comply with a wide variety of regulatory standards and obtain more permits than one would have thought possible. This is not the forum to detail the substance of these requirements.14 It is important, however, to understand their scope and the consequences of their violation.

A. Compliance

The extensiveness of environmental regulations can be glimpsed by considering, for example, the regulations applicable to a new waste-to-energy incinerator. Under the Clean Air Act alone, the incinerator must comply with (1) EPA's New Source Performance Standard (NSPS) for incinerators, which imposes emission limits for a half-dozen pollutants, regulates operating practices, and sets out fairly

13 The necessity of complete information and understanding of environmental aspects of a company's operations is implicit, for example, in discussions of how to influence EPA rulemaking. See, e.g., Eckert, Representing Private Clients in EPA Rulemaking, 1 NAT. RESOURCES & ENV'T 27 (1985); Stein, EPA Administrative Rulemaking: A View from the Outside, 1 NAT. RESOURCES & ENV'T 33 (1985).

14 For full treatments, see F. GRAD, ENVIRONMENTAL LAW TREATISE (1986), and W. RODGERS, ENVIRONMENTAL LAW (1988). For a sketchy but able summary, see R. FINDLEY & D. FARBER, ENVIRONMENTAL LAW IN A NUTSHELL (1988).
extensive sampling, monitoring, and reporting requirements,\textsuperscript{15} (2) the NSPS for steam-generating units,\textsuperscript{16} (3) depending on the type and amount of fuel used by the auxiliary burners, the NSPS for fossil-fuel burning units,\textsuperscript{17} (4) requirements for reporting monitoring data (collected pursuant to requirements in the NSPSs themselves) to EPA,\textsuperscript{18} (5) the terms of the Prevention of Significant Deterioration Permit\textsuperscript{19} (which will include, at a minimum, "best available control technology" emission limits for the dozen-plus pollutants regulated under the Clean Air Act\textsuperscript{20} and a set of monitoring requirements,\textsuperscript{21} and to obtain which the permittee must have provided a year's worth of ambient air monitoring data\textsuperscript{22}), (6) if the facility is in a nonattainment area, the terms of the New Source Review or nonattainment permit\textsuperscript{23} (which will include emission limit(s) based on the lowest achievable emission rate for the nonattainment pollutant(s),\textsuperscript{24} and to obtain which the permittee will have had to offset emissions of the nonattainment pollutant(s)\textsuperscript{25} and demonstrate that all other facilities it owns are in compliance with the Clean Air Act),\textsuperscript{26} and (7) possible additional emission limits under the federally mandated State Implementation Plan.\textsuperscript{27} All of this is merely what is required by the Clean Air Act. The many other relevant federal laws include, but are not limited to, RCRA\textsuperscript{28} (which will govern ash disposal), OSHA\textsuperscript{29} (workplace safety), and the Clean Water Act\textsuperscript{30} (any dredge and fill during construction\textsuperscript{31} or discharges in operation\textsuperscript{32}); the range of state and local

\textsuperscript{15} EPA Standards of Performance for Municipal Waste Combustors, 56 Fed. Reg. 5488 (1991) (to be codified at 40 C.F.R. § 60.50a-.59a). As proposed, this new NSPS would also have required a facility to burn only garbage reduced by 25% through the removal of recyclables. See 55 Fed. Reg. 52,190 (1989) (proposed rule).

\textsuperscript{16} EPA Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units, 40 C.F.R. § 60.40b-.49b.

\textsuperscript{17} EPA Standards of Performance for Fossil-Fuel-Steam Generators, 40 C.F.R. § 60.40.

\textsuperscript{18} 40 C.F.R. § 60.7.

\textsuperscript{19} A permit is required for any new "major emitting facility" to be constructed in an area satisfying the National Ambient Air Quality Standards. 42 U.S.C. § 7475(a)(4) (1988).

\textsuperscript{20} Id. § 7475(a)(4).

\textsuperscript{21} Id. § 7414.

\textsuperscript{22} Id. § 7475(c)(2).

\textsuperscript{23} Id. § 7502(b)(6).

\textsuperscript{24} Id. § 7503(2).

\textsuperscript{25} Id. § 7503(1).

\textsuperscript{26} Id. § 7503(3).

\textsuperscript{27} See generally id. § 7410.

\textsuperscript{28} Id. §§ 6901-6992k.


\textsuperscript{31} Id. § 1344.

\textsuperscript{32} Id. § 1342.
laws is equally broad.\textsuperscript{33}

Although the current regulatory scheme is in many ways lax and riddled with loopholes, there is no denying that it is complex, intrusive, and far-reaching.\textsuperscript{34} Careful, detailed examination of both the legal requirements and the company’s actual operations is necessary just to find out what requirements apply, let alone whether they are being satisfied.

B. Penalties

There is more than a moral imperative behind the concern with compliance. Administrative and civil penalties for noncompliance can be severe. For example, violations of the Clean Water Act can result in civil penalties of $25,000 per day\textsuperscript{35} and administrative penalties of $10,000 per violation after an abbreviated hearing, or $10,000 per day (up to $125,000) after a full-fledged administrative hearing.\textsuperscript{36} These figures are typical for the federal statutes.\textsuperscript{37} Increasingly, civil enforcement actions are resulting in penalties in the millions of dollars.\textsuperscript{38} Furthermore, penalties can be assessed not merely for failure to adhere to the substantive standards, but also for violation of monitoring and reporting requirements.\textsuperscript{39}

Nor is it just the government that a company must worry about. The critical federal environmental statutes each create a cause of action for citizens enforcement suits.\textsuperscript{40} These have been a potent enforcement tool, leading to hefty penalties payable to the federal government or to settlements under which funds are expended on environmental projects.\textsuperscript{41}


\textsuperscript{34} Indeed, the cynic would point out that the greater the number of loopholes, the more important is complete information in order to take advantage of them.

\textsuperscript{35} 33 U.S.C. § 1319(d).

\textsuperscript{36} Id. § 1319(g)(2).

\textsuperscript{37} Civil penalties of up to $25,000 per day per violation are also provided for by the Clean Air Act, 42 U.S.C. § 7413(b), RCRA, 42 U.S.C. § 6928(g), and TSCA, 15 U.S.C. § 2615(a)(1).

\textsuperscript{38} See, e.g., United States v. Environmental Waste Control, 710 F. Supp. 1172 (N.D. Ind. 1989), aff’d, 917 F.2d 327 (7th Cir. 1990) ($2.18 million RCRA penalty).

\textsuperscript{39} See, e.g., 33 U.S.C. § 1319(g); United States v. Crown Roll Leaf, Inc., 29 Env’t Rep. Cas. (BNA) 2025 (D.N.J. 1989) ($142,000 penalty for failure to respond to EPA information requests under RCRA and CERCLA).

\textsuperscript{40} See, e.g., 33 U.S.C. § 1365 (Clean Water Act); 42 U.S.C. § 7604 (Clean Air Act); 42 U.S.C. § 6972 (RCRA).

\textsuperscript{41} For example, in Chesapeake Bay Foundation v. Bethlehem Steel Corp., 608 F. Supp. 440 (D. Md. 1985), after the court made a finding of liability, the parties settled for a $1.5 million payment to support local environmental projects, in addition to increased treatment and monitoring. Oppenheimer, Humpty Dumpty, 10 AMICUS J. 14, 15 (1988).
Finally, penalties for violation of regulatory requirements are not only civil. The Department of Justice and the states have steadily increased criminal prosecutions under the environmental laws.\(^2\)

C. Superfund

More than any other single statute, Superfund has created the need for self-assessments. Because Superfund liabilities grow out of past rather than present actions, they are especially likely to go unnoticed unless a concerted effort is made to discover them. Indeed, the Superfund shotgun is double-barrelled: it imposes liabilities that are likely to be both enormous and hidden. The due diligence, or CERCLA compliance audit, has become a completely standard part of any corporate or real estate purchase.\(^3\) The only point I wish to make is that it is not enough to ensure that new acquisitions do not have hazardous waste problems lurking beneath the surface. The Superfund liabilities to worry about are not merely those a company may purchase unsuspectingly, but those hidden on the property it already owns. The threat of Superfund liability mandates at least a one-time review of past disposal practices.

D. Direct Information Gathering Requirements

Regulatory standards do not create the need for self-assessment only indirectly, via the need to comply, but also directly. Three sets of requirements stand out.

First, any discharge permit ("discharge" broadly understood to include discharges to all environmental media) will include monitoring and testing requirements.\(^4\) These are in essence explicit, albeit limited, environmental auditing requirements. Many consider moni-

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\(^2\) See supra note 10.


\(^4\) EPA’s monitoring requirements for National Pollutant Discharge Elimination System (NPDES) permits, for example, are set out at 40 C.F.R. § 122.41(j). In addition, the permittee must notify either the state environmental agency or the Regional Office of the EPA not only of the monitoring results, but also of any changes in its discharges or any noncompliance (within 24 hours). It must also, if possible, give ten days notice of any bypass of pollution control equipment. These requirements obviously forbid simply getting the permit, setting up the equipment, starting the system up, and then ignoring it. The 1990 amendments to the Clean Air Act establish a Clean Water Act-like permit program for all air pollution sources above a minimum size. 1990 Clean Air Act § 501 (West 1990) (new §§ 501-07). The permits are to include monitoring requirements, § 504(c), and EPA is authorized to promulgate monitoring regulations, § 504(b).

A facility may also have monitoring and reporting obligations apart from those included in a permit. For example, Clean Air Act NSPSs, which presently operate independent of any
Monitoring and sampling requirements typically found in EPA permits to be inadequate, and they are by definition limited to the particular activity being permitted. They do at least directly require that some attention be paid to actual discharges. Monitoring reports must, of course, be accurate.

Second, requirements for the management of hazardous waste are replete with record-keeping and reporting provisions. These include the manifest system for tracking all shipments of hazardous waste, the requirement that all generators of hazardous wastes notify EPA of their existence and obtain an identification number, the mandated biennial report from hazardous waste generators detailing the quantities and nature of hazardous waste generated, its disposition, and efforts to reduce its quantity, the requirement that any person who owns or operates, or used to own or operate, a hazardous waste disposal site notify EPA of the existence of that facility, and the requirement that a person in charge notify the government of any release of a hazardous substance or of any discharge of oil or hazardous substances onto the navigable waters of the United States.

Third, EPA may simply request information from a company wholly apart from any pre-existing monitoring or reporting requirement. Most of the pollution statutes give the agency broad authority to obtain information. The Clean Air Act, for example, states that "the Administrator may require any [regulated facility] . . . to (A) establish and maintain such records, (B) make such reports, (C) install, use, and maintain such monitoring equipment or methods, (D) sample such emissions . . . , and (E) provide such other information as he may reasonably require." How far EPA can take this authority has not been put to the test; the language is quite sweeping and the agency itself deems it sufficient to enable it to require full-fledged environmental audits. To date, the agency has not pushed this authority

permit scheme, all include testing requirements, the results of which must be reported to EPA. 40 C.F.R. § 60.7.

45 Van Cleve, supra note 2, at 1219.

46 See, e.g., 33 U.S.C. § 1319(c)(4) (criminal penalties for knowing false statements in reports and records required under the Clean Water Act).

47 42 U.S.C. §§ 6922(a)(5), 6923(a), 6924(a)(2); 40 C.F.R. § 262.20.

48 42 U.S.C. § 6930(a); 40 C.F.R. § 262.12.


50 42 U.S.C. § 9603(c).

51 Id. § 9603(a); 40 C.F.R. § 302.

52 33 U.S.C. § 1321(b)(5).


54 Mugdan, EPA Policy on Environmental Auditing 3 (paper presented at Benjamin N. Cardozo School of Law, Sept. 17, 1990) (on file at Cardozo Law Review) (EPA "would have
very far, but it is a potentially powerful tool, both to compel audits and to obtain results of an audit a company has performed on its own initiative.

Although EPA has not transformed its information gathering powers into full-fledged audit requirements, EPA information requests must be taken seriously.55 Recently, EPA has pressed for information hardest under CERCLA. Section 103(e) of CERCLA56 requires Potentially Responsible Parties (PRPs) to provide information on the substances they may have contributed to the site, the extent of any release, and their ability to pay for a cleanup; section 104(e)57 authorizes EPA to request such information. Many PRPs have been less than forthcoming in responding to EPA's requests for information. Penalties for failure to comply with a request can go as high as $25,000 per day, and the agency has begun to bring enforcement actions.58

E. Practical Benefits of Self-Policing

A company that becomes known to regulators for effective environmental management and a generally strong compliance record is going to have fewer of those regulators on its back. To be sure, EPA's auditing policy avoids any such guarantee. Ever wary about tying its hands, EPA refused to promise reduced enforcement actions at facilities with environmental audit programs in effect. The Justice Department supports this view.59 Yet EPA's enforcement and penalty policies do take into account overall compliance and any good faith efforts to ensure compliance; effective environmental management is, of course, behind good performance on both counts.60 Moreover, in the real world, the trust and confidence of the regulators is extraordinarily valuable. A strong compliance record and a sincere commit-

55 For a helpful discussion of how to handle EPA information requests, see Price, Responding to EPA Information Requests, 5 Nat. Res. & Env't 13 (1990).
56 42 U.S.C. § 9603(e).
57 Id. § 9604(e).
59 As Deputy Assistant Attorney General George Van Cleve writes elsewhere in this issue: "[A]ny reduction in enforcement efforts or inspections for those who perform environmental audits would eliminate the current incentive for them to perform effective audits and correct deficiencies." Van Cleve, supra note 2, at 1224.
60 EPA Auditing Policy, supra note 1, § III.B.1, at 25,007.
ment to dealing with any problems that do arise will go far to creating such trust and confidence. Although EPA and DOJ insist on their prosecutorial discretion and have properly refused to tie their hands, that prosecutorial discretion will work in favor of the company that has shown it takes compliance seriously. DOJ is reportedly at work on a policy that may formally lighten the heavy hand of enforcement on companies that conduct voluntary audits and take corrective action.61

Finally, should the government nonetheless bring a judicial or administrative enforcement action, the company is way ahead of the game if it is abreast of its own problems and is working to solve them. Being surprised by an enforcement action is a prime case of reactive, or nonexistent, environmental management, and it can hurt the company badly. In a court of law or of public opinion, the company can only answer the charges (whether true or false) if it is armed with complete information on the nature and seriousness of the problem, what has been done about it already, what remains to be done and at what cost, and what the actual regulatory requirements are. Consider one specific example: it is an affirmative defense to noncompliance with a water discharge permit that the excessive discharges were the result of an “upset,” i.e., that the noncompliance was unintentional, temporary, and caused by circumstances beyond the permittee’s control.62 The burden of proof is on the permittee, who must show that an upset occurred, identify its cause, and establish that it notified the relevant officials and took remedial action.63 Without systems in place to monitor discharges, respond to any problems immediately, and record and report all that occurs, the upset defense will as a practical matter simply be unavailable.64

61 21 Env’t Rep. (BNA) 1564, 1565 (Dec. 14, 1990) (interview with Assistant Attorney General Richard Stewart). Congressional debate on the 1990 Clean Air Act amendments attempted to steer DOJ in that direction:

[T]he environmental benefits of [self-evaluations or self-audits] and prompt corrective action are substantial, and section 113 should be read to encourage self-evaluations and self-audits. . . . [I]n the course of exercising prosecutorial discretion under the criminal provisions of subsection 113(c), the Administrator and the Attorney General of the United States should, as a general matter, refrain from using information obtained by a person in the course of a voluntarily initiated environmental audit against such person to prove the knowledge element of a violation of this Act if [the person transmitted the information and corrected the violation]. Chafee-Baucus Statement of Senate Managers, S. 1630, 136 CONG. REC. S16,933, S16,951 (daily ed. Oct. 27, 1990). See also 136 CONG. REC. S16,991 (daily ed. Oct. 27, 1990) (statement of Sen. Nickles).

62 40 C.F.R. § 122.42(n).

63 Id.

64 Where the government does bring a successful enforcement action, audits may be part of the remedy. EPA first included an environmental auditing provision in a consent decree in
III. PERMIT APPLICATIONS AND RENEWALS

In any situation where the regulated entity must apply for a permit, and there are many, the need for complete and accurate environmental information is especially pronounced. First, the grant of a permit by a federal agency is an “action” to which NEPA’s Environmental Impact Statement (EIS) requirement applies.® In theory, the lead agency prepares the EIS.® As a practical matter, the applicant will do most of the groundwork and provide much of the information for the EIS, which is likely to be actually prepared by a consultant. The EIS will be more accurate and convincing if it is based on a thorough knowledge of the applicant’s other facilities or projects, and if the avoidance of adverse environmental harms it promises are based on an established track record of sound environmental management. Moreover, the NEPA process begins not with the EIS but with the Environmental Assessment (EA), which indicates whether an EIS is necessary.® Unlike the EIS, the EA can be prepared by the applicant

1984. Mays, Environmental Audits: A New Enforcement Tool, EPA J., June 1985, at 26. EPA’s auditing policy explicitly notes that it will propose environmental audits in consent decrees, in particular where the violations seem attributable to the lack or breakdown of an environmental management system or suggest that there are more where those came from. For recent examples of consent decrees with explicit environmental audit requirements, see United States v. Browning-Ferris Industries Chemical Servs., Inc., 704 F. Supp. 1355 (M.D. La. 1988) (RCRA enforcement action; company agrees to install computerized waste tracking system, pay $2 million fine, give $500,000 to university for hazardous waste research, and conduct comprehensive audit); Lodging of Consent Decree, 55 Fed. Reg. 28,694 (1990) ($1.5 million fine, schedule for compliance, and in-house compliance audit); Menominee Paper Co., et al.; Notice of Consent Decree in Clean Water Act Enforcement Action, id. at 24,943 (Clean Water Act violation; company to pay $2.1 million fine, perform “comprehensive environmental audit,” and submit and implement a remedial action plan); Lodging of Consent Decree Pursuant to the Resource Conservation and Recovery Act, id. at 10,707 (RCRA violation; company to conduct audit and pay $1.55 million fine). See generally Van Cleve, supra note 2.

EPA and DOJ are not the only regulators to have obtained environmental audits in settlements. In a few cases the SEC has done the same where a company failed to disclose (or apparently failed to appreciate) its potential environmental liabilities or the costs of complying with environmental regulations. The best-known of these is In the Matter of U.S. Steel, Exchange Act Release No. 34-16223, [1979 Transfer Binder] Fed. Sec. L. Rep. (CCH) ¶ 82,319 (Sept. 27, 1979). The SEC determined that U.S. Steel’s environmental disclosures had been inadequate in several respects, including the company’s failure to disclose that it was facing between $700 million and $1 billion in capital costs to comply with the Clean Air and Clean Water Acts. As part of the settlement, U.S. Steel agreed to hire an independent consultant to perform a thorough study of the costs and means of coming into compliance. See also In re Occidental Petroleum Corp., Exchange Act Release No. 34-16950, [1980 Transfer Binder] Fed. Sec. L. Rep. (CCH) ¶ 82,622 (July 2, 1980) (company agrees to determine and disclose total cost of (1) compliance over following three years, (2) maximum civil penalties for non-compliance, and (3) third-party claims arising out of hazardous waste sites).

66 The regulations of the Council on Environmental Quality specifically require that either the agency or a contractor chosen by the agency prepare the EIS. 40 C.F.R. § 1506.5(c).
67 Id. §§ 1501.3, 1501.4(c), 1508.9.
Thus, the applicant’s own efforts in compiling and presenting information on environmental impacts is central to the NEPA process. In fact, the entire NEPA process is itself a critical aspect of environmental management. That is, it is a period in which the company and regulators directly focus on the company’s environmental performance.69

Second, whether or not an EIS is prepared, permit applications and renewals70 require an extensive information base, including data on and evaluations of past and expected future performance.71 Accuracy in the application is critical for three reasons. First, false statements can lead to permit revocation. Second, overly optimistic statements can lead to permit provisions with which the firm cannot comply. At the very least, noncompliance means bad publicity and difficult negotiations to change the provision; it may lead to outright revocation of the permit. Third, a responsible corporate officer must certify that the application was prepared under her supervision or direction and contains information that is true, accurate, and complete. False certifications can lead to criminal penalties.72

Finally, one specific indirect environmental audit requirement arising out of the permit process bears mention. An applicant for a Clean Air Act permit to build a new source in a nonattainment area must demonstrate that its existing facilities are all in complete compliance with the Act.73 If taken seriously by the permitting agency, this

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68 Id. § 1506.5(b). For actions taken by the EPA, the agency itself prepares the EA. It bases the EA, however, on an Environmental Information Document (EID) prepared by the applicant. Id. § 6.105(b).
69 See generally F. FRIEDMAN, supra note 4, at 147-56.
70 Most operating permits require periodic renewal. Clean Water Act discharge permits, for example, are issued for fixed terms not to exceed five years. 33 U.S.C. § 1342(b)(1)(B) (1988) (five-year maximum for state-issued permits); id. § 1342(a)(3) (EPA-issued permits subject to same requirements as state-issued permits). Periodic permit renewal is itself a significant incentive for environmental self-assessments. A company that must apply for numerous permit renewals should develop systems for (1) ensuring that renewal dates do not pass unnoticed, (2) generating the necessary documentation and data well in advance, and (3) using the same background information as much as possible so as to avoid duplicated effort. Obtaining permits is time-consuming, laborious, and, consequently, expensive. A 1982 EPA report found that applicants for PSD permits under the Clean Air Act spent from $6800 to $25,000 with an average of $15,000. Hahn & Hester, Where Did All the Markets Go? An Analysis of EPA’s Emissions Trading Program, 6 YALE J. ON REG. 109, 135 (1989). Given inflation, rising costs, and some increases in regulatory requirements, those figures surely significantly understated present costs. Anything that can streamline the application process is important to the applicant.
71 See, e.g., 40 C.F.R. §§ 122.21(f), (g) (NPDES permit applications).
73 42 U.S.C. § 7503(3). Similar requirements exist at the state level. For example, Mississippi now requires that applicants for hazardous waste permits include information as to the applicant’s past compliance record. 21 Env’t Rep. (BNA) 1246 (Nov. 2, 1990).
can be a heroic task, made much simpler if environmental auditing and management programs are already in place.

IV. RISK COMMUNICATION

Several federal laws require corporations to generate and disclose information about their activities with regard to the environment and actual and potential environmental liabilities.74

A. Emergency Planning and Community Right-to-Know Act

A more or less direct response to the Bhopal disaster, EPCRA requires state and local governments to adopt response plans for emergency situations involving chemical releases75 and seeks to ensure that chemical risks are fully communicated to the public.76 The second of these requirements, contained in Subtitle B, is in essence an environmental auditing requirement. Companies producing or using designated hazardous chemicals must provide state and local committees and EPA with information about the chemicals, accident risks, spills,77 and any actual releases of the chemicals.78 Although the reporting requirement applies only to designated chemicals, the designations are broad, and reach many substances that are otherwise wholly unregulated.

The company must file one-time reports (material safety data sheets, or MSDSs79) with state and local authorities—one for each designated chemical it manufactures, uses, handles, or disposes.80 The MSDS must fully describe the characteristics of the chemical, including its carcinogenicity and physical and health hazards, the primary routes of entry, the permissible exposure limit, appropriate precautions, emergency and first aid procedures, and the name, address, and

74 I discuss below SARA Title III and the securities laws. One could add the Toxic Substances Control Act, 15 U.S.C. §§ 2601-2671 (1988), to this list. As implemented, TSCA has been primarily an information-generating statute under which chemical manufacturers must test new substances and submit toxicity data to EPA. Enforcement of TSCA has been less than rigorous, but it at least nominally requires manufacturers to investigate and report on the toxicity of the chemical substances they produce.


77 42 U.S.C. §§ 11021, 11022.

78 Id. § 11004.

79 MSDSs predate EPCRA; they were already required by the Occupational Safety and Health Administration as part of an employee right-to-know program. See 29 C.F.R. § 1910.1200 (1990).

telephone number of the manufacturer.81 The company must also submit, and update as necessary, information on the quantities and locations of those chemicals at its facility.82

Covered companies must also file an annual chemical release form with EPA stating the amount of any of 329 toxic chemicals at the facility, their method of disposal, and the amount that entered each environmental medium annually.83 This is perhaps the most controversial aspect of EPCRA. Predictably, the new availability of relatively complete information on chemical releases84 has led to increased pressure for more stringent regulation, prompted voluntary reductions, and caused significant concern over public health and safety.

Companies should be aware that virtually all the information submitted to government officials under EPCRA is expressly made publicly available.85 Although the Act does provide some trade secret protection,86 it does not provide firms with all the protection they might want.

B. Securities Laws

Publicly traded companies often must prepare and disclose information regarding environmental compliance and liabilities as part of their obligation under the securities laws to disclose all information relevant to investors’ decisions. Disclosures must be made in a variety of documents, the most important of which are the registration statement for publicly traded securities and the company’s quarterly and annual reports. Specific disclosure requirements are set out in Regulation S-K.87

82 42 U.S.C. § 11022.
83 Id. § 11023.
84 The numbers were surprisingly high. The first full set of EPCRA filings showed, for example, that more than 2.7 billion pounds of hazardous pollutants were emitted into the air in 1987. 19 Env’t Rep. (BNA) 2628, 2629 (Apr. 26, 1989).
85 42 U.S.C. §§ 11044 (in general), 11021(c) (MSDS’s), 11022(e)(3) (inventory forms), 11023(b) (chemical release forms).
86 Id. § 11042.
1. Material Information

Item 101 requires companies to disclose circumstances in which environmental regulations "may necessitate significant capital outlays, may materially affect the earning power of the business, or cause material changes in registrant's business." Companies must also disclose any material "proceedings" under the environmental laws, i.e., the laws of any jurisdiction concerning discharges "or otherwise relating to the protection of the environment."88

a. **Compliance Expenses**

Companies must disclose material effects from the expense or burden of complying with environmental laws over the next two years and, to the extent material, beyond this period. This requirement applies to any anticipated (not merely authorized) capital expenses, to indirect costs of compliance, such as reductions in output or lost competitiveness, and to fines and penalties for noncompliance. For example, emitters of currently unregulated hazardous air pollutants that are covered by the new Clean Air Act amendments will soon have to estimate what installation of the "maximum achievable control technology"89 is going to cost them.

b. **Pending Proceedings**

A company must disclose any pending administrative or judicial proceeding arising under the environmental laws that is material. In particular, it must disclose a proceeding that (1) is between private litigants and involves a claim for damages and sanctions that exceed 10% of the company's consolidated assets, or (2) involves a governmental party and potential monetary sanctions, unless the company reasonably believes any sanctions will be $100,000 or less.

c. **Environmental Policy**

No general rule requires a company to disclose its overall environmental policy. Any such disclosure a company does make must, of course, be accurate. In addition, if the corporation does have a policy, and that policy is likely to cost it money, the policy must be disclosed. The example the SEC gives, drawn from the *U.S. Steel* case, is a policy of cutting corners and resisting new requirements, which is likely to lead to fines, penalties, or loss of business. Presumably, the opposite is equally true; that is, a company must disclose a

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89 1990 Clean Air Act § 301 (West 1990) (new § 112(d)(2)).
policy of super-environmental protection that will cost it more than an investor might otherwise expect it to have to pay.

2. Management's Disclosure and Analysis

Item 303 of Regulation S-K, Management's Discussion and Analysis of Financial Condition and Results of Operations ("MD&A"), requires disclosure of, among other things, "known trends or any known demands, commitments, events or uncertainties that will result in or that are reasonably likely to result in the registrant's liquidity increasing or decreasing in any material way." This vague language may well apply to potential environmental liabilities, particularly under Superfund. A recent Securities and Exchange Commission (SEC) interpretive release gives the specific example of designation as a PRP. Such designation would not require disclosure under item 101 as a "proceeding," but it would be a "known uncertainty" probably requiring disclosure as part of the MD&A. Precisely what environmental contingencies require disclosure under this provision remains uncertain.

3. Summary

To satisfy the SEC disclosure requirements, which can go far beyond anything required by the environmental laws themselves, firms must develop detailed and accurate systems to gather information about anticipated environmental expenses. For the SEC requirements to function as they are supposed to, a publicly traded company must be fully aware of its compliance status, the effect of its activities on the environment, and the likelihood of future regulation.

In practice, the statements made to satisfy the SEC disclosure requirements frequently seem empty, perfunctory, and vague. The reader is often left with the sense that she has no greater knowledge of lurking environmental liabilities than before she saw the disclosure. This defect of actual disclosures is in part the reflection of strong incentives in this context toward the vague and the optimistic. But it

90 17 C.F.R. § 229.303(a)(1).
93 The cynic, see supra note 34, might suggest that to be able to walk the fine line of empty accuracy—avoiding misleading statements, saying nothing, giving an optimistic impression, while still hewing to something that can be called "the truth" with a straight face—requires especially in-depth knowledge of the true state of affairs. In this sense, the lack of specificity in the actual disclosures, while defeating their stated purpose, enhances rather than reduces the need for complete internal self-assessments.
also underscores the very real difficulties with the concept of “disclosure” generally and with pinning down with any precision just what environmental liabilities exist and just how they are likely to affect the firm’s business. Making that evaluation is the basic challenge of environmental management.

V. ENVIRONMENTAL MANAGEMENT AND THE FUTURE OF ENVIRONMENTAL REGULATION

I will conclude with some speculations as to what the future may hold. As the environmental regulatory program changes in the years ahead, the need and opportunity for effective environmental management will only grow.

A. Increasing Explicit Audit Requirements

It is likely that the future holds many more direct regulatory environmental auditing requirements. The pending Environmental Crimes Act\textsuperscript{94} is one indication of this trend. In addition, bits and pieces of legislation with such requirements are appearing at the state level. For example, the New Jersey Toxic Catastrophe Prevention Act\textsuperscript{95} and its implementing regulations\textsuperscript{96} impose comprehensive risk management requirements on companies that produce or handle “extraordinarily hazardous” materials. Legislation has also been introduced in New Jersey that would require owners of industrial property to undergo an annual audit by a certified environmental auditor.\textsuperscript{97} While this proposal is not on the verge of passage, it is a sign of the times.

At the federal level, discussion continues on the use of environmental audit requirements as part of consent decrees or administrative settlements.\textsuperscript{98} At present DOJ seems more interested in including such provisions in settlements than does EPA, but the feds as a group can be expected to continue to push ever more directly for corporate environmental self-assessments.\textsuperscript{99}

\textsuperscript{94} H.R. 3641, 101st Cong., 1st Sess. (1989). Proposed new 18 U.S.C. § 734 would require that after any felony conviction or second misdemeanor conviction under the Act the organization be placed on probation and required to pay for an independent audit as a condition of the probation. See Van Cleve, supra note 2, at 1239 (discussing this proposal and similar proposals by the United States Sentencing Commission).
\textsuperscript{96} N.J. ADMIN. CODE tit. 7, §§ 7:31-1.1 to -6.4 (1990).
\textsuperscript{97} New Jersey Environmental Audit Review Act, Assembly No. 2315.
\textsuperscript{98} See supra note 64.
\textsuperscript{99} The possibility that the SEC might require routine environmental audits of all publicly traded companies also continues to be discussed, although no specific proposal is on the table. Kiesche, Facing Up to Hidden Liabilities, CHEMICALWEEK, Feb. 14, 1990, at 58.
A corollary development is the increasing emphasis on risk communication and the public dissemination of information. Under contemporary "information economics," the trend in both common and statutory law is toward wide distribution of information so that the electorate, the market, and the liability system can act on it.100 This tendency will only increase as the information age and the computer age continue to prod each other along in push-me-pull-you fashion. The days of keeping things quiet are behind us. Some firms have seen the writing on the wall and gone EPCRA one better. Dow Chemical, for example, has set up user-friendly computer systems in public libraries that allow members of the public to access Dow's EPCRA filings (and, of course, allow Dow to do a heavy piece of self-promotion). Under its "Product Stewardship Program," Dow has also voluntarily transmitted risk information to its distributors and customers.101 Perhaps the day will come when all EPCRA information is in a freely accessible user-friendly computer data base.102 In any event, both the regulation and the politics of the future are likely to compel ever greater environmental disclosure.

B. Self-Assessment in Place of Governmental Enforcement

A second nascent regulatory trend relevant to environmental


101 One example of a related information-based initiative is increased interest in labelling all products according to environmental acceptability. See Comment, Disclosing the Environmental Impact of Human Activities: How A Federal Pollution Control Program Based on Individual Decision Making and Consumer Demand Might Accomplish the Environmental Goals of the 1970's in the 1990's, 138 U. Pa. L. Rev. 505 (1989) (proposing a scheme whereby EPA assigns all consumer products a numerical Environmental Impact Index that would be placed on the label). West Germany has a federally administered seal of approval for environmentally benign products (the Blue Angel), and such a scheme is not inconceivable here. The National Association of Attorneys General has called for, and EPA and the FTC have begun work on, national environmental labeling standards. 21 Envtl Rep. (BNA) 1211 (Oct. 26, 1990). Moreover, several private efforts, most notably the Green Seals project, are underway. See J. Naar, Design for a Livable Planet 305-06 (1990); Schwartz, Shopping for a Model Community, Garbage, May/June 1990, at 35. To qualify for any seal of approval or environmental endorsement other than the one it gives itself, a company will of course have to develop and share reasonably complete information on the environmental effects of its products' manufacture, packaging, and disposal.

management is the increasing interest in self-regulation as an alternative to government enforcement. Such an approach has been formally adopted, to a limited extent, in areas as diverse as meat and poultry inspection and the regulation of broker-dealers under the securities laws. Its currency is illustrated by the fact that the Administrative Conference of the United States recently issued a request for proposals for a research project on this topic. A shift toward self-policing is consistent with the last decade’s emphasis on deregulation, a reduced governmental role, limited agency resources, and decentralized governmental authority. If present environmental self-assessments and the new emphasis on environmental management can establish companies’ ability to monitor their own activities effectively, environmental protection would be a logical candidate for increased reliance on self-regulation.

C. The New Environmental Regulation

The major current intellectual trend in environmental regulation is the shift away from the command-and-control approach that characterizes the pollution statutes of the 1970s and toward a regulatory scheme based on economic incentives and tradeable emission rights. Although such programs remain few and far between, the idea has finally made it out of university economics departments and into the halls of power. Congress and EPA show increasing interest in marketable permits, tradeable emissions rights, and offset-type programs. Examples include EPA’s regulations phasing down chlorofluorocarbon (CFC) production as required by the Montreal Protocol, the bubble policy under the Clean Air Act, and the

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105 40 C.F.R. pt. 82 (1990). These regulations allocate production and consumption allowances according to actual levels as of 1986. Id. § 82.6-7. The allowances are reduced to 80% of the original amount in 1993 and 50% in 1998. Id. § 82.7. The critical, and novel, aspect of the scheme is that the allowances are tradeable. Id. § 82.12. In theory, the result will be that, as CFC use is forcibly reduced, there will be an economic incentive to develop substitutes while the remaining permissible supply will flow to the highest value uses. EPA Protection of Stratospheric Ozone, 53 Fed. Reg. 30,566, 30,567 (1988) (preamble to final rule). Subsequent international agreements and Subchapter VI of the Clean Air Act render these regulations obsolete by completely phasing out production and consumption of these substances by the year 2000. See 1990 Clean Air Act § 602 (West 1990) (new §§ 601-18); 55 Fed. Reg. 45,134 (1990).

106 Under the bubble policy, which applies to several aspects of the Clean Air Act, emis-
acid rain provisions in the recent Clean Air Act amendments. To the extent such a shift in regulatory approach in fact occurs, effective environmental management will, for several reasons, be at a premium.

First, such programs are completely dependent on accurate and complete information about discharges and operations. In part, this means that direct requirements for keeping track of emissions will increase. The CFC regulations, for example, involve a relatively straightforward scheme of tradeable rights among a limited number of companies, with easily monitored consumption of the allowances. Nonetheless, the recordkeeping and reporting requirements are exceptionally detailed. Heightened regulatory requirements will not be the only, or perhaps even the most important, spur to more thorough monitoring and information-gathering, however. Additionally, each participant in a scheme of tradeable emissions rights has a tremendous incentive to ensure complete and accurate monitoring by the other participants in order to protect the value of its investment.

Second, the strength of incentive-based regulatory schemes is the flexibility they afford managers to achieve environmental goals in the most efficient way. Precisely because the regulations do not specify a complete and unbending set of requirements, managers will have to determine the optimal approach for themselves. Managers who are poorly informed, uninterested, or unimaginative will be unable to take advantage of the opportunities offered by such regulatory schemes, which rest on the premise that managers are engaged and inventive. 

"[B]y explicitly valuing pollution control outputs, the substantial creative ingenuity of entrepreneurial talents is harnessed in pursuit of environmental quality improvement."

Finally, one aspect in particular of emissions trading schemes makes an MBA more relevant than a JD: the incentive to reduce emissions increases from a new source of air pollution can be offset or "netted" by emissions decreases from an existing source. If total emissions—what exits a vent in a hypothetical bubble placed over both sources—do not increase, requirements for new sources are inapplicable. See Emissions Trading Policy Statement, 51 Fed. Reg. 43,814 (1986); Chevron U.S.A., Inc. v. Natural Resources Defense Council, 467 U.S. 837 (1984) (upholding use of bubble concept in determining what qualifies as a new source in areas where air quality does not meet federal standards).

107 1990 Clean Air Act § 401 (West 1990) (new §§ 401-16). The new provisions place facility-specific caps on emissions of sulfur dioxide by electric utilities. Each utility will receive from EPA allowances corresponding to its statutorily permissible emissions. Unused allowances may be banked for future use or transferred to another emitter.

108 Ackerman & Stewart, supra note 104, at 181-82.

109 See 40 C.F.R. § 82.13.

110 Ackerman & Stewart, supra note 104, at 182-83.

emissions as far as economically possible. Giving prices to discharge rights creates business opportunities; the greater the reductions, the more money is saved and/or earned through the sale of unneeded rights. These opportunities will reward effective environmental managers. Indeed, some have suggested that experience with such programs has already led to employees responsible for pollution control within a firm being given more respect and authority.

D. Environmental Management and Pollution Prevention

If the watchword of environmental regulation in the 1990s is not "marketable permits," it will be "pollution prevention." Administrator William Reilly arrived at EPA with a draft of new legislation premised on pollution prevention ideas and abandoning the medium-specific approach that characterizes the current regulatory morass. His predecessor had already established a Pollution Prevention Office, and much of the attention the agency gave environmental auditing five years ago seems now focused on pollution prevention.

At present, actual pollution prevention/recycling/waste minimization requirements are minimal. RCRA does, however, require that a generator of hazardous waste certify that it "has a program in place to reduce the volume or quantity and toxicity of such waste to the degree determined by the generator to be economically practicable." It imposes a similar requirement in permits for on-site treatment, storage, and disposal (TSD) facilities. This is an easy enough thing to certify but a much harder thing to do. Nonetheless, these

112 Incentive-based environmental regulatory schemes fall into two basic categories: (1) "pollution taxes," or per unit charges for emissions, and (2) tradeable emission rights (that, in the purest form of this scheme, are initially distributed by auction). The first scheme rests on an educated guess about the reduction a given charge will achieve; it does not impose a specific limit. The change creates an incentive for managers to reduce emissions to the point where an additional dollar spent on reduction will save only a dollar in taxes, a point that will vary from one facility to another and must be individually determined by each firm for itself. The second scheme establishes a specific limit on the total amount of pollution, but leaves allocation among polluters to the market. The participants must figure out whether it is cheaper to buy emission rights or controls, and the possibility of selling unneeded emission rights becomes a business opportunity.
113 Dudek & Palmisano, supra note 111, at 223.
115 Actually producing this proposal has been plagued by difficulty and setbacks. Administrator Reilly originally promised a draft by July 1989. That date came and went, and the proposal seems completely stuck in the executive branch for now. 21 Env't Rep. (BNA) 1205 (Oct. 26, 1990).
116 EPA Pollution Prevention Policy Statement, supra note 114, at 3847.
117 42 U.S.C. § 6922(b).
118 Id. § 6925(h).
requirements, though meager, are likely a sign of things to come. EPA has shied away from recommending or imposing a flat source-reduction requirement in the hazardous waste setting. It is increasingly interested, however, in extracting pollution prevention programs in settlement of enforcement actions. In addition, Congress recently passed a sketchy pollution prevention act, and state waste minimization initiatives are proliferating.

While the regulatory consequences of the new emphasis on pollution prevention remain minor and as yet unclear, environmental regulation has already rendered pollution prevention an economic mandate. Superfund liability and the tremendous cost of hazardous waste disposal under RCRA have been the leading forces prompting waste minimization. But across the board the increasing expense of complying with increasingly stringent standards has finally begun to make people realize that complex end-of-the-pipe controls may cost more to purchase, operate, and maintain than would a change in pro-

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120 See, e.g., 21 Env't Rep. (BNA) 364, 365 (June 22, 1990) (reduction of fine by $42,000 in exchange for pollution prevention project).

121 In the waning hours of the 101st Congress, The Pollution Prevention Act of 1990 snuck into The Omnibus Budget Reconciliation Act of 1990, Pub. L. No. 101-508, §§ 6601-10, 104 Stat. 1388 (1990). This legislation is primarily directed at data collection and technical assistance; it does not impose direct regulatory requirements.


123 Many companies claim to have made tremendous reductions in hazardous wastes generation. See, e.g., EPA, WASTE MINIMIZATION: ENVIRONMENTAL QUALITY WITH ECONOMIC BENEFITS (1987) (various success stories) [hereinafter EPA, WASTE MINIMIZATION]; U.S. CONGRESS OFFICE OF TECHNOLOGY ASSESSMENT, SERIOUS REDUCTION OF HAZARDOUS WASTE (SUMMARY) 40 (1986) (reporting the following percentage reductions: Rohm & Haas, 10% from 1984 to 1985; Exxon Chemical Americas, the same; Du Pont, 50% and 35% for two divisions from 1984 to 1985; 3M, 50% from 1975 to 1985); Company Solutions, INSTITUTIONAL INVESTOR (Special Issue: Financing the Environment Forum) 21 (1990) (R. Morrow, Chairman of the Amoco Corp., asserts that Amoco has reduced production of hazardous waste by 87% since 1983; R. Mahoney, Chairman and CEO of Monsanto Co., claims reductions in toxic air emissions of 36-38% since 1988 and anticipates 90% reduction by 1992). My own view is that many of these specific numbers must be taken with more than a grain of salt. Still, companies have made significant reductions in hazardous waste generation and doing so has been in their economic and public relations interest.
Pollution prevention is the classic example of a task that requires effective and informed environmental management. It will not happen by itself. A firm must have someone who is aware of the goal and has the mandate and the information-gathering tools necessary to meet it. For a company with effective environmental management, the increasing emphasis on pollution prevention will be an opportunity, not a burden.

VI. Conclusion

Mine has been an easy task: to show how the existing federal regulatory scheme directly and indirectly requires companies to inform themselves about their environmental performance and meet any problems head-on. A company cannot flourish under existing requirements without corporate systems that will gather comprehensive environmental information and then act on it. While this is emphatically true under the regulatory scheme in place today, it will only be more so tomorrow.

124 E.g., INSTITUTIONAL INVESTOR, supra note 123, at 5 (F. Popoff, President and CEO of Dow Chemical Co., asserts that in the past two years its Louisiana Division spent more than $12 million on 47 waste reduction projects, which paid for themselves in an average of 10 months).

125 One part of a corporate waste minimization or pollution prevention program is a waste minimization audit. A variation or aspect of a standard environmental audit, such an investigation identifies emissions of concern, analyses the cost and feasibility of substitutions or process modifications, and evaluates the progress of waste minimization programs already in place. See EPA, WASTE MINIMIZATION, supra note 123, at 8-11; Blomquist, supra note 119, at 848-49 & n.133.