

**Financial Responsibility for
Environmental Obligations:
Are Bonding and Assurance Rules
Fulfilling Their Promise?**

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Abstract

Financial assurance rules, also known as financial responsibility or bonding requirements, foster cost internalization by requiring potential polluters to demonstrate the financial resources necessary to compensate for environmental damage that may arise in the future. Accordingly, assurance is an important complement to liability rules, restoration obligations, and other regulatory compliance requirements. The paper reviews the need for assurance, given the prevalence of abandoned environmental obligations, and assesses the implementation of assurance rules in the United States. From the standpoint of both legal effectiveness and economic efficiency, assurance rules can be improved. On the whole, however, cost recovery, deterrence, and enforcement are significantly improved by the presence of existing assurance regulations.

Key Words: financial assurance, financial responsibility, bonding, environmental insurance

JEL Classification Numbers: K13, K32, Q38

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1. Introduction

A bedrock principle of environmental law and regulation is that pollution costs should be borne by their creators. U.S. environmental laws and regulations give this principle form by making polluters liable for property, health, and natural resource damages and unperformed resource reclamation obligations. Unfortunately, many environmental obligations, despite being well defined in theory and in law, are not always met in practice. Bankruptcy, corporate dissolution, and outright abandonment are disturbingly common means by which polluters avoid responsibility for environmental costs.¹

Financial assurance rules, also known as financial responsibility or bonding requirements, address this policy problem. Assurance rules require potential polluters to demonstrate—before the fact—financial resources adequate to correct and compensate for environmental damage that may arise in the future. Accordingly, assurance acts as an important complement to liability rules, restoration obligations, and other compliance requirements.² A benefit of assurance rules is that they can harness the expertise and scrutiny of private, third-party financial providers. For their own commercial reasons, the insurers, sureties, and banks that provide the financial products used to demonstrate compliance train a self-interested set of eyes on the financial and

¹ See Section 1.2 *infra*.

² Liability rules create future obligations associated with damage to property, human health, and natural resources. Restoration obligations create a future liability for failure to perform necessary reclamation or restoration. In addition, assurance rules promote compliance with immediate regulatory requirements, such as monitoring, control, and reporting standards. Assurance does this by fostering the internalization of administrative penalties used to motivate such operational standards.

Although liability and restoration obligations feature most prominently in the following analysis, it should be emphasized that the deterrent effect of—and thus the value of assurance to—any type of penalty is blunted by insolvency or abandonment. For a particularly dramatic example, see *In re Gary Lazar and Divine Grace Lazar*, U.S. Bankr. Cent. D. CA, Case No. LA 92-39039 SB, October 24, 1996 (administrative fines totaling hundreds of millions of dollars, associated with violations of gas station operating standards, most failing to receive priority in bankruptcy).

environmental risks posed by potential polluters. In this way, assurance rules can yield a flexible, market-based approach to compliance and monitoring.

Financial assurance is demanded of a wide variety of U.S. commercial operations, including municipal landfills, ships carrying oil or hazardous cargo, hazardous waste treatment facilities, offshore oil and gas installations, underground gas tanks, wells, nuclear power stations, and mines. Firms needing assurance can purchase it in the form of insurance, surety obligations, bank letters of credit, and deposit certificates. Alternatively, firms can establish trust funds or escrow accounts dedicated to future obligations. Most programs allow wealthy and financially stable firms to comply by demonstrating an adequate domestic asset base and high-quality bond rating. A wealthy financial parent can in some cases guarantee the obligations of a subsidiary or affiliate via an indemnity agreement.

This study provides an overview of financial assurance policies based on a review of the rules' implementation in the United States. Relatively little analysis of the rules' practical implementation exists.³ The goal is not an exhaustive review of specific regulatory programs, but rather a synthetic overview of the many issues common to environmental assurance programs. From the standpoint of both economic efficiency and legal effectiveness, assurance rules can be improved. Assurance programs raise a set of design issues, including the level of assurance to be required, the financial mechanisms to be allowed, the conditions under which bonds are released, and the interaction of assurance rules with other areas of law—most importantly, bankruptcy law. This report illustrates those issues and identifies a set of correctable weaknesses present in some assurance programs. For instance, in some regulatory contexts, inappropriately low levels of assurance are required; in others, the mechanisms used to demonstrate responsibility undermine the goal of cost internalization.

Despite its criticisms regarding the details of policy, this report should be read as a spirited defense of financial assurance's desirability as a regulatory tool. Absent assurance, too many firms can and do abandon obligations. As will be evident from the cases and data cited in this report, the evasion of environmental liabilities and cost internalization by defunct or insolvent firms is relatively common. On average, 60,000 U.S. firms declare bankruptcy each year, and an untold number cease or abandon operations without even entering legal bankruptcy

³ See, however, EPA Office of the Inspector General, RCRA Financial Assurance for Closure and Post-Closure, March 30, 2001.

proceedings.⁴ Clearly, not all of these firms leave unfunded environmental obligations behind them, but many do. Mandatory assurance addresses the insolvency problem in a direct way and thereby strengthens the effectiveness of environmental regulation and law.

1.1 The Problem: Unmet Obligations and Nonrecoverable Liabilities

Conceptually, polluter cost internalization is nearly unassailable as a guiding principle for environmental regulation. Cost internalization by responsible parties yields the most equitable means of victim compensation, the alternatives being no compensation or compensation provided by public funds. Polluter cost internalization also promotes deterrence, risk reduction, and innovations to reduce environmental harm.⁵ Accordingly, with few exceptions, most U.S. environmental laws make polluters liable for damages caused by commercial activities that injure the public health or cause property or natural resource damage.

Unfortunately, cost internalization's importance in law and regulation is not always matched by its achievement in practice. Even the most unassailable legal obligation can quickly evaporate when presented to a bankrupt, dissolved, or absent polluter. Consider first the implications of bankruptcy. Generally speaking, debtors are protected from creditors by the "automatic stay" provision of the U.S. bankruptcy code.⁶ This means that both private and public environmental claims can be discharged in bankruptcy.⁷ In other words, environmental costs are only partially recoverable once bankruptcy occurs, if they are recoverable at all.⁸ To compound the problem, firms may purposefully increase the likelihood of bankruptcy by divesting themselves of capturable assets in order to externalize costs. In industries where liability costs

4 American Bankruptcy Institute statistics for annual business bankruptcy filings, 1980–2000. Available at <http://www.abiworld.org/stats/1980annual.html>.

5 An important exception is the cost internalization achieved by so-called retroactive liability. Since retroactive liability, by definition, is not anticipated by potential defendants, it does not promote deterrence. See 4.3 *infra*.

6 11 U.S.C. § 362(a).

7 Bankruptcy may be forced by environmental obligations themselves or by conditions unrelated to those obligations. In either case, environmental obligations can be discharged.

8 See Section 6.2 *infra*. In general, environmental claims do not enjoy any special priority over other creditor claims. There is an important exception, however. In some cases governments can employ the "police and regulatory power exception" to the automatic stay. The exception states that the automatic stay does not apply to the "commencement or continuation of an action or proceeding by a governmental unit to enforce such governmental unit's police or regulatory power," 11 U.S.C. § 362(b)(4). In some cases, this exception can improve the government's ability to recover funds from a bankrupt polluter, though it is no guarantee of full recovery. See Richard L. Epling, *Impact of Environmental Law on Bankruptcy Cases*, 26 *Wake Forest Law Review*, 69, 1991.

are potentially significant, firms' business organization and capital investment and retention decisions may be influenced by the desire to externalize liabilities. For instance, firms may avoid retained earnings, choose not to vertically or horizontally integrate, or shelter assets overseas.⁹

Environmental cost recovery can also be defeated if a polluter has legally dissolved prior to the realization of liabilities or performance of obligations. There are limits to this strategy. A liable firm that is simply sold does not automatically escape liability, since those liabilities will be transferred to the purchasing firm.¹⁰ If assets are sold piecemeal or simply retired over time, however, environmental costs can more effectively be externalized. This possibility is enhanced by the nature of many environmental risks and obligations, which often materialize only after a period of years or decades.¹¹ Dissolution can be a rational, if socially irresponsible, way to avoid future obligations. Irrespective of the precise strategy used to avoid liability and reclamation obligations, the lack of a solvent defendant defeats the ability of victims or governments to collect compensation. And insolvency undermines the law's ability to deter environmental injuries in the first place.

9 To investigate the impact of liability on firm scale, Ringleb and Wiggins (1990) explored the rate of small firm incorporation as a function of the riskiness of a given industry. Their evidence suggests that liability has a direct impact on enterprise scale. They compared the number of small firms in 1967—a period before the routine use of strict liability for tort claims—with the number of such firms in 1980, when the use of strict liability was routine and expected. Their analysis suggests that the incentive to avoid liability led to a 20% increase in the number of small corporations in the U.S. economy between the two periods. For a description of offshore financial havens, or “asset protection trusts,” see Salting it Away, *The Economist*, Oct. 5, 1991, at 32.

10 Whether liability is inherited normally hinges on a determination of the degree to which there is a continuation of the seller's business. See *Ray v. Alad Corp.* 19 Cal. 3d 22 (1977) (136 Cal.Rptr. 574, 560 P.2d 3), which held that in appropriate circumstances, the successor to the manufacturer of a defective product may be held liable for damages caused by the product after the successor acquired the manufacturer. Specifically, the purchaser assumes liability if (1) there is an express or implied agreement of assumption, (2) the transaction amounts to a merger or consolidation of the two corporations, (3) the purchasing corporation is a mere continuation of the seller, or (4) the transfer of assets to the purchaser is for the fraudulent purpose of escaping liability for the seller's debts.

11 The fact that exit can create inefficiencies through risk externalization is discussed extensively in Hansmann and Kraakman, *Toward Unlimited Shareholder Liability for Corporate Torts*, 100 *Yale Law Journal* 1879, 1991, who argue that “[a factor creating] inefficient incentives under limited liability is the shareholder's option to liquidate the corporation and distribute its assets before tort liability attaches. Since products and manufacturing processes often create long-term hazards that become visible only after many years, firms can—and often do—liquidate long before they can be sued by their tort victims.”

1.2 The Scale and Scope of Unrecovered Environmental Costs

Nonrecoverable environmental obligations are more than a theoretical possibility. Over the past decades untold numbers of environmentally damaging operations have been abandoned or have avoided liability via bankruptcy. There is no central repository of statistics regarding the scale of unrecovered environmental obligations, but figures from a range of environmental programs illustrate the significance of these costs.

Underground storage tanks. Leaking underground storage tanks (USTs) pose a significant risk to the nation's groundwater supplies. There are currently an estimated 190,000 abandoned underground petroleum tanks in the United States.¹² According to EPA, "these USTs pose a challenge in that the owner is either disinclined or financially unable to comply, or is often difficult to locate." In addition, billions of dollars in public funds have been expended to clean up USTs that were not abandoned but whose owners and operators were unable to bear remediation costs themselves.¹³

Oil and gas wells. Unplugged oil and gas wells can pollute both ground and surface water. Many states have programs that have identified thousands of abandoned oil and gas wells. States have spent \$70 million to plug approximately 13,000 orphan wells, but there remain an estimated 57,000 remaining orphan wells.¹⁴ With an average plugging cost of \$5,400, the cost to state agencies of plugging these orphan sites will be an additional \$560 million.

Oil spills. Beginning with the 1972 Clean Water Act, and now under the Oil Pollution Act, the United States has maintained a public fund for the cleanup of oil spills associated with offshore accidents and onshore accidents contributing to surface water pollution. A goal of the fund is to recover public expenditures on oil spill response from responsible parties. According

12 This includes 38,000 registered but abandoned tanks and 152,000 unregistered and abandoned tanks. U.S. EPA, Report to Congress on a Compliance Plan for the Underground Storage Tank Program. EPA 510-R-00-001, June 2000, at 11-12.

13 Congressional Research Service, Report for Congress, Leaking Underground Storage Tank Cleanup Issues, updated February 17, 1999. Beginning in 1987, the federal government began collection for the Leaking Underground Storage Tank (LUST) Fund. Before the taxing authority expired in December 1995, \$1.6 billion had been collected. Congress reinstated the LUST tax in the Taxpayer Relief Act of 1997 (P.L. 105-34). As of December 31, 1998, the trust fund balance was \$1.25 billion. In addition, 47 states established financial assurance funds. For 1997, the total balance of state funds was approximately \$1.34 billion, annual revenues were \$1.31 billion, and outstanding claims against the funds were \$2.31 billion, Vermont Department of Environmental Conservation, Waste Management Division, Summary of State Fund Survey Results, June 1997.

14 See Thomas, *supra* note 14, at 2. Kentucky alone has 12,000 wells waiting to be plugged by the state.

to one study, however, the current fund has recovered only 19% of its expenditures from responsible parties.¹⁵ Accordingly, the remaining percentage corresponds to costs externalized by polluters.

Landfills and other disposal facilities. A recent inventory by Texas located 4,200 abandoned landfills in that state alone.¹⁶ A nationwide study of permitted, operating hazardous waste landfills in 1984 and 1985 identified 54 owned by bankrupt firms.¹⁷ A more recent EPA study of medium-sized municipal solid waste disposal firms found that of 40 firms studied, 37 had estimated financial assurance obligations exceeding their net worth.¹⁸ As recently as 1999, a Canadian company, exploiting exemptions in waste disposal regulations, was able to abandon a site in Tacoma, Washington, leaving \$4.3 million in uncompensated cleanup costs.¹⁹

Hardrock mining. The Bureau of Land Management (BLM) has identified 900 environmentally hazardous abandoned mine sites on agency-managed lands.²⁰ A 1986 study by the U.S. General Accounting Office (GAO) found that of a sample of BLM mine sites surveyed, 39% had not been reclaimed.²¹ One nongovernmental study estimates a total of 557,000 abandoned mine sites nationwide, with an estimated cleanup cost of \$32 billion to \$72 billion.²² Sixty-seven abandoned mines are on EPA's Superfund National Priorities List, and the agency

15 The analysis was based on congressional documents and financial statements obtained from the Coast Guard under the Freedom of Information Act. See Brent Walth, "Spill Laws Fail to Halt Seepage of Public Cash," *The Oregonian*, February 27, 2000. Records show that the Oil Spill Liability Trust Fund has paid out \$262 million for oil spills since 1990 and has been reimbursed \$49 million, or about 19%. The Coast Guard claims a significantly higher recovery rate (60%) based on recoveries associated with closed cases.

16 www.tnrcc.state.tx.us/oprd/wasteplan/swinvent.html.

17 Docket materials in support of the April 10, 1998, Financial Assurance Mechanisms for Corporate Owners and Operators of Municipal Solid Waste Landfill Facilities; Final Rule, Issue Paper: Assessment of First Party Trust Funds, at 7 (citing ICF Incorporated, Preliminary Results of Case Studies of Bankrupt TSDFs, June 1985).

18 63 Federal Register 17706, 17731, April 10, 1998, Financial Assurance Mechanisms for Corporate Owners and Operators of Municipal Solid Waste Landfill Facilities. (Hereafter, "Federal Register 1998.")

19 Andrew Ballard, Financial Assurance, Closure Changes Urged by Washington State Regulator, *Environment Reporter*, April 27, 2001, at 807.

20 U.S. Department of the Interior, Bureau of Land Management, Abandoned Mine Land Inventory and Remediation: A Status Report to the Director, November 1996.

21 General Accounting Office, Public Lands: Interior Should Ensure against Abuses from Hardrock Mining, GAO/RCED-86-48, 1986, at 24.

22 Lyon, J.S., et al., 1993, Burden of Gilt, Mineral Policy Center.

estimates that it will cost approximately \$20 billion to clean them up.²³ In terms of mine bankruptcies, a study of mining operations found 26 large-scale Western hardrock mines in bankruptcy as of 1999.²⁴ The Summitville mine in Colorado, abandoned in 1993, alone has an estimated cleanup cost of \$150 million to \$180 million.²⁵ A 1999 National Research Council report identified site abandonment and unfunded obligations as a significant regulatory issue for the industry.²⁶

Coal mining. The federal government's Abandoned Mine Land (AML) program estimates \$7.9 billion in high-priority coal-related AML problems, including health, safety, and environmental problems.²⁷ A study of coal mining sites in Pennsylvania found that mining bonds had been forfeited on more than 22,000 mining acres and that 67% of all acres covered by bond requirements had not been reclaimed.²⁸ A congressional hearing in 1986 identified poor reclamation rates in other states, including reclamation rates of only 7%, 19%, and 13% in Indiana, Kentucky, and Tennessee, respectively.²⁹ A recent actuarial study placed a lower bound of \$1 billion on Pennsylvania's long-term mine drainage costs, associated primarily with abandoned mines.³⁰

23 Office of the Inspector General, Audit Report, EPA Can Do More to Help Minimize Hardrock Mining Liabilities, EIDMF6-08-0016-7100223, June 11, 1997, at 2.

24 The study defined large-scale mines as those with bond obligations greater than \$250,000. James Kuipers, Hardrock Reclamation Bonding Practices in the Western United States, National Wildlife Federation, February 2000.

25 See www.epa.gov/unix0008/superfund/sites/sville.html.

26 National Research Council, *Hardrock Mining on Federal Lands*, National Academy Press, 1999. ("The Committee observed instances of recently abandoned but un-reclaimed exploration and mining sites that had not been covered by any financial assurance....The Committee also found that long-term water treatment and monitoring at mine sites generally does not carry financial assurance at either the state or federal level....Based on the Committee's findings, inadequate protection of the public and the environment caused by current financial assurance procedures is a gap in the regulatory programs," at 65.)

27 See Office of Surface Mining, Reclamation, and Enforcement 1999, <http://www.osmre.gov/aml/remain/zintroun.htm>.

28 Cited in U.S. Government Printing Office, *Adequacy of Bonds to Ensure Reclamation of Surface Mines*, Hearing before a Subcommittee of the Committee on Government Operations, House of Representatives, 99th Congress, June 26, 1986, at 4.

29 U.S. GPO, 1986, at 148.

30 Actuarial Study of the Pennsylvania Coal Mining Reclamation Bonding Program, Milliman & Robertson, Inc., July 16, 1993, at 13. As a concrete example of the inability to collect funds necessary for mine discharge treatment, consider Glacial Minerals, a mining company that went bankrupt in the early 1990s. The firm left 28 mine sites with postmining discharges in western Pennsylvania. Bond recoveries associated with the firm's sites have allowed for water treatment at only 3 sites. Testimony of John Hanger, Hearing on "Current and proposed Bonding

National Priorities List sites. Many Superfund sites were polluted by parties that no longer exist or are bankrupt.³¹ EPA refers to these parties' contribution to contamination as "orphan shares." One EPA study estimated that the cost of orphan shares associated with sites on the National Priorities List (NPL) would range from \$150 million to \$420 million each year.³² EPA's current orphan share compensation program has allocated \$175 million in public funds for cleanup of 98 sites where responsible parties are willing to negotiate long-term cleanup settlements.³³ It should be noted that these expenditures represent only a lower bound on nonrecoverable NPL costs, since orphan share contributions are strictly limited to 25% of remedy and removal costs.³⁴ The lion's share of orphan shares is picked up by viable responsible parties under principles of joint and several liability. Also, these numbers are associated with orphan shares at the 1,300 NPL sites, which represent only a fraction of polluted sites nationwide.³⁵

It should be emphasized that many of the unrecovered environmental obligations are due to the failure of past, rather than current regulatory programs. As described below, a variety of regulatory programs have been developed in recent years to minimize the environmental and financial problems created by bankrupt or unidentifiable polluters. The scale of problems indicated above suggests that these new programs will fill an important gap in environmental regulation. However, as will also be described below, current programs have by no means eliminated the externalization of significant environmental costs by polluters.

Requirements on Coal Mining," before the Pennsylvania Environmental Resources and Energy Committee, December 14, 1999. Also see Commonwealth of PA, DEQ Fact Sheet: Reed and Strattanville Mine Reclamation Projects, at <http://www.dep.state.pa.us/dep/deputate/minres/BAMR/Strattanville/FS2386.pdf>.

31 According to The Superfund Progress Report: 1980—1997, U.S. EPA 540-R-98-044 October 1998, "at almost every Superfund site, some parties responsible for contamination cannot be found, have gone out of business, or are no longer financially able to contribute to cleanup efforts."

32 U.S. EPA, OSWER, Mixed Funding Evaluation Report. The Potential Costs of Orphan Shares, September 1998.

33 Statement of Lois Schiffer, Assistant Attorney General, Environment and Natural Resources Division U.S. Department of Justice, before the Superfund, Waste Control, and Risk Assessment Subcommittee of the Environment and Public Works Committee, U.S. Senate, March 21, 2000.

34 Interim Guidance on Orphan Share Compensation for Settlers of Remedial Design/Remedial Action and Non-Time-Critical Removals, June 3, 1996.

35 Most states have developed cleanup programs to deal with an estimated 30,000 sites unable to qualify for the NPL program. Congressional Research Service, Report for Congress, Superfund and States: The State Role and Other Issues, October 16, 1997.

One conclusion to be drawn from the above statistics is that it is not only notorious catastrophes, such as oil tanker spills, that signal the need for financial responsibility. Smaller risks, such as unplugged wells and leaking tanks at filling stations, can in aggregate create even greater externalized costs because the number of operations is large and the pockets of firms responsible for them are shallow. Finally, it is important to realize that large companies, not only small ones, can externalize costs via bankruptcy. A current example is the chemical manufacturer W.R. Grace, which has recently filed for bankruptcy primarily because of asbestos-related liability claims. The effect of the firm's bankruptcy on its multimillion-dollar environmental cleanup liabilities remains to be seen.³⁶

1.3 The Benefits of Assurance

Liability rules and reclamation obligations lead to polluter cost internalization only in theory. In practice, liability, many administrative requirements, and any other after-the-fact penalties or obligations suffer from an important weakness: Since the financial damages or obligations arise only after environmental damage has occurred, polluters can escape cost internalization via prior dissolution or bankruptcy. Financial assurance rules counter this weakness.

In concrete terms, financial responsibility ensures that the expected costs of environmental risks appear on a firm's balance sheets and in its business calculations. If new investments imply possible future environmental costs, financial responsibility increases the relevance of these costs to the firm's decisionmaking. When firms self-insure, they must possess demonstrable wealth and financial stability. Firms with fewer resources often cannot self-insure and must therefore acquire rights to financial assets from third parties, such as banks and insurers. Third-party assurance providers are obviously concerned that their capital will be consumed by their clients' future liabilities. As a result, they have a strong incentive to monitor the environmental safety of firms they underwrite. Capital providers can also base the cost of capital or premiums on observable attributes of the firms to which they provide assurance. For example, more favorable premiums can be offered to firms with meaningful risk management and safety programs. In the extreme, financial coverage may be denied altogether to firms that

³⁶ The firm has cleanup liabilities in the tens of millions of dollars. "W.R. Grace Files for Bankruptcy Protection, Citing Huge Increases in Asbestos Litigation," *Environment Reporter*, April 6, 2001, at 640.

fail to demonstrate acceptable levels of safety. In these ways, the capital markets that arise to satisfy demand for financial responsibility generate incentives to reduce environmental risks.³⁷

Financial assurance can also foster timely, relatively low-cost public access to compensation. This can be beneficial when a swift response helps minimize damages. When assurance is held by a public trustee, such as a state regulatory agency, it minimizes the public transaction costs associated with collecting compensation. Even when liability is firmly established, the possibility of appeal, delay, and uncertainties associated with penalty collection can complicate the actual transfer of funds from defendants to victims and resource trustees. Some financial assurance instruments, such as letters of credit, allow almost instant access by regulators to reserved funds. This shifts the burden of proof from the government to the plaintiff. Instead of the government's having to prove that compensation is due and seek the funds, the burden falls to the polluter to demonstrate that it is not liable.³⁸

Assurance is a time-tested concept. Its application is neither new nor confined to environmental problems.³⁹ Mandatory automobile insurance and minimum capital requirements for banks share similar motivations: namely, the desire for victim compensation and the deterrence of inappropriate risk-taking.⁴⁰ Bail and construction bonds, like environmental bonds, guarantee performance of a future action by making a solvent third party liable for the costs of a performance failure. In terms of their environmental application, assurance has been advocated for decades as a complement to environmental law and regulation.⁴¹ The academic literature on

37 See generally Goran Skogh, *Insurance and the Institutional Economics of Financial Intermediation*, The Geneva Papers on Risk and Insurance, 1991 (describing the benefits from monitoring that come when intermediate financial guarantors expose their assets to the liability claims of the firms they underwrite).

38 The corollary, of course, is that the transaction costs borne by regulated firms will increase. Whether this improves overall welfare is a more complex issue.

39 Bond agreements can be found in the Old Testament, as in Genesis 43:9 ("I will be surety for him; of my hand you shall require him. If I do not bring him back to you and set him before you, then let me bear the blame for ever") and Proverbs 20:16 ("Take a man's garment when he has given surety for a stranger...").

40 For instance, the 1988 Basle Accord is an international agreement setting minimum capital requirements for banks to prevent bank failures. Bank insolvency creates a compensation problem because it means depositors cannot be paid. It creates a deterrence problem because the possibility of insolvency can create incentives for excessive risk taking, in this case excessive risk in the granting of loans. See Robert Merton, *A Functional Perspective of Financial Intermediation*, *Financial Management* 24, 1995, pp. 23–41 (identifying three ways for banks to reduce their risk exposures: hedging, insuring with others, and possession of an adequate capital cushion).

41 Peter Bohm and Clifford Russell, *Comparative Analysis of Alternative Policy Instruments*, in Allen V. Kneese and James L. Sweeney, eds., *Handbook of Natural Resource and Energy Economics*, Volume 1, Elsevier, 1985, and

tort law has long identified the defendant insolvency as a source of inefficiency associated with the use of liability rules.⁴²

1.4 Alternatives to Assurance

Perhaps the strongest motivation for assurance requirements arises from contemplation of the alternatives. Since environmental costs never simply vanish on their own, someone must pay. The question is, who? Two principal alternatives exist: the externalization of costs to society and the extension of environmental costs to polluters' business partners. As argued above, the externalization of environmental costs to society is highly undesirable because it undermines deterrence and the ability to compensate victims. The extension of liability to business partners is a more complex case. But it, too, highlights the desirability of assurance.

The law routinely extends liability to the business partners of insolvent or absent defendants. Retailers and distributors can be liable for injuries due to defects in products they sold but did not manufacture, and employers can be liable for damages caused by independent contractors employed by them.⁴³ The motivation for extending liability is the same as that for assurance: Deterrence and compensation are served by an internalization of costs. Firms exposed to their business partners' liability will more closely monitor those partners' safety. Business partners also provide a source of compensation. In the environmental context, joint and several

Peter Bohm, *Deposit-Refund Systems: Theory and Applications to Environmental, Conservation, and Consumer Policy*, Resources for the Future, by the Johns Hopkins University Press, 1981.

⁴² Because insolvency truncates the expected penalties borne by potential defendants, it also undermines the motivation to take precaution against risk. For analyses that explore or employ this reasoning, see Alan Schwartz, *Products Liability, Corporate Structure, and Bankruptcy: Toxic Substances and the Remote-Risk Relationship*, 14 *J. Legal Stud.* 689, 1985; Steven Shavell, *The Judgment-Proof Problem*, 6 *Int'l Rev. L. & Econ.*, 45, 1986; William Landes and Richard Posner, *The Economic Structure of Tort Law*, 1987; Lewis Kornhauser and Richard Revesz, *Apportioning Damages Among Potentially Insolvent Actors*, 19 *J. Legal Stud.* 617, 1990; and James Boyd and Daniel Ingberman, *Noncompensatory Damages and Potential Insolvency*, 23 *J. Legal Stud.* 895, 1994.

⁴³ For the liability of retailers and distributors, see Section 402A of the Restatement of Torts (Second) and *Products Liability: Manufacturer and dealer or distributor as joint or concurrent tortfeasors*, 97 *ALR 2d* 811. A recent case to this effect is *Pepper v. Star Equipment, Ltd.* 484 *NW2d* 156, *CCH Prod. Liab. Rep.* 13162, in which a defendant distributor in a products liability action was not allowed to seek contribution from a manufacturer in the midst of Chapter 7 bankruptcy.

For the liability of employers for injuries caused by independent contractors, see Sections 416 and 427 of the Restatement of Torts (Second), which states that when the contractor's activities are likely to entail significant or inherent risk, the employer of the contractor is liable for the contractor's failure to exercise reasonable precaution, even if the employer had required that precaution in the contract.

liability extends liability in this way and for these purposes. Under the Superfund law, an acquiring firm takes on the liabilities attached to property owned by the seller.⁴⁴ Liability is also extended from operators of disposal facilities to the original generators of waste.⁴⁵ And liability can be applied without reference to fault or the liable firm's proportional contribution to the damage.

Assurance is preferable to extended liability for a variety of reasons. First, the extension of liability does not guarantee cost internalization, since there may be no applicable business partners from which to seek compensation, or the partners may themselves be insolvent. Second, as the history of Superfund has shown, joint and several liability entails significant transaction costs associated with *ex ante* contracting between mutually liable firms and the resolution of *ex post* claims for contribution among jointly liable defendants.⁴⁶ Finally, extended liability can distort production decisions, such as investments in capital and the pattern of transactions between contracting parties.⁴⁷

2. When Is Assurance Required?

Although some assurance rules have existed for decades under U.S. law, in the past decade their implementation has become much more widespread.⁴⁸ Assurance regulations are now associated with many of the nation's most important environmental laws. Financial assurance is required under the Oil Pollution Act (OPA), the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, or Superfund), the Resource Conservation and Recovery Act (RCRA), the Safe Drinking Water Act, the Outer Continental Shelf Lands Act (OCSLA), the Federal Land Policy and Management Act (FLPMA), the Atomic Energy Act (AEA), Toxic Substances Control Act (TSCA), the Safe Drinking Water Act

44 See *United States v. Kayser-Roth Corp.*, 910 F.2d 1032 (1st Cir. 1990).

45 42 U.S.C. § 9607 (1988).

46 For discussion of the transaction costs associated with joint and several liability under CERCLA, see Lloyd Dixon, *The Transaction Costs Generated by Superfund's Liability Approach*, in Richard Revesz and Richard Stewart, eds., *Analyzing Superfund: Economics, Science, and the Law*, Resources for the Future, 1995.

47 See James Boyd and Daniel Ingberman, *The Search for Deep Pockets: Is Extended Liability Expensive Liability?*, *J. Law Econ. & Org.*, 1997; and James Boyd and Daniel Ingberman, *The Extension of Liability Through Chains of Ownership, Contract, and Supply*, in Anthony Heyes, ed., *The Law and Economics of the Environment*, forthcoming.

48 California required bonds for oil well plugging as early as 1931. See Thomas, *supra* note 14 at 2.

(SDWA), and the Surface Mining Control and Reclamation Act (SMCRA). Not all enterprises regulated under these laws are subject to assurance requirements, but financial assurance is required for vessels carrying oil or hazardous substances; underground petroleum storage tanks; solid and hazardous waste landfills; many types of industrial, oil, and gas wells; offshore oil-drilling facilities and pipelines; nuclear power plants and disposal facilities; and coal and mineral mining operations.

2.1 Federal Assurance Regulations

Assurance rules differ somewhat depending on their precise application but always feature descriptions of implementation schedules, types of facilities to which the rules apply, financial instruments with which compliance can be achieved, and enforcement procedures. This section provides a brief overview of the types of facilities and obligations governed by U.S. federal assurance rules. Section 3.4 describes the variety of financial mechanisms firms can use to demonstrate financial responsibility.

2.1.1 Vessels carrying oil and hazardous cargo

A financial assurance rule authorized by both OPA and CERCLA governs waterborne vessels that carry oil or hazardous substances.⁴⁹ Before the passage of OPA and CERCLA, financial responsibility was required for vessels carrying oil and hazardous cargo under the Federal Water Pollution Control Act.⁵⁰ The current rules apply to a wider range of vessels and facilities, cover a wider range of damages, and require higher levels of coverage.⁵¹ Full implementation of these rules has occurred only recently.⁵² Deadlines for compliance, which depended on the type and size of vessel, occurred between 1994 and 1997.⁵³ The vessel rule applies to tank vessels of any size, foreign-flag vessels of any size, and mobile offshore oil- and

49 33 USC § 2702; 42 USC § 9607(a)(1). The rules are codified at 33 CFR, Part 138.

50 FWPCA, Section 311, 33 USC 1321 (1970).

51 For instance, the Clean Water Act § 311(f) limited liability to \$150 per vessel ton. The corresponding limit under OPA is \$1,200 per gross ton. Moreover, before OPA there were traditional admiralty shipowner liability protections that limited the application of liability to negligent parties and situations in which plaintiffs were “physically impacted or touched by the oil.”

52 The rule was finalized in 1996, Financial Responsibility for Water Pollution (Vessels), codified at 33 CFR 138; Final Rule, 61 FR 9274, March 7, 1996, and 61 FR 9263, March 7, 1996.

53 59 FR 34212-34213. 33 CFR 138.15.

gas-drilling units.⁵⁴ Some smaller commercial vessels, such as barges not carrying oil or hazardous substances, are excluded from the regulations. Mandatory assurance amounts are based on the type of cargo, type of vessel, and the vessel's tonnage. For a large vessel, assurance requirements can run into the tens of millions of dollars.

2.1.2 Offshore oil facilities

Another assurance rule authorized by OPA governs offshore facilities used for oil exploration, drilling, production, or transport.⁵⁵ Notice of the offshore facilities rule was given in 1997 and finalized in 1998.⁵⁶ Compliance for all regulated facilities had to be demonstrated by 1999. Prior to OPA, financial responsibility was required for offshore facilities under OCSLA, and for oil pipelines under the Trans-Alaska Pipeline Act.⁵⁷ The offshore facility rule applies to facilities "in, on, or under" navigable waters. Covered facilities include platforms, terminals, refineries, and pipelines used for oil exploration, drilling, and production.⁵⁸ Onshore oil facilities are not covered. Assurance amounts are based on calculations of "worst-case" discharge volumes from the facilities and can go as high as \$150 million.⁵⁹

2.1.3 Underground petroleum storage tanks

RCRA requires financial responsibility for the owners and operators of underground storage tanks, such as those used at gas stations.⁶⁰ The rules were codified in 1988, but compliance deadlines for certain operators extended until 1998. UST owners and operators must demonstrate the ability to perform corrective action to restore a contaminated site and compensate third parties for property damage or injury arising from a leaking tank. The amount

⁵⁴ 33 CFR 138.12.

⁵⁵ OPA § 1016. The offshore facility financial responsibility rules are codified at 30 CFR, Part 253.

⁵⁶ 62 FR 14052, March 25, 1997 (notice of proposed rulemaking); and the final rule, codified at 30 CFR, Part 253, Oil Spill Financial Responsibility for Offshore Facilities, 63 FR 42699, August 11, 1998.

⁵⁷ See 30 CFR 250,251, 256, 281, 282 (mandatory bond coverage for Outer Continental Shelf lessees). The Outer Continental Shelf Lands Act had a \$35 million FAR for certain oil and natural gas facilities. OPA increased the required amounts (to as much as \$150 million) for some facilities.

⁵⁸ 30 CFR 253.3.

⁵⁹ 30 CFR 253.13.

⁶⁰ RCRA's Subtitle I covers UST facilities. The UST financial responsibility rules are codified at 40 CFR 280, and see 53 FR 43370, October 26, 1988.

of financial assurance that must be demonstrated can be significant. For example, most gas stations are required to carry \$1 million in insurance coverage.

2.1.4 Solid waste landfills and hazardous waste facilities

RCRA also requires financial assurance for solid waste (nonhazardous) landfills and hazardous waste treatment, storage, and disposal facilities (TSDFs).⁶¹ The final municipal landfill compliance deadlines were in 1997. Facilities must provide financial guarantees designed to assure the internalization of costs associated with the closure of these facilities and their long-term maintenance.⁶² Closure requirements include the capping of landfills and long-term monitoring of groundwater impacts. Hazardous facilities must also demonstrate liability coverage to compensate third parties suffering bodily injury or property damage resulting from an accident.⁶³ Coverage amounts for a typical site run into the millions of dollars.

2.1.5 Wells

To protect drinking water quality, the Safe Drinking Water Act of 1974 established rules for the regulation of underground injection control (UIC) wells. Operators of Class I, II, and III wells are required to demonstrate financial responsibility for their eventual plugging and abandonment.⁶⁴ Such wells are used to dispose of hazardous waste, to dispose of fluids associated with production of natural gas and oil, and to inject fluids for the extraction of minerals.⁶⁵ Unplugged wells can lead to migration of contaminants into aquifers, saltwater intrusion into a freshwater aquifer, and surface soil contamination. In addition to plugging, requirements can include revegetation, erosion control, and removal of tanks and lines. Bond

61 RCRA's Subtitles C and D govern hazardous and solid waste disposal facilities, respectively. The RCRA C financial responsibility rules are codified at 40 CFR 264 and 265 ("subpart H"). The RCRA D financial responsibility rules are codified at 40 CFR 258 ("subpart G").

62 For the Subtitle C requirements, see 40 CFR 264/265.144 and 264/265.145. For Subtitle D, see 40 CFR 258.72 and 258.73.

63 Coverage requirements may be for both "sudden" and "nonsudden" accidental occurrences. 40 CFR 264/265.147.

64 Codified at 40 CFR 144.28(d), 40 CFR 144.52(a)(7), and 40 CFR 144.60-144.70.

65 Injection wells are "bored, drilled or driven shafts or dug holes whose depth is greater than the largest surface dimension into which fluids...are emplaced. That is, any hole that is deeper than it is wide and through which fluids can enter the ground water is an injection well." 40 CFR 144.3.

amounts vary greatly depending on the well type.⁶⁶ There is no assurance required for third-party liability.

2.1.6 Coal and hardrock mines

Coal mining is regulated at the federal level by the Surface Coal Mining and Reclamation Act of 1977. SMCRA governs both surface effects, such as strip mine reclamation, and subsurface effects, such as damaged water quality from mine drainage.⁶⁷ Prior to the act's passage, states had regulatory authority and often required bonds, though these bond amounts were often inadequate.⁶⁸ SMCRA increased bond amounts for site reclamation, including revegetation, backfilling, grading, and mine drainage controls. Bond amounts are based on acreage and vary with the type of mining activity and site characteristics.⁶⁹

Assurance is also required for hardrock mining operations. Hardrock mining continues to be regulated primarily by state law, and state bond policies vary.⁷⁰ However, federal law requires hardrock bonds when mining occurs on federal lands.⁷¹ Mining on lands administered by the Bureau of Land Management and U.S. Forest Service is subject to those agencies' respective rules.⁷² Like coal mine bonds, hardrock bonds are based on acreage and site characteristics.

⁶⁶ Oil and gas wells are typically regulated by individual states. Bond amounts vary from state –to state. For instance, a single well bond for a well 500 feet deep or less is \$500 in Kentucky but \$100,000 in Alaska. See Thomas, *supra* note 14, at 2.

⁶⁷ 30 CFR 800. For an overview, see James McElfish, *Environmental Regulation of Coal Mining: SMCRA's Second Decade*, Environmental Law Institute, 1990. The Mineral Leasing Act also requires bonds for compliance with approved mining and exploration plans on public lands. 43 CFR 3474.1.

⁶⁸ Inadequate bond amounts were one reason for the act's passage. See McElfish, *supra* note 67 at 91, citing H. R. Rep No. 128, 95th Congress, 1st Session 57-58, reprinted in 1977 U.S. Code Cong. & Admin. News 595-96.

⁶⁹ To illustrate, Pennsylvania requires minimum per-acre bond amounts that range from \$1,000 to \$5,000, depending upon site characteristics.

<http://www.dep.state.pa.us/dep/deputate/minres/bmr/bonding/bondingrpt021000a.htm>.

⁷⁰ See generally, Kuipers *supra* note 24.

⁷¹ The Federal Land Policy and Management Act (FLPMA) directs the secretary of the Interior to prevent unnecessary or undue degradation of the public lands. Financial assurance is considered part of this charge. See 43 U.S.C.1732(b).

⁷² BLM mining rules are codified at 43 CFR 3809. USFS reclamation rules are codified at 36 CFR 228.

2.1.7 PCB storage facilities

Under the Toxic Substances Control Act, commercial PCB storage facilities must demonstrate financial assurance for costs associated with their closure, including final disposal, decontamination, and monitoring costs.⁷³

2.1.8 Nuclear facilities

The Atomic Energy Act requires financial assurance for the costs associated with nuclear power plant decommissioning and for the closure of radioactive waste disposal facilities.⁷⁴ Minimum amounts for plant decommissioning are in excess of \$100 million. Bonds are also required for the closure of uranium and thorium mill sites.⁷⁵ Assurance is also required for liabilities arising from nuclear accidents. The Price-Anderson Act, while limiting the industry's liability, also requires coverage for reactors, reprocessing facilities, and fuel enrichment facilities.⁷⁶ The private insurance requirement is currently \$200 million for reactor units.⁷⁷

2.2 The States' Role in Assurance Regulation

State laws sometimes complement and expand upon federal assurance regulations. States also often implement the assurance rules mandated by federal law. For these reasons, it is most appropriate to think of assurance regulations as emerging from a combination of state and federal rules and enforcement.

A comprehensive survey of state financial assurance requirements is beyond the scope of this paper. However, it is worth noting that individual states can have assurance requirements that in some cases exceed those under federal law. For example, California recently passed a law requiring oil-carrying vessels to demonstrate \$1 billion in coverage for oil pollution damages.⁷⁸ The law also requires marine terminals, fueling facilities, and barges to demonstrate assurance

⁷³ Codified at 40 CFR 761, Subpart D.

⁷⁴ Plant decommissioning assurance rules are codified at 10 CFR 50.33(k) and 50.75; disposal assurance at 10 CFR 61.62.

⁷⁵ 10 CFR Part 40, Appendix A.

⁷⁶ 42 U.S.C. §2210.

⁷⁷ See U.S. Nuclear Regulatory Commission, *The Price-Anderson Act—Crossing the Bridge to the Next Century: A Report to Congress*, 1998.

⁷⁸ California Government Code § 8670.37.53. The law went into effect on January 1, 2000.

coverage. Alaska law mandates financial responsibility for oil terminals, pipelines, tank vessels, and barges with coverage levels higher than under federal law.⁷⁹ In addition, a new Alaska law extends financial responsibility to vessels other than tankers, including cruise ships, and railroad tank cars carrying oil.⁸⁰ Similarly, Washington State requires oil vessel coverage in excess of federal requirements and extends the requirements to a broader range of facilities.⁸¹

In other cases, states require assurance for operations or situations not required under federal law. Again, a comprehensive review is beyond the scope of this study, but Michigan, for example, requires holders of sand dune mining permits to provide assurance for the reclamation and revegetation of sand dune areas.⁸² Several states require bonds to cover closure costs for scrap tire disposal facilities.⁸³ Texas requires transporters of medical waste to demonstrate insurance for automobile and pollution liability.⁸⁴ Several states require financial responsibility for the closure of agricultural operations producing animal waste.⁸⁵ And North Carolina established financial responsibility requirements for dry-cleaning operations.⁸⁶

States are often responsible for the implementation of assurance regulations, even when assurance is required by federal law. This is true, for example, under RCRA. In general, UST, landfill, and TSDF assurance programs are operated by the states, subject to federal oversight and approval.⁸⁷ Under SDWA, the federal government regulates wells only if states do not

79 Some oil terminals and pipelines must demonstrate \$50 million in coverage. Tank vessels and barges must demonstrate up to \$100 million. Alaska Stat. 46.04.040 (Supp. 1994).

80 Alaska Stat. 46.04.055, as of June 2000.

81 The coverage requirement for oil-carrying vessels is \$500 million. Washington Rev. Code Ann. 88.40.020(2)(a). Coverage is also required for onshore facilities that could discharge oil to navigable waters or adjoining shorelines. Washington Rev. Code Ann. 88.40.025.

82 MCL 324.63712.

83 For example, Michigan, MCL 324.16903(1)(j); Ohio, OAC 3745-27-15(B)(1); and Texas, TAC, Title 30, Part 1, Chapter 37, Subchapter M.

84 TAC, Title 30, Part 1, Chapter 37, Subchapter U.

85 Kansas requires financial responsibility for large-scale swine facilities, K.A.R. 28-18a-23. Illinois requires financial responsibility for the closure of waste lagoons used in livestock production, 35 IAC § 506.601.

86 G.S. 143-215.104F (f). These rules have not been fully implemented. Facilities were required to obtain liability insurance of no less than \$1 million or provide regulators with a surety bond or deposit of securities in the amount of \$1 million. These requirements may be waived if the operation is unable to comply and is found to be uninsurable.

87 42 U.S.C. §6926(b), §6943, §6991(c). EPA delegates implementation via a state authorization process. Federal approval of state programs places a floor on standards and ensures consistency while allowing some flexibility in program details. Individual states can implement stronger standards, 42 U.S.C. §6929.

administer their own programs.⁸⁸ For hardrock mining, states have their own mine bonding regulations but must come to agreement with the federal government over bonding criteria for mines on federal land.⁸⁹ Similarly, Under SMCRA, the Office of Surface Mining Reclamation and Enforcement (OSM) in the Department of the Interior enforces the rules until individual states achieve “primacy,” or independent enforcement authority approved by OSM.⁹⁰

3. Demonstrating Financial Responsibility

Financial responsibility can be demonstrated in a variety of ways. All the assurance rules described above allow a choice of compliance mechanisms. This section describes the variety of mechanisms in more detail. First, it is useful to note some basic distinctions between insurance and performance bonds, and between self-assurance and assurance that is purchased from third parties.

3.1 “Assurance as Insurance” versus “Assurance as a Bond”

There are two basic types of environmental costs that require assurance: uncertain environmental liabilities (typically associated with remedial site cleanups, property damage, or health impacts) and more defined environmental obligations, such as site restoration, land reclamation, or long-term water treatment obligations.

The distinction is subtle but important. Assurance for uncertain environmental costs is best thought of as mandatory insurance. An important characteristic of insurance is that by forcing cost internalization, it creates an incentive to reduce uncertain environmental risks through improved technology or management. In contrast, when obligations are fully known *ex ante*, there is no need for insurance per se. Instead, what is needed is a guarantee that the known obligation will be performed. Typically, bonds are used to guarantee performance of a known, future obligation.

88 “Direct implementation” states are those in which EPA administers the UIC program. As an example, Class II wells are federally administered in New York, Pennsylvania, Florida, Kentucky, Tennessee, Michigan, and Montana. www.epa.gov/r5water/uic/ffrdooc2.htm.

89 See Kuipers, *supra* note 24, at I-7.

90 <http://ciir.cs.umass.edu/ua/October1995/priority/pfile-7.html>.

Consider an example: landfill closures. Relatively certain obligations include the need to revegetate, cap, and monitor the site. These obligations tend to be guaranteed via bonds. Uncertain risks from the landfill include future groundwater contamination, health impacts, and damage to neighboring property. These uncertain liabilities tend to be assured via insurance coverage. To be clear, the motivation for assurance in the bonding context is nearly identical to the motivation for assurance in the insurance context. In both, assurance guarantees that funds will be available in the future to internalize costs.

The difference, though, has practical implications for the instruments used to demonstrate assurance. First, bond agreements typically assume that the principal bears ultimate responsibility for the loss. In other words, the bond provider pays only if the principal is unable to do so because of insolvency or abandonment.⁹¹ Consequently, bond pricing is primarily a function of the principal's bankruptcy risk, and bonds tend to be priced as a simple percentage of their face value.⁹² Insurance products are different because insurers typically pay the claims of both solvent and insolvent clients. This means that insurance is priced to reflect a greater likelihood and range of possible claims. Consequently, insurance is usually priced with much greater sensitivity to the risks presented by the insured.

A bright line between assurance as insurance and assurance as a bond should not always be drawn. Moreover, the distinction should not be applied to the suppliers of these forms of assurance, since surety bonds are often sold by insurance companies.

3.2 Self-Demonstrated versus Purchased Assurance

All assurance programs allow firms to purchase assurance from a third party. Insurance, bonds, bank certificates, and letters of credit can be purchased from private financial providers, including insurers, sureties, and lenders. Some programs allow firms to self-demonstrate assurance as an alternative to purchased assurance. Self-demonstration is essentially a

⁹¹ Even in the absence of an express written indemnity agreement, common law indemnity would favor the surety against the principal. See Lawrence Moelmann and John Harris, eds., *The Law of Performance Bonds*, American Bar Association, 1999, at 6 (and also for more on the difference between performance bonds and insurance and a legal overview of performance bonds generally).

⁹² Moelmann and Harris, *supra* note 91, at 5 (referring to the relative simplicity of bond pricing, "this is a monumental difference from casualty underwriting, where the loss experience of the given insured can result in a premium that is several multiples of what an insured with a better record might pay").

demonstration of profitability and stability. In theory, wealthy, stable firms can be counted on to internalize their future costs, without the involvement of third-party capital providers.⁹³

There are clear differences between purchased and self-demonstrated assurance. The most important difference is in the government's monitoring role. Self-demonstration requires the government to monitor the firm's financial condition over time. For instance, asset ratios, profitability indicators, and bond ratings may be used to pass a self-demonstration test. Accordingly, regulators must regularly audit these financial data to determine their accuracy and adequacy. Note, however, that corporate financial auditing is not a traditional strength of environmental regulators. In contrast, purchased assurance is relatively easy to monitor.⁹⁴ Two basic things must be verified: first, the existence of a valid assurance contract with a third-party provider, and second, the financial strength of that provider. The financial strength of capital providers is easy to monitor because oversight is usually already in place. The Securities and Exchange Commission, for example, keeps an up-to-date list of government-approved sureties. In contrast, self-demonstration requires verification of changeable, complex, and often subjective financial data.

Another difference is that purchased assurance inevitably directs the attention of private financial providers to the risks presented by the potential polluter. After all, it is in the commercial interest of private financial providers to accurately analyze and minimize the risks. This virtue is not harnessed when firms self-demonstrate assurance.

Some assurance mechanisms blur the distinction between purchased and self-demonstrated mechanisms. Trust funds, for example, are funded by the firm itself and thus are not technically purchased. However, when appropriately designed they involve an independent trustee and funds can be released only with the approval of the regulator. Accordingly, trust funds do not suffer from the weaknesses of self-demonstration. Another mechanism that blurs the distinction is captive insurance—that is, insurance provided by the firm itself or by a collection of similarly regulated firms. Like purchased insurance, captive insurance premiums are typically risk-sensitive. Because captive insurers are not independent firms, however, they present many of the same monitoring problems as self-demonstrated assurance.⁹⁵

93 But see Section 6.6 *infra*.

94 Section 6.4 and 6.5 *infra* discuss the need to monitor purchased assurance.

95 See discussion in Section 6.4.6 *infra*.

3.3 Publicly Subsidized Assurance

In some instances environmental assurance is provided by public funds. For example, most states under RCRA's underground storage tank rules set up state guarantee funds to help owners comply with RCRA's financial responsibility provisions. Funds were financed via taxes on gasoline sales or retail deliveries, not by UST owner-operators themselves.⁹⁶ In a limited set of cases, publicly funded remediation is a defensible public policy.⁹⁷ In general, however, public financing of pollution costs is undesirable. Public funds are usually funded from taxes that do not reflect firms' safety records, technology, or ability to manage risks effectively. Since the coverage costs do not reflect risk, they fail to create an incentive for risk reduction. One particularly troubling aspect of publicly operated assurance funds is that they undermine private markets for assurance. Public assurance funds tend to be cheaper and easier to qualify for than privately purchased insurance. Private insurance is likely to be better monitored and more accurately priced, however, because private providers have incentives to minimize their own risks and collect premiums that will cover the costs they are insuring.⁹⁸ Most states have already phased out publicly financed UST guarantee funds, or are in the process of doing so.

3.4 Mechanisms

This section provides more specific descriptions of the financial products, mechanisms, or tests firms can use to demonstrate assurance. Assurance programs allow firms to choose from

96 Because retail gasoline is a highly competitive business, these taxes are simply passed along to the consumer. So although the industry is taxed, the tax liability falls primarily on consumers.

97 Subsidized assurance can be justified if it is used to finance so-called retroactive liabilities created by a change in regulation. During a period of legal transition, public financing promotes the timely remediation of existing pollution and compliance with the prospective, deterrent aims of the law. See James Boyd and Howard Kunreuther, *Retroactive Liability or the Public Purse?*, 11 *Journal of Regulatory Economics* 79, 1997.

98 See U.S. EPA, *State Funds in Transition: Models for Underground Storage Tank Assurance Funds*, Office of Underground Storage Tanks, 1996 (updated 1998), www.epa.gov/swrust1/states/statefnd.htm ("In 1996, commercial pollution liability insurance (which meets the federal financial responsibility requirements) is readily available and generally affordable, especially for 'good' tanks meeting all technical requirements. Growth of this insurance market has not been constrained by a lack of supply, but rather by a lack of demand due to competition from state assurance funds"), at 4. Also see *Financial Responsibility Long Term Study*, State of California, State Water Resources Control Board, January 1995, 94-2CWP. (The state UST fund "is a hindrance to insurance providers"), at 5. Available at <http://www.swrcb.ca.gov/~cwphome/ustcf/resource/finrelts.htm>.

a variety of the mechanisms, as described below.⁹⁹ The data suggests that firms exploit this flexibility by routinely combining mechanisms to meet their full assurance obligations.¹⁰⁰

3.4.1 Insurance

Insurance policies are generally purchased from independent insurance providers. For a premium, the insurer promises to compensate the purchaser for claims covered in the insurance contract. Contracts are of two basic forms, “claims made” and “occurrence.” Claims-made policies provide coverage for claims presented to the insured and reported to the insurer during the coverage period. Claims falling outside the coverage period, even if caused by acts during the coverage period, are not covered.¹⁰¹ Accordingly, it is in the public interest that the use of claims-made policies be accompanied by additional safeguards to provide assurance over long time horizons. In contrast, occurrence policies cover claims arising even after the policy period has ended, providing the cause of the claim occurred during the policy period. Insurers like to avoid occurrence coverage, as a way to reduce the scale and enhance the predictability of their exposures. From the standpoint of public policy, however, occurrence coverage addresses the goals of assurance better than claims-made coverage.

Another concern associated with insurance is that the policy may feature “exclusions” that weaken coverage.¹⁰² For this reason, regulators must carefully verify that policies fully cover the kinds of claims subject to assurance requirements.

3.4.2 Letters of credit and surety bonds

Letters of credit are purchased from banks.¹⁰³ They require the bank to pay a third party beneficiary, in this case the government, under certain specified circumstances, such as the

⁹⁹ Typically, different mechanisms can be used in combination, with the aggregate coverage equaling the liability limit. For example, self-insurance can be used to cover the deductible included in an insurance policy. 63 FR 42704, August 11, 1998.

¹⁰⁰ For examples, see “Distribution of Subtitle C Facilities among Financial Assurance Mechanisms. Docket materials in support of the April 10, 1998, Financial Assurance Mechanisms for Corporate Owners and Operators of Municipal Solid Waste Landfill Facilities; Final Rule Issue Paper: Effects of the Financial Test on the Surety Industry, at 7 (TSDF assurance); Review of Hard Rock Mining Reclamation Bond Requirements, Legislative Request #98L-36, December 4, 1997, appendix (hardrock mining bonds in Montana); U.S. Coast Guard data, available at <http://www.cofr.npfc.gov> (water-borne vessels).

¹⁰¹ See discussion, Section 6.4.4 *infra*.

¹⁰² See discussion, Section 6.4 *infra*.

failure of the purchaser to perform certain obligations. Banks may require collateral or deposits before providing a letter of credit, depending on the purchaser's financial health. Letters of credit are typically priced as a small fraction of their face value and are granted for annual terms. Typically, letters of credit are automatically extended after one year, subject to the purchaser's continued good credit and adherence to contract terms. The instrument can be altered only with the agreement of the purchaser, the provider, and the beneficiary. The credit provider does not generally pay out on claims. Rather, the purchaser indemnifies the bank, making the bank liable only if the purchaser defaults. Designed properly, beneficiaries can draw on the letter of credit if its term is not extended and if a replacement form of assurance is not put in place.

Surety bonds are similar to letters of credit, though usually purchased from an insurance company. Sureties usually pay out on claims only if the purchaser defaults.¹⁰⁴ Under most programs surety companies must be certified by the U.S. Treasury Department to qualify as an acceptable source of assurance.¹⁰⁵ Bonds, like letter of credit, cannot be cancelled unless prior notice is given to the regulator, and the government is the beneficiary of the bond in the event of default by the principal.

"Blanket bonds" are a special form of bond, allowable as assurance for oil and gas wells, where relatively large numbers of sites are covered by a single bond. With proof of past good behavior and passage of financial tests, well operators can bond a large number of wells for a relatively small fraction of the assurance they would have to demonstrate if they bonded the wells individually.¹⁰⁶ Since, almost by definition, the assurance amount is less than the firm's obligations, blanket bonds do not guarantee full cost recovery.

103 Credit issuers must be those whose operations are "regulated and examined by a Federal or State agency." 40 CFR 258.74(c).

104 *Schmitt v. Insurance Co. of North America* (1991) 230 Cal.App.3d 245, 257. Typically, though, either the principal or the surety may be sued on a bond, and the entire liability may be collected from either the principal or the surety. This characteristic of surety bonds is also tempered by FAR "direct action" requirements, described below.

105 See 30 CFR 253.31 (vessels); 33 CFR 138.80(b)(2) (offshore facilities); 43 CFR 3809.555(a) (hardrock mines); 40 CFR 258.74(b) (Subtitle D), 40 CFR 264.143(b)(1) (Subtitle C), 40 CFR 280.98(a) (Subtitle I). "The surety company issuing the bond must, at a minimum, be among those listed as acceptable sureties on Federal bonds in Circular 570 of the U.S. Department of the Treasury."

106 Federal Financial Responsibility Demonstrations for Owners and Operators of Class II Injection Wells, (EPA 570/9-84-007). Federal blanket bond coverage is accepted only if the operator (1) has a spotless past record of plugged and abandoned wells; (2) has at least one oil field or lease with an estimated remaining economic life exceeding five years; (3) has been in the oil business for more than five years; (4) is producing from more than one production field; (5) operates more than ten injection wells; and (6) can pass a financial test.

3.4.3 Cash accounts and certificates of deposit

Cash accounts and certificates of deposit are a particularly iron-clad form of assurance. They place cash or some other form of interest-bearing security into accounts that are made payable to or assigned to the regulatory authority.¹⁰⁷ In the event of default, the accounts may be liquidated by the regulator for the payment of covered obligations. There are several important safeguards for the use of these instruments: The public authority must be made the sole beneficiary, the accounts must be managed by independent financial institutions, and the terms can be changed only with the approval of regulators. Assets remaining after the fulfillment of obligations revert to the firm.

3.4.4 Trust funds

Trust funds are vehicles for the collection of monies dedicated to a specific purpose. So-called third-party trust funds are administered by an independent trustee who is in charge of collecting, investing, and disbursing funds.¹⁰⁸ Because money is typically paid in over some period of time, trust funds may not be fully funded at the time of a claim. Accordingly, shorter-term pay-in periods are preferable for assurance. The regulator should be the sole beneficiary of any such trust fund. The trust agreement, administered by the trustee, specifies the conditions under which trust monies are paid out. After obligations are fulfilled, trust assets are returned to the firm. It is essential that regulators monitor payments into the trust.

Less desirable are first-party trusts, in which trust funds remain in the custody of the principal. Because there is no independent trustee, first-party trusts should allow the regulator to make direct inquiry into the trust's status. Also, the principal's ability to alter the trust's terms or access its funds must be restricted.

¹⁰⁷ Under the hardrock mining assurance rules, cash must be deposited and placed in a federal depository account by BLM, 43 CFR 3809.555(b).

¹⁰⁸ Only regulated trustees are acceptable. "The Trustee must be an entity which has the authority to act as a trustee and whose trust operations are regulated and examined by a Federal or State agency." 40 CFR 258.74(a) (Subtitle D municipal landfill regulations); 40 CFR 264.143(a)(1) (Subtitle C), 40 CFR 280.102(a) (Subtitle I). A trustee may be required to "discharge his duties with respect to the trust fund solely in the interest of the beneficiaries and with the care, skill, prudence, and diligence under the circumstances then prevailing which persons of prudence, acting in a like capacity, and familiar with such matters, would use in the conduct of an enterprise of a like character and with like aims." 40 CFR 280.103(b).

3.4.5 Self-demonstration

Self-demonstration, or a “financial test,” is a mechanism that allows companies with relatively deep pockets to satisfy coverage requirements by demonstrating sufficient financial strength.¹⁰⁹ For example, rules may require that the firm’s working capital and net worth both be greater than the coverage requirement. Some require or allow a bond rating test. Usually, a combination of tests must be passed.¹¹⁰ There may also be a domestic assets test to foster cost recovery. For example, working capital may be defined as the value of current assets in the United States minus current worldwide liabilities; and net worth may be defined as the value of all assets in the United States minus all worldwide liabilities.¹¹¹ Ideally, when using the financial test, firms must make annual reports that are independently audited according to generally accepted accounting practices and consistent with the numbers used in the firm’s audited financial statements for Securities and Exchange Commission reporting.¹¹² Any changes in a firm’s financial status should also be reported.

3.4.6 Corporate guarantee

A financial guaranty, or indemnity agreement, allows another firm, such as a parent corporation, to satisfy the coverage requirement. Financial guarantors must themselves pass the corporate financial test and agree to guarantee the liabilities of the firm seeking assurance. The requirements are identical to those for self-demonstrators, including the domestic assets requirement. Some programs require that the indemnity agreement be with a single firm that is either a corporate parent or an affiliate.¹¹³

109 USTs, 40 CFR 280.95; TSDFs 40 CFR 264.143(f); surface mines 30 CFR 800.23.

110 The Subtitle C assurance test involves passing one of two tests, each featuring a set of subtests. As an example, one of the tests requires the firm to pass a domestic assets test, a net worth test, a net working capital to closure cost ratio, and two of three tests relating to asset and liability ratios. 40 CFR 264.143(f)(1).

111 See the rules governing vessels carrying oil and hazardous substances, 33 CFR § 138.80(b)(3); 40 CFR 258.74(e).

112 As under offshore facilities assurance rules, 30 CFR § 253.21–.28. RCRA landfill rules allow discrepancies but only when accompanied by a special report providing explanation. 40 CFR 258.74(e)(2)(B). Audited reports are always required, 40 CFR 264.143(f)(3)(ii).

113 For landfills, see 40 CFR 258.74(g)(1); TSDFs 40 CFR 264.143(f)(10); and USTs 40 CFR 280.96(a). In the case of offshore facilities rules, this restriction is the outgrowth of difficulties that arose in an earlier FAR program administered by the Department of the Interior. See 63 FR 42705, August 11, 1998 (“When the USCG first started operating the OCSLA OSFR program in the late 1970s, more than one indemnitor was allowed for any one OSFR demonstration. However, this proved to be unworkable because the failure of any one of the indemnitors could and

As financial responsibility instruments, self-demonstration and indemnity are popular with the regulated community because no third party must be involved and compensated. A common refrain in regulated industries is that the financial tests should be made less stringent, thus allowing a larger number of firms to qualify. However, these instruments are less desirable from a regulatory standpoint. They require more administrative oversight than insurance and sureties, and they provide less of a guarantee that costs will be recoverable in the future. Accordingly, some programs have resisted changes favoring the more widespread use of self-demonstration.¹¹⁴

4. The Politics and Cost of Assurance

The regulated community typically opposes new or strengthened assurance rules.¹¹⁵ New assurance rules produce dire predictions of significantly higher insurance rates, the withdrawal of insurers and sureties from markets, and the demise of businesses unable to meet the assurance requirements.¹¹⁶ The response to OPA vessel assurance rules is illustrative of the alarm with which some in the private sector received new assurance rules. The law was predicted to increase the cost of insurance by seven to nine times—if insurance was to be available at all. Even more dire predictions included the possibility of a total halt in maritime trade¹¹⁷ and the collapse of worldwide vessel insurance markets.¹¹⁸ RCRA's UST regulations were met with similar fear and opposition, one U.S. representative vowing that he would not “just sit around and watch the

did cause the failure of the whole package of OSFR evidence,” and “If the designated applicant and the indemnitor share non-OSFR business objectives, then the potential for disputes over who will pay a claim should be minimized. Likewise, the corporate affiliate requirement should maximize the potential for timely settlement”).

114 See 61 FR 9270, 1996. “The Coast Guard does not consider self-insurance and financial guaranties to be ironclad methods of evidencing financial responsibility. Assets can be dissipated without the Coast Guard’s knowledge, and continuous monitoring of a self-insured entity’s asset base is not feasible...Accordingly, the Coast Guard believes that any amendment to the financial guarantor provision that reduces the protections afforded by that provision is inconsistent with the concept of financial responsibility.”

115 Such as higher required bond levels.

116 See Jason Shogren, Joseph Herriges, and Ramu Govindasamy, *Limits to Environmental Bonds*, 8 *Ecological Economics*, 109–133, 1993, for a theoretical analysis suggesting that bonds and insurance may not be readily and cost-effectively supplied by financial markets.

117 See *Deadline Near for Compliance with U.S. Oil Spill Liability Rules*, *Oil and Gas Journal*, August 1, 1994, at 14.

118 Testimony of Chris Horrocks, *International Chamber of Shipping*, Hearing before the Subcommittee on Coast Guard and Maritime Transportation of the Committee on Transportation and Infrastructure, House of Representatives, June 26, 1996 (hereafter, “1996 House Hearing”), at 44.

small businesses be legislated out of business by the Federal Government.”¹¹⁹ More recently, changes in hardrock mining rules have prompted opposition based on their impact on small mining operations.¹²⁰ Should these fears call into question assurance’s social desirability?

First, it should be noted that much opposition can be attributed to an underlying fear of expanded liability, rather than fear of assurance requirements themselves. Over the last few decades the widespread adoption of assurance rules has occurred alongside a broad expansion of liability for environmental damages under U.S. law. For example, the adoption of strict, joint and several, and retroactive liability rules has vastly expanded the conditions under which polluters are liable. Second, federal enforcement is not a potential polluter’s only concern. In addition to the federal government, private citizens, states, and localities can sue to recover environmental damages. A third source of concern to many is that OPA, CERCLA, and other statutes have expanded liability to include damages to natural resources, as distinct from damages to private property or human health.¹²¹ Natural resource damages (NRDs) can be difficult to value, and methods used to calculate NRDs are controversial.¹²² By definition, NRDs involve damages to ecosystem services or resources that are not “marketed” and for which there is no observable price. This means that NRDs are unpredictable and highly sensitive to the valuation methodologies employed by the government and courts.¹²³

119 Representative Richard Ray, November 18, 1987, Hearing before the House Committee on Small Business Subcommittee on Energy and Agriculture, Y4.Sm1/2:S.hrg.101-690. A front-page article in the New York Times fanned the flames with the headline “Fuel-Leak Rules May Hasten End of Mom and Pop Service Stations,” that included an estimate by the American Petroleum Institute that the rules would force the closure of 25% of the nation’s service stations. New York Times, June 19, 1989, at A1.

120 An economist for the Small Business Association concluded that “the regulated [hardrock] mining industries operate at the edge of profitability and that the rule would oust small businesses from the industry.” Memorandum of Points and Authorities, *National Mining Association v. Babbitt*, U.S. District Court, D.C., No. 00-2998, January 3, 2001, at 29.

121 Section 107 of CERCLA establishes natural resource damage liability and authorizes federal trustees to recover damages for assessing and correcting natural resource injuries, 42 USC 9607(f)(1). OPA Section 1002 establishes liability for “injury to, destruction of, loss of, or loss of use of natural resources.” 33 USC 2702(b)(2)(A).

122 See Testimony of Richard Hobbie, Water Quality Insurance Syndicate and American Institute of Marine Underwriters, 1996 House Hearing, *supra* note 118, at 41. “The major uncertainty to the continuation of the [financial responsibility] program is the natural resource damage assessment problem and those regulations, the lack of standards. Should our fears prove true, we may find that no insurers are going to be in a position to issue guarantees....The dangers posed by potentially excessive and arbitrary assessments present the most serious threat to our ability to continue to insure liabilities under these federal pollution statutes.”

123 The contingent valuation method is particularly controversial, but its role in damage assessment has been overemphasized. See testimony of Douglas Hall, NOAA, Subcommittee on Water Resources and Environment, House of Representatives, July 11, 1995. “There have only been six contingent valuation studies completed to date,

All of those factors have generated fears in regulated industries of large, unpredictable, and uninsurable obligations. This is true even when liability is capped.¹²⁴ One way to oppose the expansion of liability is to oppose assurance, since for many firms assurance requirements are the way in which bottom-line liabilities are actually defined. There is an important corollary to this statement: Opposition to assurance can be reduced by reducing the uncertainty of liability standards and the methodologies used to value damages.

4.1 Cost Creation versus Cost Redistribution

Another way to explain opposition to assurance is to draw a distinction between created and redistributed regulatory costs. As with any regulation, assurance comes at a cost. And costs generate opposition. It is important, however, to distinguish between costs that are merely “redistributed” by assurance and new, “true” social costs. First consider the way in which assurance redistributes costs. Most obviously, assurance can raise a regulated firm’s costs by forcing the internalization of otherwise avoided obligations—that being the very point of assurance. From the perspective of a regulated firm, newly internalized costs are very real and can be expected to reduce profitability. Accordingly, it is not surprising that assurance rules generate opposition. From the social perspective, however, costs newly internalized by polluters are redistributed, not new, costs. Without assurance society bears the cost. Assurance simply redistributes those costs to the polluter. Thus, from a social welfare standpoint, redistributed costs do not count as a true cost of assurance.

However, assurance can create real costs. For instance, assurance products must be purchased, contracts signed, paperwork administered, and compliance and coverage conflicts litigated. Also, regulators must monitor compliance and enforce the rules—tasks that create administrative costs. These costs are true social costs, since they are costs that would not be

and only one in which the Federal Government was involved in litigation.” Restoration or replacement, rather than monetized damage estimates, is the preferred damage calculation method for NRDs. See James Boyd, *Financial Assurance Rules and Natural Resource Damage Liability: A Working Marriage?* Resources for the Future, DP01-11, 2001.

¹²⁴ OPA and CERCLA, for instance, limit liability for vessel spills, 33 CFR § 138.80 and offshore facilities 30 CFR 253.13. This is not enough to counter the fears of some potentially responsible firms. According to one shipping industry representative, “there is fundamental concern about the exposure under OPA 1990 to potentially unlimited liability. We know, of course, that the act retains the principle of limitation. We know that there is legal dispute about whether, in fact, legal limitation would be breached in real life.” Testimony of Chris Horrocks, 1996 House Hearing, *supra* note 118, at 44.

present, absent assurance regulation. Note that a benefit-cost analysis of assurance should weigh only these true costs against the benefits of assurance.

In light of this distinction, political opposition to assurance should be placed in its proper perspective. As described in Section 2, environmental costs redistributed by assurance can be quite large, given the size of the obligations that many firms' would otherwise avoid. Society should embrace this redistribution, however, since it represents a fairer and more efficient allocation of financial responsibility for environmental harm. Of more appropriate concern are costs associated with administration and compliance. But the evidence suggests that these costs are relatively low. In environmental market after environmental market, assurance is readily available at reasonable rates. This is a strong indication that assurance's social costs are not overly significant.¹²⁵

4.2 Availability and Affordability

The history of assurance implementation speaks for itself. Assurance does not bankrupt whole industries, and it does not mean the end of small business. In every regulatory context to date, private financial markets have developed to provide the insurance, bonds, and other financial instruments necessary to demonstrate assurance, and they provide these products at reasonable cost.¹²⁶ Consider the market for vessel assurance required by OPA. Despite fears, a host of financial assurance products are currently available at rates that have been easily absorbed by the maritime industry. None of the worst-case predictions—bankruptcies, failure of the insurance market—came to pass, and fears were exaggerated.¹²⁷ According to the Coast

¹²⁵ But see Section 6 *infra*, for a discussion of costs associated with the administration of assurance regulation.

¹²⁶ There have been short-term shortages of assurance products in some industries. See 56 Federal Register 31602, Mining Claims under the General Mining Laws ("The traditional surety bond is no longer available. This lack of availability was clearly documented in the 1988 General Accounting Office Report, GAO/PEMD-88-17, Surface Mining: Cost and Availability of Reclamation Bonds....The report found that surety bonds were much harder to obtain than when the existing regulations were promulgated, because of tightening of requirements in the surety industry during the 1980's, and that even when obtainable they required large amounts of collateral. The report concluded that small and mid-sized coal operators face a liquidity crisis when forced to use high cost alternatives to surety bonds or to offer large amounts of collateral to obtain a surety bond"), at 31604.

¹²⁷ Consider an illustrative exchange between Representative Sherwood Boehlert and Richard Hobbie, an insurance industry representative, during 1995 hearings relating to the fear of bankruptcies in the PRP vessel community (from 1995 House Hearing, note 171 *supra*): Rep. Boehlert: Do you have any examples of [firms] that have already gone out of business? Mr. Hobbie: The escalation of costs so far in OPA have been within a context that the maritime industry has been able to sustain. I would suggest that there used to be a larger number of small tow- and push-boat companies all throughout the south intracoastal waterways. Many of those are no longer with us. The larger

Guard, which administers the program, traditional vessel insurers “confirmed that [they] had no hard and fast information to support their testimony in July 1994 that the cost of commercial [assurance] would greatly exceed the cost of [prior]coverage” provided by the insurers.¹²⁸ New specialty providers have come into existence and are currently providing coverage at affordable rates.¹²⁹ To date, there have been no complaints regarding these new providers’ ability to offer coverage.¹³⁰

The government has conducted its own analyses of financial assurance compliance costs under the vessel and offshore facility programs. According to the Coast Guard, combined annual premiums for vessel coverage were \$70 million in 1996, two years after the program went into effect. This number is significantly lower than the preimplementation worst-case compliance cost estimate of \$450 million per year.¹³¹ Coverage rates vary by the type of vessel and the cargo carried, but at the low end, small, dry cargo vessels can get millions of dollars in coverage for a \$1,000 annual premium.¹³² As for the offshore facility program, administered by the Department

operators have purchased many of them. If I may, we have had a number of companies who have ceased transporting black oil—that would be Ingram Barge Lines, Bouchard Transportation of New York, and Canal Barge Lines in New Orleans—because of the insurance costs and the liabilities, so I think there would be a direct example where OPA has caused people to change the business pattern. Rep. Boehlert: But no examples of anybody being forced out of business? I’m being intentional in my pursuit of this because so often we hear these horror stories up here and we are all alarmed and we can’t proceed with anything because the bottom is going to fall out, and then when we ask to see where the bottom has fallen out no one can quite show us where that bottom has fallen out...” Hearings before the Subcommittee on Water Resources and Environment of the Committee on Transportation and Infrastructure, House of Representatives, July 11, 1995.

128 Statement of Daniel Sheehan, Director, National Pollution Funds Center, USCG, 1996 House Hearing, *supra* note 118.

129 The traditional vessel insurance market is currently experiencing a period of health, at least on the loss side, which is translating into lower premiums. According to one insurance company document, “Excess oil pollution cover is again available from market underwriters for the 1999/2000 policy year. As a result of the excellent claims experience and the over capacity in the insurance market it has again been possible to achieve significant reductions in the rating structure.” See http://www.nepia.com/Circulars/excess_oil.htm (accessed July 28, 2000).

130 “Traditional providers of COFR guarantees declined to provide coverage under the OPA 90 regime, necessitating the emergence of new guarantors. However, since the regulatory program became effective in December 1994, there has not been a single incidence where a guarantor has not met the expectations of the program. The new mix of guarantors has been as reliable as the old mix.” Testimony of James Loy, USCG, Subcommittees on Coast Guard and Maritime Transportation and Water Resources and Environment, House of Representatives, March 24, 1999.

131 Statement of Daniel Sheehan, Director, National Pollution Funds Center, USCG, 1996 House Hearing, *supra* note 118.

132 According to one company’s advertisements, small dry cargo vessel operators can get up to \$70 million in COFR coverage for \$1,000 a year. See www.american-club.com/cir2-98.htm (accessed July 28, 2000).

of the Interior, the industry-wide annual cost of coverage is estimated at only \$6.3 million.¹³³ Moreover, Interior does “not agree with the comment that the costs of complying with this regulation threaten the viability of many small businesses, because our estimated annual compliance cost is only \$14,000 per business.”¹³⁴

Assurance under other programs is also readily available. According to a government study of hazardous waste facilities, “Every Subtitle C permit official interviewed, regardless of whether their state allowed the financial test, stated that no financially viable facility in the state was unable to obtain a valid financial assurance mechanism.”¹³⁵ An estimate of assurance costs for nonhazardous waste landfills placed them at only 2% to 3% of total annual landfill costs.¹³⁶ According to GAO, mining bonds, too, are widely available.¹³⁷

Assurance rates are a particularly good indicator of availability and affordability. The costs associated with specific assurance products are difficult to summarize. However, a 1994 government study of environmental bond prices revealed a price of approximately 1% to 1.5% of the bond’s face value. More specifically, the 1994 rates for noncollateralized bonds covering environmental obligations were as listed in Table 4.¹³⁸

Table 1. Environmental Bond Rates

<i>Level or layer of coverage</i>	<i>Bond rate</i>
First \$100,000	\$25 per \$1,000 in coverage

133 63 FR 42709, August 11, 1998.

134 These figures are the agency’s estimates for small facilities (those requiring only \$10 million in annual coverage). The total includes \$10,000 in estimated annual premium costs and \$4,000 annual administrative costs. 63 FR 42708, August 11, 1998.

135 Docket materials in support of the April 10, 1998 Financial Assurance Mechanisms for Corporate Owners and Operators of Municipal Solid Waste Landfill Facilities; Final Rule Issue Paper: Market Effects of the Financial Test, at 7. The report also notes, “In some cases, firms have been unable to obtain financial assurance. However, in every case, the problem was not the availability of financial assurance mechanisms, but the financial strength of the company,” at 7.

136 See Federal Register 1998, *supra* note 18, at 17722.

137 U.S. GAO, Federal Land Management: Financial Guarantees Encourage Reclamation of National Forest System Lands, GAO/RCED-87-157, August, 1987 (“We did not identify any cases where the costs associated with posting a financial guarantee prevented operators from mining”), at 1; (“Neither Forest Service officials nor representatives of mining associations that we spoke with could cite an instance where mine operators decided not to mine because of the cost of obtaining a financial guarantee”), at 6.

138 Office of Solid Waste, U.S. EPA, Subtitle C and D Corporate Financial Test Issue Paper: Performance of the Financial Test as a Predictor of Bankruptcy, April 30, 1996, at 5.

Next \$100,000	\$15 per \$1,000 in coverage
Next \$2,000,000	\$10 per \$1,000 in coverage
Next \$2,500,000	\$7.50 per \$1,000 in coverage

The same report suggested that larger firms with good environmental records could obtain bonds at rates less than 1%.¹³⁹ Annual rates ranging from 1% to 3% of the coverage are reported by a range of sources.¹⁴⁰ Bonds used to guarantee safe nuclear facility closure exhibit a similar range of costs.¹⁴¹ Offshore facility rates are even lower. According to the government, “90 percent of the 200 designated applicants will demonstrate an average of \$35 million in financial responsibility using insurance or a surety that costs \$35,000.”¹⁴² Annual premiums for \$10 million in OSFR coverage average \$10,000. These figures imply annual rates of only 0.1% of the coverage’s face value. Finally, UST owners can insure a tank for \$400 a year—less than it costs to insure a car.¹⁴³

In conclusion, opposition to assurance, based on fears of mass disruption to business, are unwarranted. Opposition is best explained as a reaction to the redistribution of costs to responsible parties and as a lobbying tactic to reduce the stringency of regulatory requirements.

¹³⁹ *Ibid.*, at 5.

¹⁴⁰ Interviews with Michigan Department of Environmental Quality financial assurance program administrators. Also see ICF Memorandum to Betsy Tam, EPA Office of Solid Waste, January 25, 1988 (cited in Office of Solid Waste, U.S. EPA, Subtitle C and D Corporate Financial Test Analysis Issue Paper: Market Effects of the Financial Test, December 9, 1997, at 2), which reports an annual 1.5% of face value cost of environmental letters of credit and surety bonds. See also McElfish, *supra* note 67 (citing a representative of the Surety Association of America, placing the cost of surface mining reclamation bonds at 1.25%), at 86; Kuipers, *supra* note 24 (hardrock mining bonds costing 1 to 3.5% annually), at I-12; and C. George Miller, *Use of Financial Surety for Environmental Purposes*, paper prepared for the International Council on Metals and the Environment, 1998 (citing annual costs of mining letters of credit and surety bonds of .37% to 1.5% of face value), at 5. Available online at <http://206.191.21.210/icme/finsurety.htm>.

¹⁴¹ A Nuclear Regulatory Commission study of decommissioning bonds found rates from 3% to less than 1% of the bonds’ face value. Cited in U.S. EPA, *Issue Paper, Assessment of Trust Fund/Surety Combination*, docket materials in support of Financial Assurance Mechanisms for Corporate Owners and Operators of Municipal Solid Waste Landfill Facilities; Final Rule, April 10, 1998, at 5.

¹⁴² *Id.* In addition, the government estimates that each regulated firm bears \$4,000 in annual administrative costs associated with compliance.

¹⁴³ U.S. EPA, *State Funds in Transition: Models for Underground Storage Tank Assurance Funds*, Office of Underground Storage Tanks, 1996 (updated 1998), www.epa.gov/swerust1/states/statefnd.htm, (“Premiums have also come down since 1989, when some of these commercial programs began. Then, the average premium was approximately \$1000 per tank [for good tanks]. Today that average has been reduced to roughly \$400 per tank. For a double-walled tank and piping system, the cost could drop to \$200 per tank”), at 5.

Claims that assurance mechanisms will be unavailable and that insurance and bond markets will dry up should be viewed in the same context. In the words of one commentator, “frequently the assertion of bond unavailability has been used as an attempt to ratchet reclamation standards downward and to reduce periods of operator/surety responsibility. It has also led to the use of inadequate bond amounts in some states.”¹⁴⁴

4.3 An Important Exception: Assurance Availability and Retroactive Liability

In 1994, GAO issued a report on the availability of environmental insurance products. Principal findings were that “the majority of companies operating treatment, storage, and disposal facilities in 1991 that attempted to obtain pollution insurance found that it was difficult to obtain”¹⁴⁵ and that 44% of surveyed firms attempting to obtain insurance between 1982 and 1991 were denied coverage at least once.¹⁴⁶ These conclusions are clearly at odds with the argument that coverage is easily available and affordable. In large part, the discrepancy reflects short-term difficulties in the adjustment of insurance markets to assurance. Subsequent technological changes have improved the safety of facilities (a desirable consequence of assurance regulations), and the insurance industry today has an improved ability to predict exposures and tailor products to specific risks. Another explanation for the discrepancy is that the U.S. environmental insurance market in the 1980s and early 1990s was hobbled by uncertainties and costs arising from retroactive, unanticipated liabilities.

Environmental laws passed in the 1970s and 1980s significantly strengthened regulatory requirements and expanded the scope of polluters’ liability. CERCLA, for example, imposed liability on firms retroactively. In one stroke, firms were liable for damages due to preexisting conditions, conditions that may not have created liability prior to CERCLA’s passage. It is important to emphasize that financial assurance rules foster prospective deterrence, but they do little to promote the cleanup of existing environmental problems. Firms with wealth adequate to absorb existing risks are already “financially responsible.” Firms without adequate wealth have no incentive to demand—and capital providers have no incentive to supply—coverage for existing, known liabilities. For this reason, financial responsibility rules should not be applied to

¹⁴⁴ McElfish, *supra* note 67, at 90.

¹⁴⁵ See General Accounting Office, *Hazardous Waste: An Update on the Cost and Availability of Pollution Insurance*, GAO/PEMD-94-16, April 1994, at 3.

¹⁴⁶ *Id.*, at 23.

retroactive liabilities.¹⁴⁷ In fact, the failure of regulation to account for the interaction between financial assurance rules and retroactive liability largely accounts for the insurance availability problems observed in the United States in the past decade. Insurance was unavailable or unaffordable because insurers were likely afraid of exposing their own assets to retroactive liability when underwriting future liabilities.

Consider the experience with UST assurance rules and liability. When RCRA mandated financial responsibility for UST owners, the law did not distinguish between financial responsibility for future risks and responsibility for the cleanup of existing contamination. Because many USTs had already leaked, the immediate effect of assurance requirements was to require insurance for environmental damages that already existed. Because many owners were small businesses unable to afford the cleanup of their sites, the UST requirements led to the publicly financed assurance funds described in Section 3.3. But as these funds are phased out, sites are remediated, and new technologies are installed, USTs are increasingly insurable by private markets.¹⁴⁸ EPA lists 13 major insurers and 97 agents and brokers as current providers of UST financial responsibility coverage.¹⁴⁹ The lesson to be drawn from the UST example is that public financing can be a desirable short-term financial mechanism for preexisting, retroactive liabilities. As long as they are strictly limited in duration, public funds foster the transition to a workable and affordable system of prospective financial responsibility provided by third-party, private-sector providers.¹⁵⁰ Markets for financial assurance coverage may at first be problematic, but over time they adapt to new environmental technologies and risks, resulting in greater availability and lower prices.

147 See Boyd and Kunreuther, *supra* note 97. Public funds, by absolving firms of historic liabilities, allow for remediation of existing contamination without reducing firms' wealth. Firms left with greater wealth have a greater incentive to take efficient prospective risk reduction measures, assuming that they are prospectively liable and have to demonstrate privately provided financial responsibility.

148 See note 143 *supra*.

149 U.S. Environmental Protection Agency, List of Known Insurance Providers for Underground Storage Tanks, Office of Solid Waste and Emergency Response, EPA 510-B-00-004, January 2000.

150 As noted in Section 3.3, public financing is an undesirable form of prospective financial responsibility. By subsidizing private environmental costs, public assurance funds undermine deterrence.

4.4 The Politics of Small Business Regulation

A significant political barrier to assurance arises from its disproportionate impact on small businesses. This is unavoidable, of course, since small firms—by definition—are in particular need of financial responsibility regulation. In general, small firms are less wealthy and are thus more likely to become insolvent in the face of large environmental obligations. Small firms may also be monitored less effectively than larger firms. But clearly, it is harder and more costly for small firms to demonstrate financial assurance. For large firms, compliance with financial responsibility may involve little more than the preparation of audited financial statements. Small firms, by definition, cannot self-insure and so must pay for the involvement of a third-party insurance or capital provider. Also, small firms may be required to participate in risk assessments, paperwork, and transactions with which they are unfamiliar.

In general, regulating small business is not politically popular. Regulatory relief bills for small business are a common congressional offering.¹⁵¹ A particular issue for agencies proposing assurance rules that apply to small businesses is the Regulatory Flexibility Act (RFA), which requires agencies to evaluate, offer flexible compliance alternatives, and minimize the impact of regulations on small business.¹⁵² RFA can be thought of as a procedural safeguard to ensure that small firms are not overly burdened by regulation. It can also be viewed as warning to agencies targeting small firms for regulation. From a policy standpoint, and accepting the desirability of objective regulatory impact analysis, the “smallness” of firms should not be used as a barrier to assurance regulation. After all, small firms’ size lies at the very root of the policy problem addressed by assurance.¹⁵³

151 See the Small Business Paperwork Reduction Act Amendments (HR 3310 & S. 1867), 1998, which would have prohibited federal agencies from fining small businesses for first-time violations or for not complying with paperwork requirements, as long as the company complied within six months of notice of the violation. See also the Small Business Liability Protection Act (H.R. 1831), 2001, a bill that provides Superfund liability relief for small businesses and other small contributors.

152 5 U.S.C. 601, et seq. See also the 1996 Small Business Regulatory Enforcement Fairness Act (which allows small businesses to challenge an agency in court for failure to comply with the RFA), 5 U.S.C. 801, et seq.

153 In at least one instance, an agency’s assurance rules were overturned for failure to abide by RFA requirements. Revised hardrock mining bond rules were overturned in 1998 by as U.S. District Court, *Northwest Mining Association v. Babbitt*, F.Supp.2d 9, 1998 U.S. Dist.

5. Design and Implementation: The Scope of Assurance Rules

Assurance is a simple concept: Firms must provide a financial or contractual demonstration of their ability to meet environmental obligations. This simplicity obscures a set of important design issues, however. These issues can be grouped into two basic categories. First, what is the appropriate *scope* of assurance requirements? Second, how can the *security* of the assurance mechanism be guaranteed?

Issues of scope relate to the liabilities and obligations that are covered by assurance, and the dollar value of coverage or bonding that must be demonstrated. There is a tension between the desire to maximize deterrence and compensation by maximizing the scope of assurance, and the desire to minimize compliance costs by minimizing assurance requirements.¹⁵⁴ Issues of security relate to the collection of obligations in the future, given the financial mechanisms used to comply with the assurance rule. One way for responsible parties to reduce costs and their own financial risks is to reduce the security of the instruments they purchase or provide as assurance. A major challenge created by financial assurance rules is that they require regulators to monitor and ensure the mechanisms' security over long periods of time.

5.1 How Much Coverage Is Enough Coverage?

Assurance rules need to guarantee firms' ability to internalize the costs of future environmental obligations. So how high should coverage requirements be? The answer is, just high enough to guarantee the performance of the required obligation or internalization of future liabilities. Coverage requirements higher than these levels are wasteful, because they tie up capital (which always has an opportunity cost) but yield no additional social benefit. Coverage requirements lower than these levels are undesirable because they do not guarantee cost internalization and thus yield inadequate deterrence and compensation.

If it is known that a future restoration obligation will cost a firm C , then the appropriate level of assurance is C . Requiring less raises the possibility that the firm will fail to internalize

¹⁵⁴ It is always in the interest of a regulated firm to minimize its assurance requirements. Lower levels of assurance imply less cost internalization in the future and lower assurance coverage costs in the present. As an example, see Office of Inspector General, Audit Report, EPA Can Do More to Help Minimize Hardrock Mining Liabilities, EIDMF6-08-0016-7100223, June 11, 1997, at 11 (citing instances of mine owners who converted land from federal land to private land to minimize bond requirements, where state bond requirements are less than federal requirements).

the full cost.¹⁵⁵ Usually, however, the prescription is less clear. For instance, a landfill may not leak, may leak a little, or may leak a lot. If a range of possible future costs can arise, what is the optimal level of assurance? If the possibilities range from zero to some higher-bound C^U , the appropriate level of assurance is the upper-bound C^U . Call this the “maximum realistic environmental cost.” Unless there is assurance for the maximum realistic cost, firms may fail to fully compensate victims and, as a consequence, take insufficient care to avoid that cost.¹⁵⁶ In practice, assurance rules always mandate coverage up to some finite dollar value, even if there is no real upper limit to the possible damages arising from an operation.

5.2 How Are Required Assurance Levels Actually Determined?

In practice, firms and regulators rarely know with certainty what environmental costs will eventually be. Even the cost of a certain obligation, such as the capping, restoration, and monitoring of a landfill, can be difficult to estimate with precision over a period of decades. Will climate and biological variables allow for successful revegetation? Will the site’s hydrology and geology prove stable? Will the site be subject to encroachment? As environmental conditions go, these are fairly predictable concerns. Even so, cost estimates are subject to error.

At the other extreme, liabilities associated with pollution events are even harder to predict. The environmental cost of a vessel grounding, for instance, may be very high or relatively low depending on the cargo, location, and weather conditions associated with the spill. In other words, while it may be clear that we should require coverage up to maximum realistic obligation C^U , how do we know what C^U is?

Given these uncertainties, the determination of required assurance amounts can be problematic. Various methods are used to determine coverage requirements. In some cases, coverage requirements are determined on a case-by-case basis, taking into account the specific risks posed by an operation. In others, greater procedural formality is imposed via established estimation methodologies. For example, some states require hazardous waste treatment, storage, and disposal facilities to prepare, based on a routine methodology, an estimate of costs required

155 For the moment, we set aside issues raised by the time value of money. Clearly, what is important is that the firm has reserved C for use at the future time it is required. This can mean that an amount less than C is set aside today, with knowledge that that amount will grow over time if invested properly.

156 Note that the firm need not set aside this full amount. All it need do is purchase insurance adequate to cover the full amount.

to close the facility.¹⁵⁷ This methodology typically involves the use of standard software and worksheets associated with specific cost categories. Even so, the characteristics of particular facilities, and hence closure cost estimates, can vary widely. To compound the challenge, it is common for cost estimates to change dramatically over time.¹⁵⁸ Bond amounts must be adjusted for cost inflation and changes in a site's environmental conditions.¹⁵⁹

Accordingly, estimation of required coverage amounts places a significant burden on the regulator to audit the quality of the numbers and estimation methodology. Under some regulatory programs, a relatively fixed schedule of requirements is imposed across a whole industry. An example is the OPA and CERCLA coverage requirements for vessels carrying oil and hazardous cargo. Under these rules, coverage requirements are simply a function of the vessel's size, type, and cargo (oil versus hazardous substances) and can be easily calculated and verified.¹⁶⁰ As another example, offshore facility assurance requirements are based on the facility's location and the volume of a worst-case oil discharge.¹⁶¹

In general, however, agencies may have difficulty determining appropriate assurance levels.¹⁶² Recent cases highlight the procedural challenge. For example, in *Leventis et al. v. South Carolina DHEC et al.*, the Sierra Club successfully argued that the state environmental agency failed to adequately determine and require adequate cleanup, closure, and restoration

157 See U.S. EPA, Region IV, *Evaluating Cost Estimates for Closure and Post-Closure Care of RCRA Hazardous Waste Management Units*, 1996.

158 Consider one example: bonds required for the Zortman-Landusky hardrock mine. Per-acre bond rates at the site increased from \$750, to \$8700, to \$12,500, to \$37,000 over a period from 1982 to 1998. See Kuipers, *supra* note 24.

159 Many assurance requirements have a fixed value over a period of decades. With the passage of time, fixed amounts may become significantly inadequate simply because of inflation. Some wells bonded in the 1940s and 1950s may still be operating under coverage amounts required 50 years ago. In some states, old well bonds are "grandfathered," meaning that wells with preexisting bonds do not have to post updated bond amounts. As a consequence, many wells may be significantly underprotected. (Conversation with Dave Davis, Michigan DEQ, August 1, 2000.)

160 See 33 CFR § 138.80(f)(3).

161 As a rule of thumb, the worst-case discharge is approximately equal to four times the estimated uncontrolled first-day discharge. 63 FR 42707, August 11, 1998. The only exempted facilities are those with an estimated worst-case oil discharge of 1,000 barrels or less. Depending on location and potential discharge volume, coverage requirements range from \$10 million to \$150 million for individual facilities.

162 See U.S. EPA, Office of the Inspector General, *Audit Report, RCRA Financial Assurance for Closure and Post-Closure*, March 30, 2001, at ii ("state officials have expressed concerns that the cost estimates are difficult to review").

assurance amounts for a hazardous waste disposal facility.¹⁶³ The case involved motion and countermotion to determine appropriate levels of financial assurance. In 1989, the South Carolina Department of Health and Environmental Control issued a draft determination requiring \$30 million in third-party insurance coverage for property and bodily injury and a \$114 million trust fund for cleanup, closure, and restoration costs. In 1992, those requirements were raised to \$33 million and \$132 million, respectively. A later administrative decision revised the requirements slightly downward. In turn, the Sierra Club appealed to the DHEC board. The board agreed in part, raising the trust fund component to \$133 million, with part to be satisfied by a corporate guarantee. At that point, the landfill owner and Sierra Club both sought judicial review, challenging various aspects of the decision. Based on the state agency's failure to honor procedural safeguards relating to public comment, the court found in favor of the higher assurance amounts.¹⁶⁴

One way in which an agency's assurance requirements—particularly for mining and forestry operations on federal lands—may be challenged is through the National Environmental Policy Act (NEPA). Primarily, a procedural statute, NEPA requires agencies to consider the full environmental consequences of allowing a project to proceed.¹⁶⁵ NEPA cannot be used to require assurance per se. But it can be used to force analysis and identification of restoration requirements that in turn would demand assurance.¹⁶⁶

Also, federal and state agencies can be compelled to promulgate assurance requirements, as a matter of administrative law, if assurance is found to be short of legal requirements.¹⁶⁷ In

163 340 S.C. 118, 530 SE2d 643, 2000 WL 502520 (S.C. App., refiled April 4, 2000).

164 "Sierra Club contends DHEC failed to issue proper notice and provide opportunity for adequate public comment. We agree."

165 42 U.S.C. 4321-4347.

166 See Interior Board of Land Appeals, IBLA 97-339, National Wildlife Federation et al., September 23, 1998. ("We believe the proper course of action at the time the ROD issued in March 1997 would have been for BLM, an agency operating under a mandate to protect the public lands from unnecessary or undue degradation, to require the posting of a sufficient bond to protect against the uncertainties relating to groundwater quality identified in the FEIS, with the possibility of reducing that bond if further studies clarified those uncertainties"), at 360; ("The lack of information and BLM's failure to require a bond in light of the uncertainties created by that lack of information is what convinced the Board to grant a partial stay in this case"), at 366.

167 See Pennsylvania Federation of Sportsmen's Clubs, et al. v. Com. of Pa. Dept. of Env. Resources 1868 C.D. 1981, which sought higher coal mine bonding rates. The petition resulted in a 1988 consent decree requiring modifications to the state's bonding program, including higher bond rates if indicated by forfeitures and incomplete reclamation.

general, the cost estimates that determine assurance requirements under many programs should be taken with a grain of salt and considered good candidates for regular review by both regulators and environmental advocates.

5.3 The Need to Audit Self-Estimated Assurance Requirements

Although regulators can perform cost estimation themselves, estimation is costly and time-consuming. In some cases, firms are asked to develop their own environmental cost estimates as a basis for their assurance obligations. Absent adequate oversight, these estimates may prove to be too low. After all, low-balling estimates of future environmental obligations is a good way for firms to minimize the costs of assurance. A low estimate translates into lower coverage requirements and, consequently, lower compliance costs. Accordingly, audits, ideally conducted by certified third parties, are imperative to ensure that adequate assurance is put in place. Note that a virtue of fixed assurance schedules is that they minimize this auditing burden.¹⁶⁸

Absent a meaningful audit procedure, it is inadvisable to allow firms to estimate their own obligations.¹⁶⁹ In fact, there is evidence that firms routinely underestimate obligations in the course of complying with assurance regulations. One recent EPA study found that 89 of 100 facilities submitting landfill cost estimates underestimated their closure costs and thus posted inadequate levels of assurance. Moreover, the total amount of the underestimates was significant, estimated at \$450 million just for those 89 sites.¹⁷⁰ Because the effectiveness of assurance rules hinges in large part on having enough assurance, and because the level of assurance is often based on cost estimates, verification of estimates should be an important regulatory priority.

See also *Trustees for Alaska v Gorsuch*, 835 P 2d 1239 (Alaska 1992), wherein Trustees for Alaska challenged a surface coal mining permit issued by the Alaska Department of Natural Resources, claiming that DNR violated Alaska's mining laws by approving a bond amount that inadequately reflected the costs of reclamation over the life of the permit. The court held that DNR should "recalculate" the bonds so that they would be "sufficient to assure the completion of the reclamation plan by [DNR] in the event of forfeiture," as under AS 27.21.160(a).

¹⁶⁸ On the other hand, a weakness of fixed schedules is that they may fail to account for differences in the specific risks being assured.

¹⁶⁹ See Kuipers, *supra* note 24, at 4, for a critique of Arizona and Nevada's hardrock mining regulations, in part on the basis of their willingness to allow companies to estimate their own reclamation costs.

¹⁷⁰ Study cited in U.S. EPA, Office of the Inspector General, Audit Report, RCRA Financial Assurance for Closure and Post-Closure, March 30, 2001, at 46.

5.4 Are Coverage Levels Adequate?

Not always. The best test of whether coverage levels are adequate is the degree to which firms' environmental obligations are met over a span of decades. Because many assurance rules are relatively recent and cover obligations that arise over a period of decades, it is difficult to draw firm conclusions regarding the adequacy of coverage levels under, for example, RCRA waste disposal assurance rules. To be sure, isolated examples suggest that coverage amounts may be inadequate.¹⁷¹ But longer-term, overall patterns of cost recovery have yet to be established.

Mining bond levels are an exception. Mining bonds have been required for decades, and there is ample evidence that mining bond levels have been, and in many cases remain, inadequate. The Surface Coal Mining and Reclamation Act of 1977 was enacted largely in response to the coal mining industry's poor record of surface mine reclamation. Over the past two and a half decades, SMCRA bonding requirements have improved, though not completely solved, the problem of unreclaimed coal mining sites and their associated environmental impacts. The adequacy of required bond levels has been an ongoing issue. A General Accounting Office study and congressional hearing in 1986 highlighted the problem. For example, as of 1986—nearly a decade after the passage of SMCRA—67% of all acres covered by bond requirements in Pennsylvania had not been reclaimed.¹⁷² In West Virginia, 30% of disturbed lands had gone unreclaimed despite the presence of bonds.¹⁷³ The problem was due largely to the inadequacy of the bond amounts. For example, in Pennsylvania average per-acre reclamation costs were \$6,200 over the period, yet average bond amounts were only \$730.¹⁷⁴ GAO testimony suggested that

171 For example, the first major post-OPA vessel oil spill created injuries valued at \$90 million. The vessel was required to post only \$10 million in assurance coverage, however. Brent Walth, *Spill Laws Fail to Halt Seepage of Public Cash*, *The Oregonian*, February 27, 2000. According to Walth, seven vessel spills since 1990 resulted in damages exceeding assurance requirements in seven vessel spills since 1990 (reporting on a statement from Daniel Sheehan, Director, National Pollution Funds Center, USCG). See also U.S. EPA Region V, *UIC Permitting Guidance, Technical Support Document, Financial Responsibility for Class II Injection Wells*, at http://www.epa.gov/r5water/uic/r5_02.htm, which suggests that coverage amounts for certain wells are not likely to be adequate (“The present coverage for blanket bonds in Michigan is \$50,000 and in Indiana is \$30,000. This is generally less than the Federal guideline of 10 times the cost to plug and abandon an injection well”).

172 US Government Printing Office, 1986. *Adequacy of Bonds to Ensure Reclamation of Surface Mines*. Hearing before a Subcommittee of the Committee on Government Operations, House of Representatives, 99th Congress, 2nd Session, June 26, at 5.

173 *Id.*

174 *Id.* In West Virginia, the average reclamation cost was \$2,500 per acre, and the average bond was \$1,100 per acre.

states were uncritically accepting reclamation cost estimates from mine operators, resulting in inadequate bond amounts.¹⁷⁵ More recent studies have also been critical of SMCRA bond implementation.¹⁷⁶ A study of Pennsylvania's coal bonding program suggests that the underbonding problem continues in that state,¹⁷⁷ and bonding programs have failed to adequately anticipate problems associated with long-term acid mine drainage.¹⁷⁸

Bond levels for hardrock mining on Western lands are also inadequate in many cases.¹⁷⁹ A 1997 EPA Inspector General's report found "strong agreement" among agency officials that "financial assurance limits now in place at mines are, in large part, inadequate."¹⁸⁰ The report also found that only two of eight states studied required full bonding for the estimated costs of addressing toxic contamination.¹⁸¹ A 1987 General Accounting Office study focused on bonds

175 "If you read OSM oversight reports, the comment that was made by OSM was that the State was accepting what the operator submitted as the estimated bond amount with no independent verification or mathematical calculations by the State regulatory authority...There isn't any written or formal criteria." *Id.*, at 71.

176 McElfish, *supra* note 67 ("SMCRA's bonding provisions have not been effectively implemented in all states. Bond amounts are often set based on faulty assumptions or under systems that have not accurately projected the need for reclamation funds. Some forfeited mine sites still remain un-reclaimed or have been reclaimed to lower than statutory standards because their bonds were insufficient for full reclamation"), at 85.

177 Assessment of Pennsylvania's Bonding Program for Primacy Coal Mining Permits, Office of Mineral Resources Management, Bureau of Mining and Reclamation, February 2000. The analysis derives reclamation costs for sites that forfeited bonds ranging from \$5,500 to \$20,000 per acre, while bond rates range from only \$1,000 to \$5,000 per acre, at 5, and 20-23.

178 Actuarial Study of the Pennsylvania Coal Mining Reclamation Bonding Program, Milliman & Robertson, Inc., July 16, 1993. See also McElfish, *supra* note 67 ("...current bond-setting methodologies incorporate assumptions that do not consider all factors affecting reclamation costs, and thus result in bonds inadequate to cover all costs. For example, bond forfeiture sites frequently have water pollution problems, yet bond-setting methodologies overlook these costs"), at 92.

179 See Kuipers, *supra* note 24 ("the financial failure of numerous mining companies has exposed shortcomings in both bond methods and bond amounts. American taxpayers are faced with significant liability for mines left un-reclaimed, shifting the economic burden from the companies that profited from the mines and leaving environmental disasters behind for the public to clean up"), at 1. The bond amounts cited vary widely, depending on the state program (average per-acre bond amounts in Alaska \$2,600 vs. \$15,000 in Montana).

180 Office of the Inspector General, Audit Report, EPA Can Do More to Help Minimize Hardrock Mining Liabilities, E1DMF6-08-0016-7100223, June 11, 1997, at 8. ("Federal and state land management agencies' authorities to require environmental performance standards and financial assurances at hardrock mines varied, leaving critical gaps in bonding requirements. Unreasonably low bond ceilings did not allow adequate financial assurance coverage for hardrock mining on some state and private lands. As a result, EPA may become liable for the considerable costs of cleaning up mines abandoned by the companies that operated them"), at v.

181 *Id.*, at 9.

for mining on Forest Service lands found federal bond procedures to be lacking.¹⁸² The report cites Forest Service studies documenting poor management of bond programs. One finding is of particular significance: that reclamation standards, which determine bond amounts and the criteria for the release of bonds, were “not well documented” and are “generally subjective and difficult to measure.”¹⁸³ This highlights the importance of standardized, audited reclamation cost estimates and performance standards. Other studies have emphasized the need for extending bonding requirements to even the smallest mine operations, some of which are exempt under current rules.¹⁸⁴

Another concern relating to the adequacy of bond amounts arises from the use of trust funds as an assurance mechanism. If a trust fund is fully funded at its inception, then coverage will be adequate (if the required coverage amount is adequate). Some programs, however, allow firms to pay into a trust fund over time.¹⁸⁵ If a firm becomes insolvent before a trust is fully funded, the actual amount of available coverage will be inadequate. And in fact, incompletely funded trusts are relatively common.¹⁸⁶

5.5 Does Assurance Lead to Confiscation?

Some have raised a concern that bonds and other forms of assurance may aid the government’s ability to confiscate private property.¹⁸⁷ Put differently, if the government is the beneficiary of a bond, what is to guarantee that the bond will be released to a firm upon

182 U.S. GAO, Federal Land Management: Financial Guarantees Encourage Reclamation of National Forest System Lands, GAO/RCED-87-157, August, 1987.

183 Id., at 5.

184 See National Research Council, *Hardrock Mining on Federal Lands*, National Academy Press, 1999 (“Financial assurance should be required for reclamation of disturbances to the environment caused by all mining activities beyond those classified as casual use, even if the area disturbed is less than 5 acres”), at 8. See also U.S. Department of the Interior, Office of the Inspector General, *Hardrock Mining Site Reclamation*, Bureau of Land Management (92-I-636), 1992 (recommending that all operators post financial guarantees, commensurate with the size and type of operation in question).

185 RCRA’s hazardous waste disposal rules, for example, allow trust funds to be funded over the term of the facility operating permit, or the remaining life of the facility, whichever is shorter. 40 CFR 264.143(a)(3).

186 See U.S. EPA, Office of the Inspector General, *Audit Report, RCRA Financial Assurance for Closure and Post-Closure*, March 30, 2001 (“In our Subtitle C sample, there were a significant number of facilities that went out of business or into bankruptcy with partially funded trust funds”), at 21.

187 For a theoretical exploration of this concern, see Jason Shogren, Joseph Herriges, and Ramu Govindasamy, *Limits to Environmental Bonds*, 8 *Ecological Economics*, 109–133, 1993.

satisfaction of its obligations? Recall that bond agreements include a set of performance criteria. If those obligations are fulfilled, the bond is released—at least in theory.

Assuming a bond agreement is well specified *ex ante* and governments are subject to independent judicial oversight, there is little reason to fear confiscation. First, clear restoration criteria, and a firm's success in achieving those criteria, are interpretable by courts.¹⁸⁸ Second, liability for the environmental damage must be established before bond funds can be forfeited.¹⁸⁹

Finally, bonds funds cannot be used to cover liabilities not specified in the bond agreement. A good example is *Long v. City of Midway*, a construction bond case, where tort claimants not explicitly covered by a bond sought construction bond funds as a source of compensation.¹⁹⁰ The plaintiffs' effort was rejected on the grounds that "if tort claimants are permitted to share in the amount of the bond equally with claimants for labor and material, such claimants can never be certain they will be paid, because a great many tort claims for personal injuries and injury to property would materially reduce or amount to perhaps, in some instances, more than the penalty of the bond."¹⁹¹ Empirically, there is little evidence that environmental bonds are used for claims not specified in the bond.¹⁹²

188 *United States v. Shumway*, U.S. Court of Appeals for 9th Cir. (December 28, 1999), wherein the court rejected the U.S. Forest Service's attempt to increase required bond amounts for a hardrock mine operation. The court found the bond amount to have been raised arbitrarily. More specifically, the court cited evidence that environmental problems had not become more serious over time and that existing site conditions were acceptable, thus calling into question the need for increased bond levels ("Based on our review of the evidence before the trial court, there is an issue of fact as to whether or not the government properly increase the bond amount").

189 *See C & K Coal Co. v. Commonwealth of Penn.*, Dept. of Environmental Resources, Docket No. 91-138-E (Consolidated), 1992 Pa Envirn LEXIS 128 (Pa EHB September 30, 1992), where the state was found to have improperly denied a bond release due to its failure to establish liability for damages ("...Since DER did not sustain its burden of proving there was a hydrogeologic connection between the discharge [emanating in the right-of-way of a public road and running along the boundary of the permitted area] and appellant's permitted area, DER's order to appellant directing it to treat the discharge was an abuse of DER's discretion. Likewise, as the only reason for DER's denial of the appellant's application for bond release was this discharge, DER's denial of bond release was an abuse of its discretion.")

190 311 S.E.2d 508 (Ga. Ct. App. 1983).

191 *Id.*, citing *John L. Roper Lumber Co. v. Lawson*, 143 S.E. 847 (N.C. 1928). ("If actions for a tort like the present or personal injuries are contemplated, this should be fully and clearly provided for by the surety bond in reasonably clear language. The remedy of plaintiffs is against the contractors"), at 850.

192 *See Moelmann and Harris*, *supra* note 91, who reviewed surety contracts in the environmental field to assess whether bonds were reinterpreted to cover tort claimants ("In researching this field, previously thought to be a 'hot topic,' at no point was a performance bond surety castigated or found liable for any damages beyond those which are reasonably foreseeable or within the realm of a normal recovery under surety or contract law"), at 176.

However, it is important to note that many bonds are “penal bonds,” which authorize the forfeiture of an entire bond amount for failure to perform as agreed. As a result, even though the performance failure may have a relatively small cost, a larger bond sum can be collected by the government.¹⁹³ This is by design, however, and is agreed upon mutually by the parties before the fact. Accordingly, penal bond collections represent less a worrisome form of confiscation, and more a penalty used to motivate compliance with performance standards.

5.6 Should Liability Be Limited to the Coverage Requirement?

Assurance requirements, even if based on sound estimation procedures, may be exceeded by the eventual costs of reclamation or liability. If so, is the firm’s liability limited to the assured amount? In practice, it may be, since the firm may have no other funds available to cover environmental claims.¹⁹⁴ Legally, however, a firm’s liability is not generally limited by the amount of required assurance.¹⁹⁵ That is, a firm is liable for any environmental damages it causes, irrespective of the amount of required assurance. There are exceptions, however. Under OPA and CERCLA, liability for oil and hazardous waste vessels and offshore facilities is capped at a statutory limit that is equal to the financial assurance requirements.¹⁹⁶ Nuclear facility liability is also limited, and equal to the amount of mandatory insurance coverage.¹⁹⁷

193 See *American Druggists Ins. Co. v. Comm. of Kentucky Department of Natural Resources and Environmental Protection et al.*, No. 83-CA-807-MR, slip op. (Ky. Ct. App., November 11, 1983) (clarifying the nature of penal versus performance bonds and finding that failure to perform all reclamation requirements resulted in total bond forfeiture). See also *Morcoal Co. v. Comm. of Pennsylvania*, 459 A.2d 1303 (Pa Commw Ct 1983) (ruling that mining reclamation bonds are intended to be penal and that the state Department of Environmental Resources was not required to prove precise damages in order to forfeit the bonds).

194 The assured amount is a minimum, guaranteed amount of money available for compensation.

195 See Regulatory History 48 FR 32932 (July 19, 1983), Final Rule, Bond and Insurance Requirements, Discussion of Comments and Rules Adopted (“The operator does have the underlying obligation to fully reclaim disturbed lands. A regulatory authority, in having reclamation performed on which the operator has defaulted in his obligation, may incur costs in excess of the forfeited amount. To make clear that the regulatory authority may recover that excess amount from the operator, the suggested addition is made to Sec. 800.50 in paragraph (d)(1)”).

196 There are limits to the liability limitation. Specifically, there is no liability limit if a release is determined to be caused by “gross negligence or willful misconduct of, or the violation of any applicable Federal safety, construction, or operating regulation by, the responsible party” or if the incident is not reported in a timely fashion. 33 USC § 2704(c)(1). But note that the liability of guarantors (the third parties guaranteeing coverage) is always strictly limited to amounts specified in the assurance contract, which in no case would be greater than the coverage requirement. 42 USC § 9608(d).

197 See section 2.1.8.

From a public policy standpoint, the choice of liability limits reflects a trade-off. On one hand, truncated damage awards reduce uncertainty. Reduced uncertainty can be expected to reduce the costs of assurance (above and beyond the cost reductions implied by the limitation itself) and thus may promote the development of markets for third-party assurance products. Also, from a regulated firm's standpoint, liability limits discipline the government's pursuit of claims the polluter may feel are unsubstantiated. Accordingly, liability limits may ameliorate political opposition to financial assurance requirements. On the other hand, these benefits to regulated industries must be weighed against the obvious drawback of capped liability: namely, that environmental costs above the cap will be uncompensated by responsible parties.

6. Design and Implementation: The Security of Assurance Mechanisms

Assurance rules must ultimately be judged on the basis of their ability to deliver compensation when environmental obligations come due. Thus, it is important to understand the ways in which the effectiveness, or security, of assurance can be thwarted. In some cases, firms may overtly fail to comply with coverage requirements. In other cases, third-party providers of assurance may themselves be unable to deliver on obligations because of their own insolvency. The financial mechanisms used to demonstrate compliance may be flawed, by design or lax regulatory oversight. In this regard, self-demonstrated financial assurance is a particularly problematic compliance mechanism. Finally, regulators may fail to administer assurance instruments effectively, allowing funds to be released prematurely.

6.1 Compliance Evasion

A virtue of financial assurance rules is that they create an incentive for third-party assurance providers to monitor the environmental safety and performance of the firms whose obligations they guarantee or underwrite. This can relieve some of the enforcement burden on regulatory agencies. An enforcement burden that is not relieved, however, is the need to ensure

that firms comply with the assurance requirements themselves.¹⁹⁸ Like any regulation, assurance requirements require penalties and monitoring to promote compliance.¹⁹⁹

Noncompliance has been defended with a variety of novel arguments, most of which fail. In *United States v. Ekco Housewares, Inc.*, for instance, Ekco failed to comply with RCRA hazardous waste financial assurance requirements and a consent order requiring assurance.²⁰⁰ The firm argued, unsuccessfully, that it was excused from assurance requirements because the facility in question had accepted no new waste after 1984.²⁰¹ The defendant also filed a liability insurance policy as proof of assurance, knowing that it contained exclusions rendering it unacceptable as an assurance mechanism, and backdated the instrument in an attempt to conceal its failure to comply over a period of years. Finally, the firm argued that the \$4,600,000 penalty imposed for these violations was unreasonably high.²⁰² The court of appeals ultimately reduced the penalty only a little, concluding that “the deterrence message sent by the district court’s penalty was one sorely needed” given “Ekco’s apparent view that financial responsibility requirements take a far-distant seat to its other RCRA obligations.” Another example of noncompliance was a firm’s argument that payments into a state UST trust fund constituted funds applicable to compliance with financial assurance requirements. In that case, the court held that the RCRA UST assurance rules required the firm to secure its own assurance.²⁰³

198 According to EPA, 19% of hazardous waste facilities studied were not in compliance with financial assurance requirements. U.S. EPA, Office of Inspector General, Audit Report, RCRA Financial Assurance for Closure and Post-Closure, March 30, 2001, at 24.

199 For a set of cases involving penalties for failure to comply with financial assurance regulations see In the Matter of Marley Cooling Tower Co., No. RCRA-09-88-008, 1989 RCRA LEXIS 22 (November 30, 1989) (\$7,000 penalty for failing to update financial assurances and failing to demonstrate financial responsibility for third-party claims); In the Matter of Landfill, Inc., Appeal No. 86-8, 1990 RCRA LEXIS 65 (November 30, 1990) (financial assurance penalty of \$1,900); In re Frit Indus., No. RCRA-VI-415-H, 1985 RCRA LEXIS 4 (August 5, 1985) (financial assurance penalty of \$1,200); In the Matter of Harmon Electronics, No. RCRA-VII-91-H-0037, 1994 RCRA LEXIS 52 (December 12, 1994) (\$251,875 for four years of noncompliance); In the Matter of Standard Tank Cleaning Corp., No. II-RCRA-88-0110, 1991 RCRA LEXIS 47 (March 21, 1991) (\$145,313 for six years of noncompliance), *aff’d*, Appeal No. 91-2 (July 19, 1991).

200 62 F.3d 806, 809, 812 (6th Cir. 1995).

201 The argument was based on a flawed reading of cases related to RCRA’s “loss of interim status” (LOIS) amendment. The facility is in fact subject to assurance regulations until final closure is certified, even though it never obtained interim status by filing for a permit.

202 *U.S. v. Ekco Housewares, Inc.*, 853 F. Supp 975 (N.D. Ohio 1994).

203 In the Matter of B&R Oil Company, Inc., Respondent, United States EPA, before the Administrator. Administrative Law Judge, issued September 4, 1997 (“payment into the state tank fund constitutes a legal obligation separate and apart from respondent’s obligation to comply with the Federal regulations...”).

Another case worthy of note, one testing the federal government's ability to "overfile" a state enforcement action, centered on Power Engineering Company's failure to provide financial assurance for a hazardous waste treatment facility.²⁰⁴ The case history involved numerous RCRA violations associated with a metal refinishing plant and the defendant's failure to comply with several regulatory orders. The federal government initiated an action when Colorado failed to require financial assurance for the facility's closure. Assurance enforcement was urgent because as the court noted, the defendant had "recently engaged in a pattern of debt reduction and asset forfeiture...[and] threatened bankruptcy or abandonment of the facility if the federal or state government continues seeking the facility's compliance with applicable hazardous waste regulations."²⁰⁵ Based on the federal government's motion, the district court required the defendant to provide \$3.5 million in financial assurance.²⁰⁶ The defendant subsequently appealed, arguing that the federal government did not have the authority to override a completed state enforcement action under RCRA. The firm's appeal was based in large part on another RCRA financial assurance case, *Harmon Industries, Inc. v. Browner*. In that case, the Eighth Circuit held that the federal government could initiate an enforcement action only if the state failed to initiate *any* enforcement action, or if the federal government completely withdrew the state's authorization to implement RCRA.²⁰⁷ Power Engineering's appeal failed, however, upon the Tenth Circuit's refusal to decide the "overfile" issue and upon the Supreme Court's refusal to hear the case. Upon its return to district court, Power Engineering was required to comply with the financial assurance requirements originally imposed on it. The district court also explicitly rejected the Eighth Circuit's argument in *Harmon* limiting federal enforcement authority under RCRA.²⁰⁸ The case is important because it affirms the federal government's ability to force compliance with assurance rules, and other RCRA provisions, despite preexisting and potentially inadequate state enforcement actions.

204 United States v. Power Engineering Co., no. 97-B-1654 (D. Colo. November 24, 2000).

205 United States v. Power Engineering Co., no. 98-1273 (D. Colo., September 8, 1999), at 8. See also United States v. Power Engineering Co., 10 F.Supp2d 1145, 1165 (D. Colo. 1998) at 1157, 1163, and 1165.

206 United States v. Power Engineering Co., 10 F.Supp2d 1145, 1165 (D. Colo. 1998).

207 191 F.3d 894 (8th Cir. 1999).

208 United States v. Power Engineering Co., no. 97-B-1654 (D. Colo. November 24, 2000). ("With all due respect, I conclude that the Harmon decision incorrectly interprets the RCRA"), at 15.

6.2 Evasion via Bankruptcy?

Assurance rules reduce the risk that firms with environmental obligations will be insolvent when the obligations come due. In some cases, however, assurance is imposed, or greater amounts must be posted, while a firm is already in bankruptcy.²⁰⁹ This creates a clash between assurance requirements and bankruptcy law. For instance, environmental cleanup costs, once a firm is in bankruptcy, may be a dischargeable “claim” under the bankruptcy code.²¹⁰ With the bankruptcy code as a shield, firms have attempted to evade assurance requirements by claiming that assurance-related expenditures are dischargeable obligations.

In general, however, courts have held that assurance costs, including the required posting of bonds or increased bond amounts to cover reclamation costs, are not “money judgments” under the bankruptcy code and fit within the “police and regulatory powers” exception to the automatic stay.²¹¹ Consider the decision *In re Industrial Salvage, Inc.*, which involved cleanup and closure orders for landfills in Illinois.²¹² As Industrial Salvage filed for bankruptcy, the Illinois Pollution Control Board required the facilities’ closure, revoked the owner’s development permit, and required it to post financial assurances for closure of the facilities. Industrial Salvage filed a petition for the discharge of debts, and in particular claimed that the facilities’ closure and assurance costs should be discharged in bankruptcy. The company argued

209 Of the cases referenced in note 198 supra, “financial difficulties and bankruptcies were significant contributing factors to facility non-compliance,” at 24.

210 See note 8 supra. For general guidance on the conditions that discharge environmental costs and penalties, see U.S. EPA, EPA Participation in Bankruptcy Cases, September 30, 1997, memorandum, available at <http://es.epa.gov/oeca/osre/970930-1.pdf>. An illustrative case exploring the issues is *In Re Chateaugay Corp.*, 944 F.2d 997 (2d Cir. 1991) (finding that an injunction encountered in an environmental case that does no more than impose an obligation entirely as an alternative to a payment right is dischargeable). But see also *Ohio v. Kovacs* 469 US 274, 105 S Ct 705 (1985) (Dischargeability is limited to situations where a cleanup order is converted into an obligation to pay money, and regulatory orders that demand performance and cannot be satisfied solely via a monetary payment are not dischargeable in bankruptcy). See also *In re Commonwealth Oil Refining Co.*, 805 F.2d 1175 (5th Cir. 1986) (a RCRA compliance order is not stayed by bankruptcy code even though compliance involved expenditure of money).

211 See *Commonwealth of PA, Dept. of Environ. Resources v. Peggs Run Coal Co.*, 55 PA Commw 312, 423 A 2d 765 (Pa Commw Ct 1980) (DER injunction, including bond requirement, was a “proceeding to enforce its police or regulatory power and as such is exempted from the stay provisions of Section 362 of the Bankruptcy Code”).

212 196 Bankr. 784, 702 (Bankr. S.D. Ill. June 6, 1996). In the court’s reasoning, the ability to collect on the bonds is not akin to a claim (“Environmental cleanup orders, in particular, often require an expenditure of money in order to clean up immediate and ongoing pollution, and the government may exercise its regulatory powers and force compliance with its laws even though a debtor must spend money to comply....an obligation does not become a ‘claim’ merely because it requires the expenditure of money”), at 5.

that the order to post financial assurances constituted a dischargeable claim because the state could collect on the bonds in the event of nonperformance. The court disagreed, however, finding that the “obligations under the Board’s order for closure and post-closure care of the three landfills were not discharged as a claim in their Chapter 11 bankruptcy proceedings.”²¹³

Another decision supportive of assurance in the bankruptcy context is *Penn Terra, Ltd. v. Department of Environmental Resources*.²¹⁴ The bankrupt Penn Terra was asked to expend funds under Pennsylvania’s SMCRA law to reclaim lands it had previously mined. The Third Circuit reversed a district court ruling that the reclamation request was a money judgment and thus dischargeable. In its ruling, the circuit court argued that the state environmental agency’s attempt to remedy future harm, rather than past damages, did not constitute a money judgment but rather was an exercise of the state’s police powers.²¹⁵ Accordingly, although the precise limits of the police and regulatory powers exception remain somewhat murky, closure and reclamation obligations, such as those associated with assurance, are not easily dischargeable in bankruptcy.

6.3 Insolvency of Assurance Providers

Insurers, banks issuing letters of credit, and sureties issuing bonds can themselves become insolvent, thus threatening the availability of assurance funds. Unfortunately, there is no insurance against an assurator’s financial failure.²¹⁶ Regulations typically guard against the possibility of assurator insolvency by requiring U.S. Treasury certification of bond issuers, “secure” ratings for insurers, or at a minimum, some form of licensing for financial institutions providing assurance.²¹⁷ Nevertheless, provider bankruptcies are relatively common. Eight U.S.

²¹³ Id., at 4.

²¹⁴ 733 F.2d 267 (3rd Cir. 1984).

²¹⁵ Id., at 278.

²¹⁶ For example, the Federal Deposit Insurance Corporation (FDIC) does not insure letters of credit issued to governments, such as those that would be used as an environmental guarantee. Similarly, most states have an insurance guaranty fund to protect policyholders in the event of an insurer’s insolvency. However, most enabling statutes include a “net worth exclusion” that eliminates governments as recipients of these funds. See Michigan, MCL 500.7925(3); and Illinois, 215 ILCS 5/534.3(b)(iv). Accordingly, government attempts to access such funds in environmental guaranty cases have not been successful. See Attorney General ex rel Department of Natural Resources v. Michigan Property and Casualty Guaranty Association, Court of Appeals of Michigan, 218 Mich. App. 342; 533 N.W.2d 700, 1996.

²¹⁷ See notes 100, 103, and 106 supra. Trust funds can be vulnerable to the insolvency of a financial institution acting as trustee. Some regulations require trustees to be only those regulated or regularly examined by a federal or state agency, see 40 CFR 264.143.

insurance companies failed in 1998, 10 in 1999, and 16 in 2000.²¹⁸ Between 1982 and 1986, 10 to 15 sureties serving the surface mine bond reclamation market become insolvent, leaving a total of \$36 million in bonds unfunded.²¹⁹ According to EPA, between 1984 and 1990 the average annual number of insolvencies among property and casualty insurers was 32 of 3,800, or an average annual failure rate of 0.85%.²²⁰ Over the same period, the average annual failure rate for FDIC-insured banks was 1.14%, and U.S. Treasury-approved sureties were delisted at an annual rate of 0.95%.²²¹

A particular concern when assurers fail is that their former customers must acquire assurance elsewhere on fairly short notice. For financially healthy customers this is not typically a problem. When firms in need of assurance are experiencing financial difficulties of their own, however, replacement can prove difficult. In some cases, new assurance may not be available. Recent problems with an important assurance provider, Frontier Insurance Company, are illustrative.²²² Because of financial weakness, the U.S. Treasury in 2000 removed Frontier's qualification to issue federal bonds. As a result, Frontier customers had to find providers to remain in compliance with their assurance requirements. Most were able to. But two large customers, landfill operator Safety-Kleen Corporation and mining company AEI Industries, have to date been unable to replace their environmental bonds.

When an assurance provider fails suddenly and a firm with assurance obligations is in financial distress, regulators face a dilemma.²²³ Technically, noncompliance with assurance regulations is grounds for an injunctive action, including facility closure. This kind of penalty can be a powerful compliance motivator if a firm is financially healthy. When a firm is near

218 See American Insurance: Bungee Jump, *The Economist*, September 16, 2000, at 84.

219 McElfish, *supra* note 67, at 89 (citing Office of Surface Mine Reclamation and Enforcement, Record of Surety Insolvencies, August 1988, unpublished).

220 U.S. EPA Issue Paper: Assessment of Financial Assurance Risk of Subtitles C and D Corporate Financial Test and Third-Party Financial Assurance Mechanisms, in docket materials in support of Financial Assurance Mechanisms for Corporate Owners and Operators of Municipal Solid Waste Landfill Facilities; Final Rule, April 10, 1998, at 7.

221 *Id.*, at 6. Being delisted is not equivalent to being insolvent, though a surety's financial health is the main determinant of whether it is listed as an acceptable government bond provider.

222 Frontier was a major supplier of environmental bonds. For example, of 198 solid waste landfills in Michigan in 2000, 35, or 18% of the total, had closure bonds issued by Frontier.

223 According to an EPA official, "requiring the company to close its treatment, storage, and other services was not in the best interest of the environment." Quoted in Pat Phibbs, Safety-Kleen, EPA Agree on Deadline for Obtaining Insurance for Facilities, *Environment Reporter*, October 20, 2000, at 2200-1.

bankruptcy, however, facility closure yields no real environmental benefit, since closure starves the firm of cash flow that could be used to finance obligations, improve the firm's ability to find alternative bonds, and avoid insolvency.

In light of the dilemma, consider the difficulties faced by the states and EPA in motivating Safety-Kleen to replace its bonds. Safety-Kleen filed for bankruptcy in 2000, raising questions about a large number of closure obligations associated with its operations.²²⁴ Safety-Kleen and EPA entered into a consent agreement requiring regular financial reports, reports on the firm's attempts to find alternative assurance, and independent environmental audits of sites formerly covered by Frontier bonds.²²⁵ The agreement also specified a set of deadlines for bond replacement. Unfortunately, three deadlines have already passed without compliance, and according to Safety-Kleen itself, "there can be no assurance that the Company will be able to replace Frontier on a schedule acceptable to the EPA and the states."²²⁶ Without any meaningful threat except facility closures, EPA's hand is weak. Compounding Safety-Kleen's problems, another its assurance providers, Reliance Group Holdings, Inc, filed for bankruptcy protection in June 2001.²²⁷

Frontier's weakness caused difficulty for at least one other large bond holder, AEI Resources, Inc.²²⁸ AEI held \$680 million worth of Frontier bonds and relied heavily on debt financing prior to Frontier's failure. In turn, the withdrawal of Frontier bonds led Moody's to downgrade the firm's debt to a Caa2 rating.²²⁹ With such poorly rated debt and a lack of collateral, sureties have not been willing to supply AEI with replacement bonds.²³⁰

224 In re Safety-Kleen Corp., Bankr. D. Del. No. 00-2303, October 17, 2000. Safety-Kleen and its subsidiaries operate approximately 30% of the waste management facilities in the United States. Approximately 50% of its financial assurance was provided by Frontier. It is important to note that Frontier bonds, while not acceptable because of Frontier's financial weakness, remain in place, with Safety-Kleen continuing to pay the premiums. See 10-Q Report for Safety-Kleen Corporation, SEC file 1-08368, February 28, 2001, at 9.

225 10-Q Report for Safety-Kleen Corporation, SEC file 1-08368, February 28, 2001, at 9-10. Safety-Kleen was in financial difficulty for a variety of reasons, most unrelated to the withdrawal of the Frontier bonds.

226 Id., at 9.

227 Wall Street Journal, Reliance Files for Chapter 11 Protection, June 13, 2001, at A3.

228 AEI is the fourth-largest producer of coal for energy production in the United States (corporate website).

229 Moody's Downgrades AEI Debt, Coal Outlook, July 31, 2000, at 1.

230 Ken Ward, Addingtons' Coal Company in Trouble, Downgrade of Reclamation Bond Provider Gets the Blame, Charleston Gazette, July 7, 2000.

Safety-Kleen and AEI Resources are large firms. Even so, the weakness of a single surety created a significant barrier to compliance for both firms and a financial crisis for AEI. Although assessor failures remain an infrequent occurrence, Frontier's failure underscores the importance of regulatory oversight and the screening and monitoring of assurance providers' financial health.

6.4 The Importance of Instrument Language

For assurance to be effective, the financial instruments used to demonstrate it should not contain defenses or exclusions that might hamper the government's ability to collect obligations. It is also important that the instruments not be easily withdrawn by providers if costly environmental problems develop. In most situations, insurers and insureds voluntarily agree on cancellation terms and coverage exclusions. For instance, nonpayment of premiums is typically grounds for cancellation. Exclusions may be included to reduce the insurer's risk exposure and, correspondingly, the customer's cost of coverage. These voluntary coverage limitations are inappropriate for the purposes of environmental assurance, however. Coverage limitations, though potentially desirable for the customer and insurance provider, undermine the ability to recover costs and ensure future environmental obligations.

6.4.1 Defenses

It is common for assurance rules to require that assurance instruments adhere to a format with terms established by regulation. As an example, consider the OPA and CERCLA rules for vessels and offshore facilities. Allowable assurance instruments must include an "acknowledgment of direct action."²³¹ This acknowledgment states that "the insurer [or surety] consents to be sued directly with respect to any claim."²³² The direct action provision is designed to foster resolution of claims and access to compensation. In practice, direct action allows cost recovery independent of a defendant's bankruptcy status.²³³ The direct action requirement also eliminates a set of defenses that are typically available to insurers, such as fraud or

²³¹ 33 USC § 2716; 42 USC § 9608(c)(1-2).

²³² Appendix B to 33 CFR, Part 138. Also see 30 CFR 253.41(a)(4).

²³³ The offshore facilities rule, for instance, allows direct action against guarantors as long as insolvency is simply "claimed" by the responsible party. In the government's reasoning, "Establishing a regulatory process that might require a lengthy insolvency determination procedure before compensation could begin would be totally inconsistent with [OPA objectives]." 63 FR 42707, August 11, 1998.

misrepresentations by the insured.²³⁴ In a typical insurance agreement, fraud and misrepresentation are grounds for a denial of coverage.²³⁵ OPA and CERCLA remove this possibility, as do some state laws.²³⁶ All the third-party financial assurance mechanisms authorized under the statutes require an acknowledgment that the guarantor agrees to direct action.²³⁷ The only defense available to a guarantor is that the loss was caused by the “willful misconduct” of the owner or operator.²³⁸ The motivation for the direct action provisions is sound. Both cost recovery and deterrence are served by the limitation on policy defenses.²³⁹

234 61 CFR 9270. “No standard marine liability insurance policy of which the Coast Guard is aware meets [the direct action] requirement.”

235 For instance, there is an admiralty rule that any evidence of a material misrepresentation cancels insurance coverage. This rule is generally respected in U.S. jurisdictions. See *Port Lynch, Inc. v. New England International Assurety, Inc.*, 754 F.Supp 816, 1992 AMC 225 (W.D. Wash. 1991), upholding the standard. In contrast, however, see *Albany Insurance Co. v. Anh Thi Kieu*, 927 F.2d 882, 1991 AMC 2211 (5th Cir.), at 890, holding that state law should govern the question of what voids coverage and that misrepresentations did not void coverage since the insured did not intend to deceive the insurer.

236 42 USC § 9608(c)(1). “The guarantor may invoke all rights and defenses which would be available to the owner or operator under this subchapter. The guarantor may also invoke the defense that the incident was caused by the willful misconduct of the owner or operator, but the guarantor may not invoke any other defense that the guarantor might have been entitled to invoke in a proceeding brought by the owner or operator against him.” 61 FR 9268. “A guarantor agrees to waive all other defenses, including nonpayment of premium.” For a state law example, see Alaska Statute 46.04.040(e).

237 33 CFR 138.80(d)(1). “Any evidence of financial responsibility submitted under this part must contain an acknowledgment by the insurer or other guarantor that an action in court by a claimant for costs and damage claims arising under the provisions of the Acts may be brought directly against the insurer or other guarantor.”

238 30 CFR 253.41(a)(4); 33 CFR 138.80(d). “There is no evidence that fraud and misrepresentation have been a problem in the current OSFR program.” 63 FR 42707, August 11, 1998. The meaning of the “willful misconduct” standard has been previously addressed by U.S. courts. See *The Tug Ocean Prince, Inc. v. United States*, 584 F.2d 1151, 1978 AMC 1787 (2nd. Cir 1978), cert. denied 440 U.S. 959 (1979): Willful misconduct or gross negligence being equivalent to the equally vague “egregious conduct making an accident likely to happen.”

239 In the words of the Minerals Management Service, which administers the offshore facilities assurance program, “Allowing such a defense is inconsistent with two objectives of the OSFR program: Ensure that claims for oil-spill damages and cleanup costs are paid promptly; and make responsible parties or their guarantors pay claims rather than the Oil Spill Liability Trust Fund. Limiting the types of defenses guarantors may use to avoid payment of claims is consistent with and furthers the achievement of these objectives. Furthermore, there is no evidence that fraud and misrepresentation have been a problem in the current OSFR program,” 63 FR 42707, August 11, 1998.

6.4.2 Exclusions

Not all assurance rules feature such a clearcut limitation on defenses available to an insurer.²⁴⁰ Most programs, however, guard against the use of policy “exclusions”—features of an insurance contract designed to limit the exposure of an assurance provider to certain kinds of risks. Exclusions are problematic for an environmental assurance program.²⁴¹ Most obviously, they may directly exclude coverage for costs that are intended to be assured.²⁴² Even if an exclusion is not ultimately honored, exclusions complicate interpretation of the insurance contract, which can open the door to costly and time-consuming litigation.²⁴³

Because exclusions can so directly undermine the effectiveness of assurance, many state programs rely on the use of boilerplate endorsements that must accompany instruments used to demonstrate coverage.²⁴⁴ These endorsements require the insurer to acknowledge the scope of coverages required by regulation and rule out any exclusions that would limit that coverage.²⁴⁵

240 But note that, like the lack of insurer defenses under direct action provisions, case law denies sureties a defense based on malfeasance by the bond purchaser. In general, fraud by the principal does not discharge the surety’s obligations unless the obligee (the party to whom performance is owed) was involved in the fraud. *Rachman Bag Co. v. Liberty Mutual Insurance Co.*, 46 F.3d 230,237 (2nd Cir. 1995).

241 From an assurance standpoint, the most problematic of all exclusions would be one that relieves an insurer of its coverage obligations in the event of a customer’s insolvency. Assurance rules tend to explicitly prohibit this specific exclusion. For example, 280.97(b)(2)(a).

242 See State of California, State Water Resources Control Board, Financial Responsibility Long Term Study, January 1995, 94-2CWP, describing difficulties associated with exclusions (“First, the products offered have many preinsurance requirements and numerous policy exclusions so that the coverage desired is often not the coverage offered. Second, the policy coverage offered often does not match necessarily the type of coverage legally required”), at 6.

243 “In spite of insurance certificates which provide a warrant that policies conform with regulations, policy terms and exclusions may make it difficult for states to obtain closure and post-closure funds from insurance policies without litigation,” U.S. EPA, Office of the Inspector General, Audit Report, RCRA Financial Assurance for Closure and Post-Closure, March 30, 2001, at 18.

244 See Texas assurance regulations 30 TAC §37.641 (2)(e) and certification that “the wording of this [coverage] endorsement is identical to the wording specified in 30 TAC §37.641.”

245 For example, Michigan’s hazardous waste management facility assurance program requires one of two endorsements. The first is for policies that are “preaccepted” as limiting exclusions. Insurers without preaccepted policies must sign an endorsement that includes the following declaration: “No condition, provision, stipulation, limitation, or exclusion contained in the Policy, or any other endorsement thereon, or any violation thereof, shall relieve the insurer from liability or from payment of any claim, within the stated limits of liability in this Endorsement, for bodily injury and property damage to a third party caused by a sudden and accidental occurrence.” [The second endorsement? If not relevant, change the first sentence to “For example, Michigan’s...program requires an endorsement for policies that are ‘preaccepted’...”?]

In general, contract law offers protections against the use of exclusions that are not voluntarily agreed to by the insured or by the beneficiaries of assurance. Misrepresentations of an insurance contract by an insurer—for example, claiming coverage when coverage was in fact excluded—are not tolerated.²⁴⁶ When bonds are issued to satisfy a customer’s regulatory obligations, the coverage mandated by the regulations defines the bond provider’s obligation. In cases where the regulatory requirement and the bond’s language are in conflict, courts tend to favor the regulatory definition of coverage.²⁴⁷ Courts also accord little credence to a surety’s claim of misunderstanding a surety agreement.²⁴⁸

6.4.3 Cancellation

The cancellation of coverage prior to the satisfaction of claims and obligations is also a concern. Accordingly, assurance instruments, at a minimum, must carry cancellation clauses that require prior notification. Consider the RCRA rules for hazardous waste facility closure, which require advance notification of cancellation whether the instrument is a bond, letter of credit, or insurance policy.²⁴⁹ Cancellation of an insurance policy is prohibited unless alternative coverage is acquired, or unless the insured fails to pay premiums.²⁵⁰ Letters of credit must be automatically renewed, absent a cancellation notice.²⁵¹

In the case of OPA and CERCLA rules for vessels and offshore facilities, the Coast Guard or Minerals Management Service must be notified at least 30 days prior to the cancellation of coverage. Moreover, the instruments must specify that “termination of the

246 See *Advanced Environmental Technology Corp. v. Brown*, 4th Cir., No. 99-2228, October 2, 2000 (insurance agent found liable for having “negligently misrepresented” coverage provided to a waste removal subcontractor, knowing an exclusion was for coverage sought by the insured).

247 A bond that is required by law but does not conform to the regulatory requirement is typically interpreted to provide the protections envisioned by regulation, 17 Am. Jur. 2d, *Contractors’ Bonds* §8. See also *Davis v. Moore*, 7 Ill App 2d 519, 130 NE 2d 117 (Ill Ct App 1955), “[T]his court holds that the statutory requirements of an appeal bond are a part of such bond, whether fully recited therein or not, that it is not error for a court to decree a reformation of a bond to conform to the statute (although it may not be necessary), and that judgment may be entered on an appeal bond according to the provisions of the statute, regardless of any error in the form of the bond.”

248 See *U.S. v. Country Kettle, Inc.*, 738 F.Supp 1358, 1360 (D.Kan. 1990).

249 Bonds and letters of credit require at least 120 days’ notice prior to cancellation. 40 CFR 264.143(b)(8), 40 CFR 264.143(c)(8), 40 CFR 264.143(d)(5).

250 40 CFR 264.143(e)(6),(8),(10). Failure to pay premiums is considered a violation of assurance regulations and accordingly can lead to monetary or injunctive penalties.

251 40 CFR 264.143(d)(5).

instrument will not affect the liability of the instrument issuer for claims arising from an incident...that occurred on or before the effective date of termination.”²⁵² And with respect to litigation, guarantor liabilities survive well past coverage termination.²⁵³ Because assurance can be difficult to purchase once environmental or financial difficulties arise, cancellation restrictions are an important component of any assurance program.²⁵⁴

6.4.4 Claims -made policies

Insurers can limit exposure to environmental risks by using “claims-made” policies. Under such policies, coverage is limited to claims made against the insured during the period of insurance. Claims made after the insurance expires or is withdrawn are not covered. In contrast, “occurrence” policies cover claims resulting from events during the coverage period, even if the claim is brought after coverage is withdrawn.²⁵⁵ Claims-made policies can complicate cost recovery, since they place time pressure on regulators to discover pollution and initiate cost recovery actions.²⁵⁶ For this reason, some assurance programs place restrictions on claims-made insurance policies. For example, regulations may require that the coverage period of a claims-made policy be extended beyond the policy’s cancellation date.²⁵⁷

²⁵² 30 CFR 253.41(a)(2).

²⁵³ “OPA makes guarantors subject to liability for claims made up to 6 years after an oil-spill discharge occurs.” 63 FR 42704, August 11, 1998.

²⁵⁴ See 44 FR 14902, March 13, 1979 (“This restriction [against cancellation of the bond] is based on the first principle of surety law, i.e., the surety undertakes the obligation to stand in the shoes of the principal, and his obligation may not be rescinded or terminated without the consent of the party to whom the duty is owed”).

²⁵⁵ For more on the distinction between claims -made and occurrence coverage, see Chris Mattison and Edward Widmann, *Environmental Insurance: An Introduction for the Environmental Attorney and Risk Manager*, 30 ELR 10365, 2000.

²⁵⁶ *Central Illinois Public Service Company v. American Empire Surplus Lines Insurance Company*, 267 Ill. App. 3d 1043 (1994) (denying coverage on a claims -made policy because of the lack of a third-party demand necessary to constitute a valid “claim,” even though pollution had been discovered and the regulator was notified of the occurrence).

²⁵⁷ See RCRA’s UST assurance rules, 40 CFR 280.97(e). When a claims -made policy is used, the insurer must include an endorsement stating that “The insurance covers claims otherwise covered by the policy that are reported to the [“Insurer” or “Group”] within six months of the effective date of cancellation or non-renewal of the policy except where the new or renewed policy has the same retroactive date or a retroactive date earlier than that of the prior policy, and which arise out of any covered occurrence that commenced after the policy retroactive date, if applicable, and prior to such policy renewal or termination date.” See also 40 CFR 258.74(d)(6), 40 CFR 264.143(e)(8).

6.4.5 Arrangements worthy of special attention

The regulator's administrative problems are multiplied when different mechanisms and providers are used in combination. This is typically allowed so long as the assorted coverages equal the aggregate requirements.²⁵⁸ In some cases, however, there are restrictions on the number of providers. Under OPA-CERCLA vessel rule, for example, no more than four insurers or ten sureties can be used to satisfy a firm's coverage requirement.²⁵⁹ The offshore facility rules place a limit on the number of insurers (either four or five, depending on the facility's location). Also, contribution percentages, in insurance parlance, must be "vertical," not "horizontal."²⁶⁰ Vertical contributions associate a specific fraction of liability to a provider, irrespective of the dollar value of the claim. Horizontal contributions delineate provider liability as a function of the total dollar claim.²⁶¹ Horizontal layering of coverage by different providers is prohibited under the rules, apparently because of administrative difficulties associated with that type of contract.²⁶²

Increased attention should also be given to the use of "captive" insurance plans. A captive is an insurance company formed to insure the risks of a parent company or set of affiliated companies. Captives do not supply insurance to the general market. Although captives are entirely appropriate as a risk-reduction tool for firms, they are inappropriate as a demonstration of financial assurance because the captive insurer's financial strength is tied to that of the parent company. Thus, unlike a third-party insurer, a captive insurer's ability to

Some states make further requirements. Texas, for example, require firms using claims-made policies to place in escrow funds sufficient to pay an additional year of premiums for renewal of a policy by the state on notice of the termination of coverage. Texas Code §37.6031(f).

258 For example, self-insurance can be used to cover the deductible included in an insurance policy. 63 FR 42704, August 11, 1998.

259 33 CFR 138.80(c)(1).

260 30 CFR 253.29(c)(4); 33 CFR § 138.80(c)(1)(j). The offshore facilities rule, however, establishes specific horizontal layers that can be served by different guarantors. Multiple guarantors cannot cover intermediate horizontal sublayers.

261 For example, insurer A is liable for claims up to \$1 million, insurer B is liable for claims from \$1 million to \$2 million, etc.

262 Problems have been indicated by the Minerals Management Service: "The reason we placed a limit on the number of insurance certificates and the amounts in the [coverage] layers is that in the past we received insurance certificates that did not add up to the total amount of coverage indicated. We found that insurance certificate problems likely would increase with the number of certificates. Many times the problem was associated with 'horizontal' layering, which is the allocation of risk within an insurance sub-layer. Verifying that the total amount of the certificate was properly allocated among participating insurers is a burdensome process..." 63 FR 42704, August 11, 1998.

absorb claims is weakest when its strength is most needed—upon the insolvency of the parent.²⁶³ Some, but not all, assurance programs prohibit the use of captives as an assurance instrument.²⁶⁴ A problem for regulators is that identification of captive policies can be difficult because policies do not necessarily specify the insurer's structure.

6.5 Monitoring, Administration, and Record-Keeping

Assurance instruments must be monitored by regulators. First, the initial establishment of an approved mechanism must be verified, usually by inspection of the coverage contract from an approved assurance provider. The issues highlighted in Section 6.4 illustrate the need for regulatory oversight of the insurance, bond, and other instruments used to demonstrate assurance. But just as important, the ongoing validity of assurance contracts must be verified.

Regulatory rules themselves can help simplify the regulator's task. For example, requiring letters of credit to automatically renew relieves the regulator of one burden—the need to verify annual renewals. But sound bookkeeping and monitoring of instruments is crucial in order to ensure that the contracts will be valid and provide funds in the future. A particular problem is the release of assurance funds—letters of credit, certificates of deposit, and trust funds—by providers without regulatory approval.²⁶⁵ Again, regulations can help address the problem, in this case by requiring the state agency be the sole beneficiary of a bond, letter of credit, certificate of deposit, or trust fund.²⁶⁶ Changes in bank accounts or trust agreements can occur over time, providers themselves can merge or restructure, and computer records need to be

263 U.S. EPA, Office of the Inspector General, Audit Report, RCRA Financial Assurance for Closure and Post-Closure, March 30, 2001 (“For example, a significant portion of the assets of one captive, established by a large waste management firm, was represented by a note receivable from the parent company”), at 12; (“captive insurance policies in our sample do not meet the intent or requirements of RCRA financial assurance regulations”), at 26.

264 A Virginia law, passed in 2000, prohibits reliance on captive insurers, approved surplus line insurers, and risk retention groups as a means of assuring closure and postclosure costs. HB1022, passed January 24, 2000.

265 U.S. EPA, Office of the Inspector General, Audit Report, RCRA Financial Assurance for Closure and Post-Closure, March 30, 2001 (“We were given examples during our audit where banks had released funds from trust funds to Subtitle C facility owners without the required approval”), at 21.

266 See Financial Responsibility Long Term Study, State of California, State Water Resources Control Board, January 1995, 94-2CWP (“The Fund has not directed owners or operators to send an original of these mechanisms to us even though the Fund is the designated payee....The Fund, as the payee, should obtain the original document designating the SWRCB as the payee”), at 10.

updated to reflect changes in the instruments.²⁶⁷ At a minimum, regulatory rules and administrative procedures need to require basic record-keeping that facilitates the legal and financial maintenance of assurance instruments.²⁶⁸ The fact that regulators are typically not accountants, insurance experts, or contract lawyers complicates the task.

Another potential pitfall for regulators is the decision to release assurance funds after a firm's reclamation, closure, postclosure, and other obligations are met. This requires scientific and engineering expertise, rather than financial acumen. But the administrative challenge is clear. The quality of restoration and site closure efforts can be difficult to assess.²⁶⁹ Public involvement in these determinations can help but cannot be relied upon in all circumstances.²⁷⁰ Firms also have the right to challenge an agency's determination not to release bonds. Litigation over these issues is common in some cases and adds to administrative costs.²⁷¹

6.6 Problems with Self-Demonstration and Corporate Guarantees

Self-demonstrated assurance and corporate guarantees allow firms to pass accounting tests as a substitute for purchased assurance. When a firm self-demonstrates, its own financial

267 Review of Hardrock Mining Reclamation Bond Requirements, Legislative Request #98L-36, Legislative Audit Division, State of Montana, December 4, 1997 ("During the course of our review, we identified several potential control weaknesses which affect the department's ability to effectively manage performance bonds....File documentation does not necessarily reconcile with computer system information. We noted instances of bonds without department signatures"); document available at leg.state.mt.us/audit/download/98L-36.pdf.

268 See testimony from the General Accounting Office on mining bond collection problems, Adequacy of Bonds to Ensure Reclamation of Surface Mines. Hearing before a Subcommittee of the Committee on Government Operations, House of Representatives, 99th Congress, 2nd Session, June 26, 1986. ("I spoke to the Director of the State regulatory authority. She indicated that the problem in Oklahoma was the 'paper' on which some of those bonds were written. In essence, the bond paper was bad. Once the bonds are written off on a legal technicality, you are not going to get any money"), and ("Some of these bonds—I think four of them, had letters of credit amounting to about \$425,000 which were allowed to expire. Therefore the money is not going to be available to reclaim the sites"), at 70.

269 See Kuipers, *supra* note 24 ("The measurement of success can be highly subjective and is often dependent upon the interpretation of specialists hired by the mining company"), at I-16.

270 Review of Hardrock Mining Reclamation Bond Requirements, Legislative Request #98L-36, Legislative Audit Division, State of Montana, December 4, 1997 ("The department relies on public comment and scrutiny as a [bond release] control measure"), at 6.

271 Adequacy of Bonds to Ensure Reclamation of Surface Mines. Hearing before a Subcommittee of the Committee on Government Operations, House of Representatives, 99th Congress, 2nd Session, June 26, 1986 (discussing problems with inappropriate bond release and stating that 66% of mined Pennsylvania acres were appealed to an Environmental Hearing Board on the basis of conflicts over release. In all cases, the board eventually sided with state, but hearings took on average 16 months for resolution), at 4.

status is used to meet the standards. When a corporate guarantee is used, the corporate parent or affiliate's financial status is used. Almost all financial assurance programs allow self-demonstration and corporate guarantees as forms of compliance.²⁷² To the regulated community, self-demonstration is the cheapest and thus most desirable form of compliance, since no coverage need be purchased or dedicated funds set aside.²⁷³ Accordingly, agencies and legislatures may be pressured to relax self-demonstration standards to allow more firms to comply in this nearly costless fashion.²⁷⁴ Self-demonstration is desirable because it avoids the cost of purchased assurance.²⁷⁵ Unfortunately, it can be surprisingly difficult to distinguish between wealthy, environmentally responsible, and financially stable firms—the firms for which self-demonstration is appropriate—and their less stable and scrupulous counterparts.

The problem with self-demonstration and guarantees, in a nutshell, is that there exists no financial instrument dedicated to environmental obligations.²⁷⁶ In recognition of self-

272 Self-demonstration is allowed under the OPA/CERCLA vessel and offshore facility rules, all of the RCRA programs (Subtitles, C, D, and I), SMCRA, and many state hardrock mining programs.

273 Firms unable use self-demonstration are particularly aware of this advantage. According to the testimony of a firm unable to comply with the self-demonstration criteria, "The market is now divided into those who can self-insure and do not have to pay the additional premium cost, and those who cannot and must assume this enormous expense." The Federal Requirements for Vessels to Obtain Evidence of Financial Responsibility for Oil Spill Liability under the Oil Pollution Act of 1990, Hearing before the Subcommittee on Coast Guard and Maritime Transportation of the Committee on Transportation and Infrastructure, House of Representatives, 104th Congress, June 26, 1996, at 33.

274 As an example of the tendency to reduce the criteria necessary for self-demonstration, consider Michigan's UST assurance rules, which state, in part, that "the amount of the financial responsibility requirements required under the provisions of this subpart shall be reduced to the amount required by the federal government upon passage by the federal government of a reduction in the financial requirements of this part." R 29.2161(f), amending Section 280.90. See also Minerals Management Service Press Release, May 4, 1995, OCS Policy Committee Passes Recommendations on Oil Pollution Act Financial Responsibility Requirements (#50033), reporting on an advisory committee's approval of a resolution to seek "additional mechanisms for qualifying as a self-insurer" so that "the costs of demonstrating OSFR do not cause serious economic harm to responsible parties." Available at <http://www.mms.gov/ooc/press/1995/50035.txt>.

275 See Federal Register 1998, *supra* note 18 ("The financial test allows a company to avoid incurring the expenses associated with the existing financial assurance requirements which provide for demonstrating financial assurance through the use of third-party financial instruments, such as a trust fund, letter of credit, surety bond, or insurance policy"), at 17708. An EPA analysis of its self-demonstration rules for municipal landfills concluded that self-demonstration, by eliminating third-party assurance costs for qualifying firms, would save approximately \$77 million annually. *Id.*, at 17719.

276 Disturbingly, and perhaps not coincidentally, Nevada's hardrock mining program, which as of 2000 had 13 mines in foreclosure or bankruptcy, also features a particularly high rate of self-bonding (approximately 50% of Nevada's hardrock mine reclamation bonds are in the form of self-bonds). Kuipers, *supra* note 24, at II-44.

demonstration's dangers, regulations feature a set of safeguards designed to ensure the firm's ability to absorb future costs. Under the RCRA hazardous waste facility rule, for example, firms must pass one of two tests: a bond rating test, or a set of financial ratio tests based on "total liabilities to net worth," "sum of net income plus depreciation, depletion, and amortization to total liabilities," and "current assets to current liabilities." In addition, there are a tangible net worth test, a domestic assets test, and a net working capital and "net working capital and tangible net worth to estimated closure and post-closure costs" ratio test.²⁷⁷ This daunting set of accounting challenges means that many firms cannot self-demonstrate.²⁷⁸

The regulator's task is equally daunting. Interpretation, verification, and monitoring of the financial tests over time require either significant in-house accounting expertise or reliance on third-party audits. Regulations typically require independent accounting reports, but this is not an ironclad safeguard. Accounting fraud is relatively common, mostly among small firms and firms in financial distress—precisely the kind of firm and situation that can pose the most serious assurance problems.²⁷⁹ Unfortunately, the occurrence of financial reporting fraud is not eliminated by independent audits, even those by the nationally prominent, "Big Six" firms.²⁸⁰ Moreover, accounting standards for environmental liabilities and other obligations are not adequately standardized.²⁸¹ There tends to be great variability in the way environmental

²⁷⁷ The financial tests are not arbitrary. Using retrospective analysis, EPA compared, the ability of different tests to predict future bankruptcy. For example, firms with less than \$10 million in tangible net worth went bankrupt four times more frequently than firms with tangible net worth greater than \$10 million. Federal Register, vol 59, no. 196, October 12, 1994, at 51524. See also Federal Register 1998, *supra* note 18 ("An analysis of bond ratings showed that bond ratings have been a good indicator of firm defaults, and that few firms with investment grade ratings have in fact gone bankrupt"), at 17709; justifying the use of debt-to-equity ratio profitability ratios as an alternative to bond ratings ("The Agency selected these two specific financial ratios with their associated thresholds based on their ability to differentiate between viable and bankrupt firms"), at 17709.

²⁷⁸ Self-demonstration tests differ slightly under the various programs. For example, see section 3.4.5 *supra*.

²⁷⁹ See Mark Beasley, Joseph Carcello, and Dana Hermanson, *Fraudulent Financial Reporting: 1987–1997, An Analysis of U.S. Public Companies*, Committee of Sponsoring Organizations of the Treadway Commission, 1999 ("Relative to public registrants, companies committing financial statement fraud were relatively small"), ("Pressures of financial strain or distress may have provided incentives for fraudulent activities for some fraud companies"), at 2.

²⁸⁰ *Id.*, at 3. During the fraud period, 56% of the sample fraud companies were audited by a Big Eight/Six auditor, and 44% were audited by non-Big Eight/Six auditors.

²⁸¹ See Federal Register 1998, *supra* note 18, at 17717 ("The financial analysis of firms with net worth between \$1 million and \$10 million show that environmental obligations may not be universally recognized. When EPA examined the liabilities, net worth and estimated financial assurance amounts for forty firms with net worth between \$1 and \$10 million, it found that many of these firms had estimated financial assurance obligations that exceeded their net worth [thirty-seven] and their reported liabilities [thirty-five]. In the instances of firms with financial

obligations are recognized for accounting purposes.²⁸² Also, the degree to which a firm's assets are obligated to other liens or creditors may not be readily apparent.²⁸³ From a bookkeeping standpoint alone, it is very difficult to assess all the environmental obligations attached to a single firm. Firms often operate multiple facilities with multiple obligations in multiple jurisdictions. Accordingly, adding up all these obligations and accounting for them properly is crucial for assessing a firm's ability to internalize costs years in the future.²⁸⁴ In sum, environmental assurance accounting is a problem not only for regulators untrained in its subtleties, but for accountants themselves.

Another serious concern is that a firm's financial status can quickly deteriorate. When this happens, the regulator may not even be notified of the financial crisis for many months. Consider a firm that experiences a loss of revenue or an increase in costs, leaving it unable to pass the financial test criteria. RCRA hazardous waste rules require notification only "within 90 days after the end of the fiscal year for which the year-end financial data show that the owner or operator no longer meets the requirements."²⁸⁵ The firm then has an additional 120 days in which to find alternative, third-party assurance. If financial conditions deteriorate early in a firm's fiscal year, notification may not occur until well into the following year.

assurance obligations that exceed their liabilities, this strongly implies that they are not recognizing these obligations as liabilities, particularly because liabilities also include money owed to creditors such as banks. This inconsistent reporting of landfill closure obligations has been reported by the Financial Accounting Standards Board.")

282 For discussion of environmental obligation accounting standards, see Financial Accounting Standards Board, Exposure Draft, Proposed Statement of Financial Accounting Standards, Accounting for Certain Liabilities Related to Closure or Removal of Long-Lived Assets, No. 158-B, February 7, 1996. Given the subjectivity of standards, another concern is that audits may favor the interests of the audit's purchaser. See Comment Response Document for Financial Test and Corporate Guarantee for Private Owners or Operators of Municipal Solid Waste Landfill Facilities, October 12, 1994 Proposed Rule (59 FR 51523), ("Compliance with the proposed financial test relies on the opinion of an independent certified public accountant. The experience of [The Michigan Department of Natural Resources] is that even independent certifications are slanted to the benefit of the owner/operator to the maximum extent allowed by law"), at 111.

283 In a bankruptcy filing creditors compete to recover money owed to them. Environmental agencies are not typically guaranteed any priority in this competition. For this reason, some assurance rules require self-demonstrating firms to base asset calculations only on their unencumbered assets (those with no other claim attached to them). As under the offshore facilities rule, 30 CFR § 253.26; 63 FR 42703, August 11, 1998.

284 In theory, this problem is addressed by a requirement that all costs being assured are revealed. ("Requiring that the owner or operator include all of the costs it is assuring through a financial test when it calculates its obligations prevents an owner or operator from using the same assets to assure different obligations under different programs"), 63 Federal Register 1998, supra note 18, at 17712.

285 40 CFR 264.143(f)(6).

As an example of both the rapidity with which a firm's financial fortunes can turn and the subjective and inappropriate use of accounting data and techniques, consider the case of Dow Corning. Between 1994 and 1995 Dow Corning went from an AA bond rating to bankruptcy, largely because of breast implant litigation costs.²⁸⁶ As a result, the firm no longer qualified for self-demonstration for a hazardous waste disposal facility in Michigan. Nevertheless, the firm submitted a claim of self-demonstration based on dubious accounting techniques and unaudited data that were ultimately inconsistent with audited financial reports. In effect, the firm claimed that its balance sheet, for the purposes of assurance, improved as a result of its bankruptcy filing.²⁸⁷ In that short period the firm went from compliance to noncompliance and left the site without an adequate assurance of its ability to provide closure, postclosure, and liability obligations. Any firm finding itself in this situation faces the challenge of finding alternative assurance at the very time—a bankruptcy filing—when providers will be most reluctant to offer it.²⁸⁸

Another problem with self-demonstration is that it involves no specific financial asset to which a regulator can lay claim in the event obligations are not performed.²⁸⁹ Although, as discussed above, trust funds, insurance policies, letters of credit, bonds, and cash deposits may not always be easily converted into compensation, these instruments are reasonably likely to yield liquid sources of compensation.²⁹⁰ This is particularly true if, as is ideal, the regulating

286 See "The People v. America Inc," *The Economist*, March 24, 2001, at 71.

287 See Correspondence, Waste Management Division, Michigan Department of Environmental Quality, to the Dow Corning Corporation, October 19, 1995 [on file with author] ("In making the demonstration, the company relied upon the bankruptcy filing as a basis to exclude certain liabilities, receivables, and special charges for the breast implant litigation. The MDEQ cannot accept the bankruptcy filing as a basis to exclude the amounts attributed to the breast implant litigation....The bankruptcy filing cannot be used as a basis to improve Dow Corning Corporation's ability to pass a financial test that it previously failed"). The data submitted to MDEQ was un-audited and in conflict with subsequent, audited data. According to MDEQ, "The August 2, 1995 letter from the independent accountant, Price Waterhouse LLP, noted many significant deviations from the un-audited financial statements."

288 See discussion in section 6.3 *supra*.

289 In the words of the Michigan Department of Natural Resources, commenting on the RCRA D financial test, "A financial test does not provide a state or the U.S. EPA access to funds to complete closure, post-closure, or corrective action should the financially responsible corporation refuse to take the needed actions....The only recourse to a state or the U.S. EPA would be a lengthy and costly lawsuit with the owner or operator." Comment Response Document for Financial Test and Corporate Guarantee for Private Owners or Operators of Municipal Solid Waste Landfill Facilities, October 12, 1994, Proposed Rule (59 FR 51523).

290 This distinction is acknowledged by EPA. Third-party mechanisms "provide easier access to funds to fulfill financial obligations. A State may, therefore, decide that it has facilities with poor compliance histories that do not make them a good candidate for the financial test in order to eliminate potential delays in obtaining closure, post-

agency is the sole beneficiary. Purchased coverage also tends to be viewed by courts as specifically dedicated to reclamation or liability obligations and thus is more likely to be recoverable for regulatory agencies.²⁹¹ The assets claimed by a self-demonstrating firm, on the other hand, are much more ephemeral. Such assets are not specifically dedicated to assurance in a legally binding way and must therefore be sought in competition with other creditors once obligations come due—if in fact they exist and have value at all.

7. Conclusion

Environmental obligations that are unfulfilled, whether due to abandonment or insolvency, are disturbingly common. Cost recovery, deterrence, and enforcement are improved directly by financial assurance requirements. Assurance is desirable in theory because it helps assign costs to the parties best able to plan for and reduce them—potential polluters themselves. Assurance is desirable in practice because it achieves its goals at relatively low cost and without significant commercial disruption, contrary to fearful rhetoric that typically accompanies the imposition of new assurance requirements. It is particularly desirable when viewed in relation to the alternatives: costs abandoned to the public or imposed after-the-fact on offending firms' commercial partners. Compared with these alternatives, assurance leads potential polluters to a transparent, in-advance appreciation of future environmental obligations. The value of assurance as a deterrent is enhanced further when firms must purchase assurance from third parties, since coverage rates and availability will be determined by the customer's environmental track record and expectations of future environmental performance. The breadth of operations and risks covered by current rules is an additional testament to assurance's practicality. Markets for assurance coverage provide a wide variety of financial instruments that can be tailored to the needs of individual firms, facilities, and regulatory needs.

If there is to be a criticism of assurance requirements, it may be that they do not go far enough. It is clear, for example, that many mining bonds have not been sufficient to ensure adequate reclamation. In other programs, more experience with cost recovery over longer periods is needed to judge whether the scope of assurance requirements is adequate. The security of

closure or corrective action. Similarly, States may decide to forego altogether adoption of the financial tests.” Federal Register 1998, *supra* note 18, at 17726.

²⁹¹ See Section 6.4.2 *supra*.

particular assurance instruments is also worthy of ongoing scrutiny. Self-demonstrated assurance, claims-made insurance policies, captive insurance arrangements, and trust funds with lengthy pay-in periods may hamper cost recovery, particularly if costs arise only after decades. Also, state assurance programs could benefit from centralized administration and record-keeping and the creation of databases to foster intrastate comparison of firms' financial statements, aggregate environmental obligations, assurance coverages, and reclamation performance. As it stands, most state programs operate independently of one another, both within and across state boundaries.

Finally, it should be noted that many of the most significant environmental obligations guaranteed by assurance mechanisms have yet to come due. Long-tailed hazards associated with landfills, for example, will not reveal themselves for decades. Accordingly, the legal and financial security provided by current assurance rules will be tested in earnest only in the years to come. Ongoing analysis should be trained on the various mechanisms' ability to internalize costs over the long run. In turn, regulators should be prepared to respond to any weaknesses that are revealed, by eliminating weak mechanisms, mandating greater coverage amounts, improving auditing, and building assurance mechanisms with sturdier contractual foundations.