

A Framework for Understanding the Relationship Between Environmental Liability and Managerial Decisions Affecting Pollution Prevention

September 1993



**A FRAMEWORK FOR
UNDERSTANDING THE RELATIONSHIP
BETWEEN ENVIRONMENTAL LIABILITY
AND
MANAGERIAL DECISIONS
AFFECTING POLLUTION PREVENTION**

Prepared by the
Environmental Law Institute
Submitted to the
U.S. Environmental Protection Agency

September 1993

ACKNOWLEDGEMENTS

This report was prepared by the Environmental Law Institute under Cooperative Agreement CR-817553-01 with funding from the U.S. Environmental Protection Agency. Environmental Law Institute staff contributing to the report were Ivie Higgins, John Pendergrass, Lawrence Pratt and Adam Schwartz. Julie Weisman also contributed to this report. EPA staff were Martin Spitzer and John Cross.

The information in this document has been funded wholly or in part by the United States Environmental Protection Agency under assistance agreement CR-817553-01 to the Environmental Law Institute. Mention of trade names or commercial products does not constitute endorsement or recommendation for use.

1.0 INTRODUCTION

Environmental liability, particularly strict, joint and several liability under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or Superfund), has been cited as an incentive for businesses to invest in pollution prevention. Ideally, the high cost of cleaning up sites contaminated by hazardous substances provides motivation for managers to avoid contributing new wastes to such sites. The similarly high costs of liability for toxic torts and the high personal cost of potential prison time for conviction for criminal violations of environmental law would also be expected to provide a strong incentive to avoid releases of toxic substances or violations of environmental laws.

The most certain method of avoiding future Superfund or toxic tort liability is to stop using toxic substances or creating hazardous wastes and therefor avoid entirely the inherently imperfect system for treating and disposing of hazardous substances. Thus, managers would be expected to favor source reduction as a means of avoiding prospective superfund, toxic tort or toxics-related criminal liability. This is how the regulations would be expected to work from a policy analysts point of view. Growing anecdotal evidence, however, suggests that these incentives for pollution prevention may not be working as well as expected. This evidence suggests that countervailing incentives related to liability and disclosure may be discouraging managers from making decisions to implement source reduction strategies.

Managers and policy analysts do not see these environmental policies in the same light. From a managerial point of view, environmental liabilities can work in two ways to impede pollution prevention: 1) the fear of potential liability can prevent business managers and their analysts from fully recognizing or considering the benefits of specific pollution prevention projects, or, 2) they can distort an analysis of the business's present pollution status by failing to fully consider the negative affects of potential liability from current practices. Thus, the policies that were designed to promote pollution prevention may actually be impeding it.

This report begins by briefly analyzing the current legal state of several specific types of environmental liability. After discussing the state of the law the report summarily analyzes how managers might react to information about potential liability given liability law. The second half of the report describes the management and accounting systems typically used to provide managers with information to be used in decision making. After describing various management and accounting systems, the report analyzes how information about how liability is used in the various management systems and identifies some problems with the way this information is used by management. The report concludes with recommendations for improvements in how lawyers and managers communicate and use information about environmental liabilities.

2.0 ENVIRONMENTAL LIABILITY LAW

This section examines three types of liability that corporations are subject to: (1) CERCLA liability, (2) toxic tort liability, and (3) criminal liability arising under the various federal environmental statutes. These three forms of liability were singled out for this report because they were designed to create strong incentives for pollution prevention, were expected to be the most likely to affect management decisions relating to pollution prevention, and are representative of other types of liability.

Following descriptions of the current status of each of the three forms of liability law, this report will analyze two possible polar effects that each type of liability may have: (1) the potential consequences resulting from each type of liability would encourage a corporate official to incorporate

source reduction concerns into the decision making process and (2)fear of these liabilities (or fear that knowledge obtained while pursuing source reduction may implicate these liabilities) would serve as a disincentive to pollution prevention.

2.1 Liability under CERCLA

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)¹ and its 1986 amendments (Superfund Amendments and Reauthorization Act or SARA) have been interpreted by the courts to have two main objectives. The first is to provide the government with "tools necessary for a prompt and effective response to the problems of national magnitude resulting from hazardous waste disposal." The second objective is, to provide that those responsible for the problems caused by the disposal of chemical poisons bear the costs and responsibility for remedying the harmful conditions they created.²

After more than a decade of litigation, it is now well established that CERCLA is a strict liability statute.³ The courts have specifically held that the strict liability standard of CERCLA does away with the traditional need to prove that a party's conduct was the direct cause of a release that is required in other types of cases.⁴ Therefor, a party can be held liable for Superfund cleanup regardless of their care, negligence, knowledge, or intent surrounding disposal at the site involved.⁵

It is also well settled that unless a potentially responsible party can prove that the harm at the site is divisible, the party is jointly and severally liable for response costs at a site.⁶ Joint and several

¹ 42 U.S.C. §§ 9601 *et seq*

² *Dedham Water Co. v. Cumberland Farms Dairy, Inc.*, 805 F.2d 1074, 1081 (1st Cir. 1986) citing *United States v. Reilly Tar*, 546 F. Supp. 1100, 1112 (D.Min. 1982); *Walls v. Waste Resource Corp.*, 823 F.2d 977, 980 (6th Cir. 1987). See also, *General Electric Co. v. Aamco Transmissions, Inc.*, 962 F.2d 281, 285 (2nd Cir. 1992).

Citing the legislative history of CERCLA to the effect that the statute ensures "that those responsible for any damage, environmental harm, or injury from chemical poisons bear the costs of their actions." S. Rep. No. 848, 96th Cong., 2d Sess. 13 (1980).

³ See *Nurad, Inc. v. Williams E. Hooper & Sons*, 966 F.2d 837, 841 (4th Cir. 1992) (Anyone who qualifies as a responsible person under section 107(a) of CERCLA is strictly liable for costs of response to a release).

⁴ *United States v. Kramer*, 757 F. Supp. 397, 419 (D.N.J. 1991).

⁵ *Mathis v. Velsicol Chemical Corp.*, 786 F. Supp. 971, 974 (N.D. Ga. 1991).

⁶ *United States v. R.W. Meyers, Inc.*, 889 F.2d 1497, 1506-1508, (6th Cir. 1989); *United States v. Northernaire Plating Co.*, 670 F. Supp. 742, 748-749 (W.D. Mich. 1987).

But see *United States v. Alcon Aluminum Corp.*, 964 F.2d 252, 271 (3rd Cir. 1992)(if party can establish that the hazardous substances it sent to the site could not, when added to other hazardous substances, have caused or contributed to the release or resultant response costs, it should not be held liable for any response costs).

liability means that parties can be liable together as a group or individually for the whole site. The burden of proving that the liability of a Superfund site can be divided between the parties involved is placed on the defendant. Past court decisions have shown that this can be very difficult.⁷

It is also difficult for a party to prove that they have no responsibility for the clean up of a site if they were ever involved in any way with it. For example, parties may be found liable under CERCLA even if the material that they sent to the site cannot be categorized as a "waste" or a "hazardous waste" under RCRA.⁸

2.1.1 CERCLA Liability and Pollution Prevention

Given the implications of strict, joint and several liability under CERCLA, it is reasonable to assume that large corporations have modified internal practices as a result of the statute. The question is, to what extent have practices been changed and in what ways? In an ideal world, corporations would recognize that the use of hazardous substances in operations may give rise to many types of liability. Once recognizing this fact,⁹ corporate managers would then take adequate steps to reduce the amount of hazardous substances released by either a particular plant or the entire company. Source reduction is the method with the least risk of failing to prevent the release of hazardous substances and should, logically, be a manager's preferred choice.

With respect to CERCLA however, there are other means that a company can take to reduce its liability. Many companies have set up special programs to track the disposal of hazardous wastes, retain pre-approved contractors for both hauling and disposal, and prepare contracts which provide for indemnification by disposal companies. Companies may also change disposal practices for nonhazardous wastes (under RCRA) that contain traces of hazardous substances.

Of course, a company that engages in these activities will only be able to prevent future liabilities. Since CERCLA permits the imposition of retroactive liability,¹⁰ it would be difficult for a corporation to take prophylactic action now to prevent liability based on conduct that occurred many years ago. Thus, the potential for retroactive liability grounded on this past conduct may not form

⁷ See *United States v. Monsanto Co.*, 858 F.2d 160, 172-173 (4th Cir. 1988), and *O'Neil v. Picillo*, 883 F.2d 176, 181 (1st Cir. 1989). *O'Neil v. Picillo*, 682 F.Supp 725 (DRI 1985). But see, *United States v. Iron Mines, Inc.*, 812 F. Supp. 1528, 1540 (E.D. Cal. 1992) reaff. 1993 U.S. Dist. Lexis 1665 (E.D. Cal. 1993) (some mining wastes are excluded under the ambit of CERCLA).

⁸ For example, in a case determining whether municipal waste is hazardous, the Second Circuit ruled that the definition of hazardous substance makes "no distinction dependent upon whether the substance's source was industrial, commercial, municipal or household" or whether the substance was even "an element of a waste stream." The court concluded that therefore municipal waste may be a hazardous substance under CERCLA. *B.F. Goodrich Co. v. Murtha*, 958 F.2d 1192, 1199-1200 (2nd Cir. 1992).

⁹ Assuming of course in the ideal world that the corporate decisionmaker will receive all necessary facts presented in such a way that the liability issues are apparent.

¹⁰ See *U.S. v. Kromer*, 757 F. Supp. 397, 429 (D.N.J. 1991); *United States v. NEPACCO*, 810 F.2d 726, 734 (8th Cir. 1986).

the basis for future decisions by corporate officials. This is not to say that the fear of retroactive liability for present or future acts will not indeed induce changes in current operations.

The existence of CERCLA liability probably will not preclude a company from reviewing its operations for pollution prevention purposes. With one major exception,¹¹ information generated during such a review should not pose significant CERCLA liability issues for a company. Since CERCLA is not a regulatory statute, "intent" or "knowledge" do not form the basis of liability. Therefore, knowledge of past conduct which could give rise to liability is not a relevant factor in a determination of whether a company is liable under the statute.

2.2 Toxic Tort Suits

Toxic tort litigation been a burgeoning area of case law over the past few years.¹² Beginning with the asbestos litigation, plaintiffs are now filing suit over problems ranging from discharges into groundwater to fear of cancer brought on by living near a landfill. Most toxic tort suits are based on actual or perceived exposure to a hazardous substance.

Perception is critical to assessing how firms react to potential tort liability arising from their use or handling of toxic substances. To the extent that managers believe their firms may be liable for toxic torts, the large claims that can be involved in toxic torts would be expected to provide managers with strong incentives to reduce their firms' use, handling and release of toxic substances. Perception about how high the potential damage award could be in a toxic tort suit is likely to be an important factor in managerial decisions because toxic torts are governed by state law, which may be difficult for managers to accurately assess.

2.2.1 Disclosure Issues

A typical firm that deals with toxic substances is likely to be concerned that disclosure of information about its practices could increase its potential liability, especially toxic tort liability. Disclosure of information about a firm's use of hazardous substances can affect a company facing a potential toxic tort suit in at least three ways.

First, disclosure of a past spill or release to the proper reporting authorities may alert potential plaintiffs (or plaintiffs' attorneys) to the possibility of a lawsuit. A number of public interest groups and plaintiffs' attorneys routinely check state and federal records in order to discover violators who may be subject to citizen suits. The same information may be used to find targets of a toxic tort lawsuit.

Second, disclosure issues may implicate a company with respect to violations of environmental statutes. Plaintiffs in toxic tort suits may use this information to argue that a company's conduct is "negligence per se." Meaning that it is an action or omission that can be declared negligence without proof of the circumstances, because it is in violation of a statute. Courts have applied the basic premise of negligence per se in cases involving the violation of environmental

¹¹ This exception is where a review reveals a company's "knowledge" that wastes were being improperly disposed. Apart from the obvious RCRA problems, this factor may be significant in determining the allocation of cleanup costs at a superfund site.

¹² See Kanner, *The Evolving Jurisprudence of Toxic Torts: The Prognosis for Corporations*, 12 Cardozo L. Rev. 1265 (1991).

statutes.¹³ However, the availability of negligence per se as a cause of action in toxic tort cases depends on the jurisprudence of each individual state. In jurisdictions which accept a negligence per se standard, a company determined to be in violation of an environmental statute may find it has limited defenses to a toxic tort suit.

This liability may discourage managers from disclosing information related to the use, disposal or release of hazardous substances. More significantly here, the desire to avoid disclosure may lead some managers to conclude that it would be better to avoid close investigation of the company's practices for using, handling and disposing of toxic and hazardous substances. This could result in a failure to recognize, understand, or quantify a variety of risks associated with toxic and hazardous substances and consequently to underestimate the value in terms of risk reduction of pollution prevention alternatives.

The third way disclosure of information about a firm's use of hazardous substances can affect a company facing a potential toxic tort suit is that disclosure of internal operations information may subject a company to punitive damages. Again, the standard of proof for punitive damages will vary from state to state. Thus, the availability of punitive damages will necessarily depend on the law of the state where the litigation is brought. A company's potential liability will also rest with its conduct surrounding the underlying problem. A company's prompt response to information identifying violations of law or other hazards may demonstrate that punitive damages are not appropriate. Contrarily, information which indicates a problem that has gone uncorrected may provide proof of the requisite standard to apply punitive damages.

2.2.2 Toxic Tort Liability and Pollution Prevention

With the specter of Bhopal fresh in the minds of managers, it is reasonable to expect that the prospect of toxic tort liability could induce corporations to consider pollution prevention options. The importance of this issue to a corporate decisionmaker probably depends on several factors. One such factor would be a company's past history with toxic tort suits. A company that has incurred significant liability due to toxic tort suits, and perhaps suffered damage to its reputation in addition, may have sufficient experience and motivation to quantify and understand the risk. Such a company may be more likely to incorporate a toxics reduction scheme into future planning. Conversely, a company that has not been subject to a number of successful suits may not factor such a risk into the decisionmaking process. This could be because the firm's attorneys and accountants do not quantify the risk of future tort liability or because the process fails to account for that risk.¹⁴

Another issue relates to the type of hazardous substances that are used by a particular facility. Companies that use ultra hazardous substances in their processes (like Union Carbide's methylisocyanate) may be more sensitive to toxic tort concerns than companies that deal with more common or less lethal substances. Companies using extremely hazardous substances may also find the costs associated with precautions necessary to continue using these substances to be steep. Such costs themselves may give rise to pollution prevention planning.

Finally, the manner in which a hazardous substance is used at a facility and the probability of

¹³ See *Bagley v. Controlled Environment Corp.*, 503 A.2d 823, 827-829 (N.H. 1986).

¹⁴ For a discussion of how the various management decisionmaking account for liability risks see section 5 *infra*.

humans being exposed to such substance, may affect a company's view of toxic tort suits. Companies which discharge significant quantities of hazardous substances into surface waters or the air (even if such emissions are legally permitted) should have more concerns than companies that use toxic tort substances solely within closed systems at a facility. The potential toxic tort liability arising from such emissions should be an incentive to pursue pollution prevention alternatives.

2.3 Criminal Liability Arising Under Federal Statutes

Under the major environmental statutes, both the corporation and individual employees are subject to criminal liability. Prosecutions for environmental crimes are on the increase, especially against corporate officers. According to the EPA, environmental criminal enforcement cases more than tripled from 1989 to 1993.¹⁵

In 1990, 55% of corporate individuals indicted for environmental crimes were given jail time.¹⁶ Moreover, the Federal statutes currently provide for hefty penalties. For example, criminal offenders under the Clean Water Act may be fined up to \$50,000 per day of violation.¹⁷ A person indicted under RCRA for "knowing endangerment" is subject to a penalty of up to \$250,000 and 15 years of imprisonment. Disclosure of criminal proceedings can take a higher toll. As discussed above, a company may be sued by private parties for toxic torts, and disclosure of potential criminal conduct can damage an otherwise unblemished reputation.

The trend towards increasing criminal environmental prosecution has been aided by congress. As statutes come up for reauthorization, Congress has been broadening the scope of activities which can give rise to criminal liability. This principle is reflected in the Clean Air Act amendments of 1990. Most violations which were previously classified as misdemeanors have been upgraded to felonies. Penalty amounts and times for imprisonment were also increased.¹⁸ In addition, the amended Clean Air Act now expands the scope of criminal liability to include negligent acts or omissions if such acts create an "imminent danger of death or substantial bodily injury."¹⁹

Given this climate, corporations and their officers may view as highly suspect any activity which presents even the slightest risk of criminal liability. Since most criminal provisions in environmental statutes require that a person "knowingly" violate the law, companies and their officers may perceive that information generated internally about potential environmental problems could provide evidence that officers had previous knowledge of the offense and possibly even that they did not take actions to guard against the offense, supporting a criminal liability case. This type of scenario is the heart of the current debate in the business and policy fields over privileging environmental audits.

¹⁵ U.S. Environmental Protection Agency. (as cited in: Laura M. Litvan. "The Growing Ranks of Enviro-Cops." Nation's Business, June 1994: 29-32.)

¹⁶ Richard B. Stewart, Criminal Environmental Enforcement (ALI-ABA April 11-12, 1991), at 3.

¹⁷ 33 U.S.C. §1319(c).

¹⁸ See 42 U.S.C. §113.

¹⁹ 42 U.S.C. §113(c)(4).

This section discusses in brief the types of criminal provisions in the major environmental statutes, the direction that the case law has taken under these statutes and finally, how information generated internally can affect the calculation of criminal sanctions under the sentencing guidelines. An analysis of how these issues might affect a company's decisions regarding source reduction follows.²⁰

2.3.1 Criminal statutory provisions

Environmental statutes contain two basic types of provisions which prohibit "knowing" conduct. The more common and established type of provision concerns a "knowing" violation of the particular statute and its regulations. Included in this ambit is the "knowing" failure to report when required. All of the major environmental statutes have such provisions.²¹ The definition of knowledge has been expanded in a number of courts to include simply knowledge of actions taken rather than knowledge of the prohibitive statutes.²²

A more recent trend makes it a crime to "knowingly endanger" life or human safety in violation of environmental laws. Congress first passed such a provision in RCRA in 1988,²³ and when the Clean Water Act and the Clean Air Act were reauthorized, similar provisions were enacted.²⁴

2.3.2 Court interpretations of "knowing" in criminal environmental provisions

A review of the case law developed over the past decade or so, as prosecutions for environmental crimes have increased, indicates that the law is less than clear as to what constitutes a "knowing" violation. This lack of clarity is partially due to several emerging doctrines as they relate to environmental crimes, including the responsible corporate officer ("RCO") doctrine, the collective knowledge doctrine and the doctrine of willful blindness. The most pervasive of these doctrines is the responsible corporate officer doctrine.

A seminal case involving the RCO doctrine is *United States v. Park*, 421 U.S. 658 (1978). This case did not involve an environmental statute but rather a prosecution by the Food and Drug Administration. Park was President of Acme Markets, Inc., a chain of supermarkets. He was warned that rats had infested a company warehouse in a state outside that where the company was headquartered. He was advised that a local corporate officer was handling the problem and then did nothing further. In upholding Park's conviction for five misdemeanors, the Supreme Court held that Park had, "by reason of his position in the corporation, responsibility and authority either to prevent

²⁰ See § 5.2.

²¹ See RCRA 42 U.S.C. §6928(d) and (e), Clean Water Act, 33 U.S.C. §1319(c), Clean Air Act, 42 U.S.C. §7413(c), TSCA, 15 U.S.C. §2615(b) and CERCLA, 42 U.S.C. §9603(b).

²² Darnell, Robert W. "Environmental Criminal Enforcement and Corporate Environmental Auditing: Time for a Compromise?" American Criminal Law Review Vol. 31, No. 1 Fall 1993: p123-143.

²³ 42 U.S.C. §6928(e) (1988)

²⁴ See 33 U.S.C. §1319(c)(3) and 42 U.S.C. §7413(c).

in the first instance, or promptly to correct the violation complained of, and that he failed to do so."
Id. at 1912. The RCO doctrine espoused in the *Park* case has also been extended to cases involving environmental crimes.²⁵ However, the results reached in these cases are not necessarily consistent.²⁶

In a 1993 speech during a session of the American Bar Association convention, Charles A. DeMonaco, assistant chief of the Environmental Crimes Section of the Justice Department stated that the Justice Department supported the idea that simply being a corporate officer is not enough to justify a criminal conviction, specifically, Mr. DeMonaco reported that the Justice Department agreed that a responsible corporate officer must have actual knowledge of the wrongdoing.²⁷ Mr. DeMonaco warned, however, that this still is an "unsettled area of the law."²⁸ The veracity of this statement is illustrated by an examination of other recent cases construing the RCO doctrine and the definition of the term "knowing." [CURRENT STATUS?]

In *United States v. Hayes International Corp.*,²⁹ the Eleventh Circuit held that a RCRA prosecution required proof of knowledge regarding lack of a permit. The Ninth Circuit, in *United States v. Hofflin*,³⁰ disagreed holding that "knowledge of the absence of a permit is not an element of the offense." In *United States v. Baytank, Inc.*,³¹ the Fifth Circuit disagreed with *Hofflin* by requiring proof that the defendant had knowledge of no permit but also ruled that the term "knowingly" means no more than the defendant knows factually what he is doing -- what is being stored and that what is being stored has the potential for harm to others or the environment. The *Baytank* Court did not require that the defendant know of the regulation which states that what is being stored is hazardous. *Id.* Finally, in *United States v. White*,³² the court specifically ruled that a corporate officer can only be held criminally liable if that officer actually and knowingly participated in the crime.

²⁵ In fact, both the Clean Water Act and the Clean Air Act have provisions which include within the definition of person a responsible corporate officer. See 33 U.S.C. §1319(c)(6) in the definition of person and 42 U.S.C. §7413(c)(3).

²⁶ *United States v. MacDonald & Watson Waste Oil Company*, the First Circuit stated that the government could not impute "knowledge" of the offense simply by establishing that the defendant was a responsible corporate officer. *Id.* at 55. The Tenth Circuit, on the other hand, in *United States v. Brittain*, the court determined that in order for a corporate officer to be held criminally liable, the willfulness or negligence part of the act could be imputed by virtue of his/her position of responsibility. *Id.* at 1419.

²⁷ BNA Report 153, August 11, 1993.

²⁸ *Id.*

²⁹ 786 F.2d 1499 (11th Cir. 1986). (The *Hayes* court simultaneously held that knowledge of the need for a permit was not an element of the offense).

³⁰ 880 F.2d 1033 (9th Cir. 1989), *cert. denied*, 110 S.Ct. 1143 (1990).

³¹ 934 F.2d 599 (5th Cir. 1991).

³² 766 F. Supp. 873, 895 (E.D. Wash. 1991).

2.3.3 Calculation of criminal fines

There are two documents that give the courts guidance on sentencing for environmental crimes. The purpose of these Sentencing Guidelines is to establish a mandatory system of determining sentences whereby varying classes of criminal violators are treated similarly. On November 1, 1987, Sentencing Guidelines for individuals, including individuals convicted of environmental offenses, went into effect. Under these guidelines a particular sentence depends on the specific violation. However, circumstances surrounding the violation can increase or decrease the sentence.³³ On March 5, 1993, the Advisory Work Group on Environmental Sanctions produced draft sentencing guidelines (hereinafter Draft Guidelines) for organizations convicted of environmental crimes under federal statutes. These guidelines have never been formally adopted,³⁴ but the formula for calculating penalties presented in the draft guidelines is currently in use in the courts.

The Draft Guidelines propose four mitigating factors which can be used to reduce the base fine for a violation, however.³⁵ These are: (1) commitment to environmental compliance, (2) cooperation and self-reporting, (3) absence of scienter, and (4) remedial assistance. The Draft Guidelines specify how a company must provide the existence of these mitigating factors.

For example, in order to demonstrate a "commitment to environmental compliance," a company must demonstrate that its program satisfies the following seven requirements: (1) line management attention to compliance, (2) integration of environmental policies, standards and procedures, (3) auditing, monitoring, reporting and tracking systems, (4) regulatory expertise, training and evaluation, (5) incentives for compliance, (6) disciplinary procedures, and (7) continuing evaluation and improvement. The burden is on the company to demonstrate that it has made the substantial commitment to qualify for mitigation.

If "an individual within high-level personnel of the organization participated in, condoned, or was willfully ignorant of the offense," a rebuttable presumption arises that the corporation did not make a commitment substantial enough to serve as a mitigating factor. Given all of these requirements, and the absence of precedent corporate managers may be unsure whether a good faith effort to establish a compliance program will achieve a reduction in the fine.

The Draft Guidelines also list 10 factors which would create an upward enhancement of criminal penalties. These are: (1) management involvement, (2) threat to the environment, (3) threat to human life or safety; (4) scienter or knowing violations of the law, (5) prior criminal

³³ For example, in *U.S. v. Goldfaden*, 959 F.2d 1324, 1331 (5th Cir. 1992), the Fifth Circuit upheld a maximum statutory sentence of jail time based on the fact that the defendants had not only discharged without a permit, but had also obstructed justice.

³⁴ Apparently these guidelines are in the process of being rewritten. "Environmental Law Sentencing Guidelines Being Rewritten," Daily Environment Report, September 10, 1993. Nonetheless, this report discusses these draft guidelines as they are currently on the table.

³⁵ The Draft Guidelines however do limit the amount that a fine can be reduced as a result of mitigating factors. The fine can be reduced to a level below the greater of (1) 50% of the Base Fine calculated in Step 1 or (b) the economic gain from the offense if calculated into the Base Fine.

compliance history, (6) prior civil compliance history, (7) concealment of a violation, (8) violation of an order, (9) absence of a compliance program or other organized effort, and (10) absence of a permit.

Two of these factors in particular, management involvement and previous knowledge of the violation (*scienter*), may affect a manager's willingness to probe into a plant's day-to-day operations and processes. With respect to management involvement, the Draft Guidelines propose that if "one or more members of the substantial authority personnel of the organization participated in, condoned, solicited or concealed the criminal conduct, or recklessly tolerated conditions or circumstances that created or perpetuated a significant risk that criminal behavior of the same general type or kind would occur or continue," the base fine will be increased. Thus, any reports circulated to top management may serve as direct proof that management knew of particular pollution problems and/or violations.

2.3.4 Criminal Liability and Pollution Prevention

With respect to liability for violations of law, regulations and standards, this analysis focuses on incentives created by criminal liability as opposed to civil penalty liability. The incentives created by civil penalties are the same as those due to criminal liability and the degree of effect from criminal liability is assumed to be higher than civil. In fact, there is anecdotal evidence to suggest that in some instances, corporations knowingly choose to ignore the consequences of civil liability when it is economically beneficial to do so. For example, companies may determine that it is better to pay civil penalties than to invest the capital necessary to remedy a particular problem. The amendments to the Clean Air Act reflect recognition of this problem. Section 120 of the Clean Air Act authorized calculation of penalties for noncompliance taking into account the economic benefit to the company for noncompliance.³⁶

Although it is clear that the consequences flowing from environmental criminal liabilities are serious, it is not certain that the risk associated with such liabilities will induce corporations to consider toxics reduction programs. Again, a logical course of action for a company would be to reduce its use of toxic substances, thereby, minimizing a risk of incurring criminal liability. However, as with CERCLA liability, there are other avenues a company can pursue in order to reduce the risk of criminal prosecution. Corporations can institute training programs, establish environmental compliance requirements and modernize internal reporting procedures to identify issues which might become problems. Some managers may believe that changing behavior is an effective way of avoiding criminal liability. To the extent that companies have already put such programs in place, any incentives to consider source reduction to minimize criminal liability may be reduced.

Merely knowing a facility's chemical usage and ways to reduce it will not give rise to liability. On the other hand, any internal investigation which identifies environmental violations may pose significant consequences to a company with respect to criminal liability. Internal reports which identify potential problems may serve as evidence of "continuing" and "knowing" violations, especially if such problems go uncorrected. Information concerning potential violations also may force companies to make hard choices. For example, one mitigating factor under the sentencing guidelines requires a company to report the violation. In deciding whether to report, a company

³⁶ 42 U.S.C. §7420(d).

may weigh the benefits of the mitigating factor against the possibility that if the company does not report, the company may never get caught.

A corporate official's perception of how internal investigations implicate criminal environmental issues may well depend on the company's particular circumstance and the status of the case law (and the official's correct understanding of it) in the jurisdiction where the company is located. For example, if a company is located in a jurisdiction where a corporate officer can be found liable for an environmental crime regardless of "knowledge" on the officer's part, then that officer might want to uncover potential problems (and fix them) before the enforcing agency does. If "knowledge" is still a clear requirement in a particular area, a corporate manager may not be so anxious to find potential violations. In order for this issue to become a factor in any conscious decisions concerning internal investigations, the corporate officer (who is likely not an environmental specialist) must have an accurate understanding of the law. It is not clear whether corporate decisionmakers have that understanding. Another issue that may affect a corporate officer's perception of internal investigations would be whether the state the company is located in has a law privileging internal environmental investigations or audits.

Another example of a hard choice which companies may face regards a corporation's ability or inclination to correct violations. Any time a violation is uncovered and then goes uncorrected, a company faces problems, for it then becomes a "knowing" violation. It is for this reason that the commentators often advise that companies never commit to an audit program without first committing to accept responsibility for problems that are identified.³⁷ The cost of correcting violations may require a large commitment of funds. Companies do not want to be in the position of uncovering a problem and then not have the proper capital available to correct the problem. Once a company has knowledge of a violation, it faces criminal liability regardless of its ability to correct.

3.0 DISCLOSURE REQUIREMENTS OF ENVIRONMENTAL LIABILITIES TO THE SEC

The Securities and Exchange Act of 1934³⁸ mandates periodic reporting requirements for publicly held companies. Pursuant to this Act, the SEC established three major requirements for reporting environmental liabilities.³⁹ Obviously, information uncovered by an internal investigation which triggers any of these requirements must be disclosed. Disclosure of this information is required in a company's annual 10-K report and in certain instances, quarterly 10-Qs. Material contained in these reports is readily available to the public at large.

3.1 Item 101 Requirements – Disclosure of Material Effects

This section requires "appropriate disclosure" of "any material effects that compliance with Federal, State and local" environmental laws may have on the "capital expenditures, earnings and competitive position" of the registrant and its subsidiaries.⁴⁰ The SEC has defined "material" as those

³⁷ See Hogan and Bromberg, "*The Hidden Hazards of the Environmental Audit*" 36 The Practical Lawyer 3, 1990; Reed, "*Environmental Audits and Confidentiality: Can What You Know Hurt You As Much As What You Don't Know?*", 13 ELR 10303 (1983).

³⁸ (15 U.S.C. § 78(a) *et seq.*).

³⁹ 17 C.F.R. § 229.101.

⁴⁰ 17 C.F.R. 230.405; 240.12(b)-(2).

matters to which there is a substantial likelihood that a reasonable investor would attach importance in determining whether to buy or sell the securities registered.⁴¹ In 1988, the Supreme Court clarified the definition of materiality when it ruled that "[a]n omitted fact is material if there is a substantial likelihood that a reasonable shareholder would consider it important in deciding how to vote."⁴²

Any information that suggests noncompliance with an environmental law may pose problems for a company. For example, a company may receive information which indicates that the corporation is in violation of a law, but the company may not be required to report such violation pursuant to any statute or regulation. If correction of the violation will have a material effect on the financial condition of the company, disclosure under 101 may be mandated.⁴³

In addition, the SEC has ruled that if a corporation has an environmental compliance policy which is "reasonably likely to result in substantial fines, penalties or other significant effects on the corporation" it may be necessary for the corporation to disclose these potential effects to prevent the financial statement from being misleading.⁴⁴

3.2 Item 103 – Disclosure of Pending Proceedings

This provision requires disclosure of a pending environmental administrative or judicial proceeding (or one contemplated by the government) under three circumstances:

- a.a proceeding is "material to the business or financial condition" of the company, or
- b.a proceeding is "primarily a claim for damages, or involves potential monetary sanctions, capital expenditures, deferred charges or charges to income and the amount involved, exclusive of interest and costs, exceeds 10 percent of the current assets of the registrant and its subsidiaries on a consolidated basis," or
- c.a government authority is a party to the proceeding, and such proceeding involves "potential monetary sanctions, unless the registrant reasonably believes that such proceeding will result in no monetary sanctions, or in monetary sanctions, exclusive of interest and costs, of less than \$100,000"⁴⁵

With respect to notice letters issued by EPA pursuant to CERCLA, the SEC has stated that designation as a PRP does not in and of itself provide knowledge that the government is contemplating a proceeding thus triggering disclosure under this section. However, the SEC has

⁴¹ 17 C.F.R. 230.405; 240.12(b)-(2).

⁴² *Basic, Inc. v. Levinson*, 108 S.Ct. 978 (1988).

⁴³ (see *Levine v. N.L. Industries*, 926 F.2d 199, 203 (2nd Cir. 1991) – disclosure of potential costs for violations of environmental laws, if those costs are material, is required).

⁴⁴ 44 Fed. Reg. 56,924, 56,926 (October 3, 1979).

⁴⁵ 17 C.F.R. § 229.103(5).

cautioned that "a registrant's particular circumstances, when coupled with PRP status, may provide that knowledge."⁴⁶

3.3 Item 303(c) – Management Discussion and Analysis

This provision requires disclosure of "material events and uncertainties" known to management that would cause reported financial information not to be necessarily indicative of the company's future financial position.⁴⁷ SEC releases on MD&A disclosures indicate that the SEC has not been satisfied with past MD&A disclosures.⁴⁸ The releases thus provide specific guidance to companies with respect to the type of disclosure registrants must make. One major requirement put forth by the SEC is that companies must disclose if they are unable to make an objective determination that a known environmental problem will have a material effect on the registrants' future financial condition.⁴⁹

A key question surrounding item 303 involves the type of investigation a company must conduct in order to make the required MD&A determinations. In a proceeding against Occidental Petroleum it was determined that the company had not made an adequate investigation in order to meet its environmental disclosure requirements.⁵⁰ However, the SEC has not articulated a specific standard for internal investigations, they have only indicated that such investigations should not cause "undue effort or expense."⁵¹

Finally, the SEC has noted on several occasions that "compliance with the commission's specific environmental disclosure rules does not necessarily constitute full compliance with the disclosure requirements of the federal securities laws."⁵² In the U.S. Steel Release, the SEC clarified that the "general disclosure rules require disclosure of any additional material information beyond that for which disclosure is specifically required, necessary to make the required statements not misleading."⁵³

⁴⁶ 54 Fed. Reg. 22427, 22430 (May 24, 1989).

⁴⁷ 17 C.F.R. § 229.303(c).

⁴⁸ Richard Roberts, Commissioner of the Securities and Exchange Commission recently warned attorneys and the American Bar Association's annual meeting that the SEC would be closely monitoring disclosure of environmental liabilities in the future. *SEC Commissioner Warns ABA Attorneys to Disclose Environmental Liabilities*, 154 BNA, August 12, 1993.

⁴⁹ 54 Fed. Reg. 22427, 22430 (May 24, 1989).

⁵⁰ *In re Occidental Petroleum Corp.*, No. 3-5936 (July 2, 1980).

⁵¹ 17 C.F.R. § 229.303(a) (Instruction 2 of Item 303(a)).

⁵² Release Nos. 33-6150, 34-16224 (Sept. 7, 1979).

⁵³ 44 Fed. Reg. 56,924, 56,925, n. 11 (October 3, 1979).

3.4 Disclosure Laws and Pollution Prevention

Regardless of actual circumstances it is doubtful that any company (in today's political climate) would want to admit that it is an overt environmental polluter. The lack of standardization and room for interpretation about what may be deemed material limits the incentive to disclose environmental liabilities as. Moreover, the SEC has been infrequent in challenging the environmental disclosures on corporations financial statements, limiting what could be a powerful incentive for corporations to disclose environmental liabilities in their financial disclosure statements.⁵⁴

4.0 THE ROLE OF FINANCIAL MANAGEMENT TOOLS IN INTERPRETING LIABILITY INFORMATION FOR DECISION-MAKING

4.1 Introduction

An analysis of how potential liability concerns affect management decisions would not be complete stopping at the legalities of potential liability. As discussed above, the role of the legal aspects of liability in driving pollution prevention decisions is unclear. Finance and accounting tools play an important part in portraying liabilities to a firm's various stakeholders, including managers, shareholders and the government. The purpose of this section is to examine how financial management tools interpret and present liability information, and what roles the tools themselves might play -- either alone, or in concert with the special nature of environmental liability -- in influencing pollution prevention decisions.

4.2 Financial Management Tools

If future liability concerns are to have an effect on decisions made today, there must be some vehicle for information to make it to the decision process. In certain cases, environmental liability concerns may be so acute that managers do not need detailed analysis; however, in many if not most instances, potential liability concerns will be treated like other costs and folded into decisions based on data supplied by various management tools.

The tools most relevant to this analysis and to management decisions on liability and pollution prevention are capital budgeting, financial accounting, and managerial accounting. While there may be additional tools which managers use, these are the most broadly used channels that bring potential liability information to bear on, and pollution prevention decisions. Below is a brief description of the various tools.

Capital budgeting is a cost/benefit analysis of the previous performance of a project. This is a standard tool used in some form by virtually every commercial firm in the U.S. The general purpose of the capital budget is to assess whether a particular investment makes economic sense for a firm. Within firms it has the specific purpose of comparing projects against established benchmarks and against each other. Firms use various measures -- such as return on investment, net present value, internal rate of return, and pay back period -- to decide which projects should receive funding. In most firms there is a set rate of return called a "hurdle rate" which projects must meet before funding is granted.

⁵⁴ Lewis, Robert J. "Shh! Maybe in My Backyard!" An Equity and Efficiency-Based Critique of SEC Environmental Disclosure Rules and Extraterritorial Environmental Matters." Minnesota Law Review. April 1994: 1060.

Financial Accounting is the system of reporting financial information to all the firm's stakeholders, including shareholders, potential investors, directors, creditors, the Internal Revenue Service and the general public. The goal of financial accounting is to provide fair and accurate information about the financial position of an organization. This branch of accounting is governed by strict guiding principles of public and quasi-public organizations such as the Financial Accounting Standards Board (FASB), the Securities and Exchange Commission (SEC) and the Internal Revenue Service. Certified Public Accountants (CPA's), nationally accredited experts in financial accountancy, follow a set of rules collectively known as Generally Accepted Accounting Principles (GAAP). GAAP can best be described as the accounting world's analogue to the legal concept of common law. New projects are generally evaluated for their effect on the company's financial statements (balance sheet, income statement, statement of cash flow and Securities and Exchange Commission disclosure forms), and tax position.

Managerial accounting is a management tool concerned with efficient and accurate allocation of production resources. Its role in commercial firms is to make sure management knows and correctly allocates the costs of each product and process. The costs of various aspects of production such as materials, labor and overhead traditionally have been grouped into pools and allocated to various products or processes. The information provided by managerial accounting is used to make decisions about: which products to make or sell, how to price products, allocation of resources, and the relative performance of departments and their managers. The principles of managerial accounting are quite old, but recent innovations in information technology have allowed firms to become more sophisticated in allocating costs. There is no formal standard setting body, and practices tend to vary widely across industries and firms. The Institute of Management Accountants develops guidance for the industry, however at this time their guidance carries none of the quasi-regulatory weight of its financial accounting counterpart, the Financial Accounting Standards Board.

4.3 Limitations and Biases

Nearly all manufacturing firms use some form of each of the above tools, though they may be known by slightly different names or incorporate slightly different functions. The tools are designed to be objective, but they have limitations. They are all really financial models and suffer the limitation of all models in that they capture only what they are designed to capture, and are subject to unforeseen biases. The most significant limitation of these managerial tools is that they will not tell you anything that you do not ask them for.

4.3.1 Capital Budgeting

Capital budgeting's limitation as a model is straightforward. Capital budgets will only include costs and benefits that are provided as inputs. Most companies have standardized capital budgeting procedures. The model is limited by the knowledge and abilities of the staff designing the capital budgeting system for the company, or by the ability of a manager to convince senior management that an existing company model is inappropriate.

Thus, if a company's capital budgeting system does not include allowances for environmental liability contingencies, this cost will not be explicitly factored into the analysis. There are numerous efforts currently [WHAT IS THE CURRENT STATUS?] underway to improve capital budgeting

techniques for pollution prevention projects.⁵⁵ The goal of these efforts is to develop more systematic approaches to including indirect, which are difficult to establish, as well as direct costs so that pollution prevention projects will be evaluated on a level playing field with other capital projects.⁵⁶

In its Pollution Prevention Benefits Manual,⁵⁷ EPA specifically recommends categorizing costs by tiers, building out from the direct costs, and moving through tiers of more and more indirect cost items. The tiered system is explicitly set up to allow managers making a case for a pollution prevention project to continue identifying costs in tiers until a threshold is met. This and other improvements in capital budgeting for environmental projects will go a long way in improving the accuracy of these models.

Unlike its limitations, the biases of capital budgeting are not as clear. There appear to be timing biases in the model which arise from accounting for the time value of money⁵⁸. For long-term liabilities, the effect of time value of money makes future liabilities look very small. This technique is appropriate as long as the future costs are estimated accurately, and the appropriate rate is used. In instances where the benefits of pollution prevention efforts are diversified across various products and processes, an argument can be made that it is of inherently lower risk, and therefore the discount rate should be lower.

The timing biases in capital budgeting may be aggravated by the variety of measures used to evaluate projects. The most commonly used measures are internal rate of return (IRR), net present value (NPV), pay back period, and return on investment. Assuming costs and benefits are accurately portrayed, these different valuation measures can yield different results. So, depending on the measure used, projects may look radically different to a decision maker. This is a problem for pollution prevention efforts in that some measures may undercount distant future costs, including those of environmental liability. In this way, capital budgeting may end up counteracting the pollution prevention incentives provided by environmental liability law.

4.3.2 Financial Accounting

Interestingly, the limitations of financial accounting as a model are primarily intentional biases, and are derived from its traditional role as an "objective" report for shareholders and

⁵⁵ See for example USEPA, *Total Cost Assessment: Accelerating Industrial Pollution Prevention through Innovative Project Financial Analysis*, May 1992; and Marlene R. Wittman, Costing and Financial Analysis of a Pollution Prevention Project, *Environmental Finance*, Winter 1991/92.

⁵⁶ See U.S. EPA, *Total Cost Assessment: Accelerating Industrial Pollution Prevention through Innovative Project Financial Analysis*, May 1992.

⁵⁷ U.S. EPA 1989

⁵⁸ One dollar today is worth more than one dollar a month from now. The difference is due to lost opportunities for using that dollar to make money during the month. A firm typically values money at a rate equal to the usual return on a dollar for the time period (or at the firm's cost of borrowing money). For example, if a firm typically makes 10% per year on invested capital, it would value money at 10% per year because the cost of waiting one year for one dollar is the \$.10 it could have made if it had the money today.

government.. "Conservativeness" is the guiding principal of financial accounting. For example, only liabilities that are known, probable (with reasonable certainty), and estimable will be included in financial statements.⁵⁹ The countervailing force is an obligation to disclose any situations which could have a "material effect"⁶⁰ on the company.

Financial accounting is also limited, because accountants render opinions on data provided to them by others, such as managers, plant engineers, financial analysts, and lawyers, so a good accountant's analysis will only be as good as the data provided her and will reflect the cautionary bias of the profession. Therefor, even if the accountants are given complete liability information, the rules and practices of their profession may dictate that the information not appear on financial statements. On the other hand, if information on environmental liabilities is withheld from the accountants, there will be no possibilities for stakeholders to see a record of future environmental concerns.

The Securities and Exchange Commission is becoming increasingly concerned about this, and reportedly is considering action in this area.⁶¹ [WHAT IS THE CURRENT STATUS OF THIS?] If the SEC requires more complete disclosure of potential future environmental liabilities, this may drive firms to better estimate and account for these liabilities in their financial statements. This in turn might allow for more explicit recognition of liability costs in product and process decisions.

4.3.3 Managerial Accounting

Managerial accounting suffers as a model in the same way that capital budgeting does – it is difficult to estimate costs and cost savings accurately when so much is conditional and speculative. In addition, much of the data used as inputs in managerial accounting derive from capital budgets and the financial accounting system and are therefore subject to the limitations of those tools. The strength of managerial accounting is that avoiding bias in analysis is one of its key goals. Its primary weakness is that traditional methods of accounting for costs may not optimize environmental decisions.

The primary limitation of managerial accounting appears to be rooted in its traditional use. Most cost accounting systems are fairly old. With the increased availability of cheap computing power, managerial accounting systems are becoming more detailed and effective. However certain standard practices still prevail. The extensive use of indirect cost pools is particularly relevant for this discussion. Firms usually pool indirect costs such as insurance, custodial services, and environmental compliance (including disposal and liability) and assign them to products and processes.

Common managerial accounting practice tends to treat environmental costs in general as an indirect cost, and lump all such costs in a common pool to be shared on some sort of allocated basis.

The most common bases for allocation are value added, labor input or raw materials. For example, if a product uses 5% of a facility's total labor as production inputs, it will be assigned 5% of the indirect

⁵⁹ Financial Accounting Standards Board #5.

⁶⁰ *Ibid.*

⁶¹ Dean S. Petralla, "*SEC on a Mission to Clean Up Environmental Reporting*," Environmental Business Journal, August 1993.

production costs. The general rule used is to tie indirect costs to the factor of production that most fairly allocates them.

Since hazardous waste is usually generated on a process basis, the effect of this pooling can be an unfair sharing of risk, and inefficient allocation of production resources. A company, in theory, would want to prevent this since if one particular product generates more than its fair share of liability risk, the product is probably underpriced relative to other products.

The practical effect of this cost pooling can be a "tragedy of the commons."⁶² There is little or no incentive for managers to optimize their use of these pool resources since there is no penalty for overusing them, and no specific incentive for conserving them. With the advent of more sophisticated computer based techniques, firms now have the ability to efficiently allocate indirect costs more accurately to their source.

Recently there has been increased emphasis on developing more sophisticated costing systems. To remain competitive in tight markets, firms are striving to better understand which products and processes are the ones adding value. From a pollution prevention perspective Activity-Based Costing (ABC) seems to offer opportunities for improving the allocation of environmental costs.⁶³ These systems seem more capable of including the necessary framework for assigning environmental costs directly to their sources. While ABC offers a good deal of flexibility, the system is somewhat rooted in the operating paradigm of pooling indirect costs. ABC allocates costs to "unit activities," "batch-level activities," "product sustaining activities" and "facility sustaining activities." Accurately allocating environmental costs to production units may require a different approach which would isolate indirect costs and better assign them to processes.

4.4 Likely Effects of Limitations on Liability Concerns

The most significant effects of financial and accounting tools derive not from the tools themselves, but are a product of the environment in which they are used. Corporate managers directly control the inputs into decision processes. They are therefore in a position to influence analytical outcomes.

These incentives can be related to the incentives discussed in previous sections. Managers wishing to "keep their head in the sand" can validate this approach by influencing interpretations of future costs. Similarly, managers might underestimate liability costs to increase their compensation or apparent value of their firm.

Below is a discussion of likely hypothetical uses of these tools that may lead to less acknowledgement of potential liability and consequently less pollution prevention activity. Two key assumptions underlie these hypothetical cases. First, that increased potential liability costs increase the likelihood of substituting cleaner technologies for existing technologies. Second, that any action that underestimates the cost of liability decreases the likelihood of undertaking pollution prevention activities.

Managers may want to downplay future liability in their analytical processes. Managers usually are rewarded for programs they introduce and implement. This may provide an incentive to

⁶² Garret Hardin, "*Tragedy of the Commons*," *Science Magazine* 62:1243-1248 (1968).

⁶³ See Robin Cooper and Robert S. Kaplan, "Profit Priorities from Activity-Based Costing," *Harvard Business Review* May-June 1991.

minimize the apparent risk of a project. Ignoring liability would make sense in this case since it is long-term (usually beyond the typical manager's tenure at one company), fairly intangible (easy to credibly state that there was no reasonable way to estimate the costs), and because liability and other costs are likely to be pooled (individual manager may not get charged for these costs unless the management accounting system allocates them to his product or process).

4.4.1 Capital Budgeting

Capital budgeting is likely to underestimate the costs of future environmental liability. There is no reliable way to accurately value the benefits of eliminating future liability risk. Since these numbers are speculative and many of the costs are indirect, they do not lend themselves well to quantitative modeling. Since the inherent bias of capital budgeting is to omit what is not seen, there is reason to suspect that both the costs of liability and the benefits of reducing liability may be undercounted.

The way capital budgeting data is analyzed may underestimate future liability costs. In practice, many firms require capital budgets to show short pay back periods before funding is given. The emphasis on short payback periods is analytically flawed, but according to many sources, still widely used.⁶⁴ A pay back period approach to assessing a project's financial viability would essentially treat future environmental costs as a sunk cost after a certain short-term threshold is met. The same probably holds true for any analytical measure (including IRR and NPV), but is much more explicit in a payback period decision.

Pushing liability farther out into the future can also have a dramatic effect on current decisions. Suppose a typical firm estimates that it has a 10% chance of losing a \$10 million settlement ten years in the future (nominal dollars) or \$13.5 million 20 years in the future (implied 3% inflation). Assuming the firm's cost of capital is 10% and inflation is 3%, the liability would have an expected net present value of \$385,000 if it is assumed to occur ten years out, and only \$200,000 if it is assumed to occur twenty years out.⁶⁵

The final limitation of note is that certain pollution prevention projects may be held to too high a financial return threshold for their relative risk. If viewed as part of a project, it is logical to view costs like future liabilities as related to the project as a whole. However, even if a project fails there may be benefits that accrue to the company from not generating the waste. Learning value and reduced liability for parent companies are among the most significant. The case is even stronger if the pollution prevention activity cuts across different products and processes. In this case, the risk of the activity is diversified, and it would therefore be inappropriate to assign project-specific risk to it.

This issue is especially important for future liability since valuation of long term costs are very sensitive to discount rates. Using inappropriately high rates for discounting future liability would underestimate the present value of those costs. The result is that pollution prevention activities look less financially attractive.

⁶⁴ See, e.g., Ross, Westerfield and Jaffee; Corporate Finance, 1992.

⁶⁵ $(.10 * [\$10 \text{ million}]) / (1.10)^{10} = \$385,000$
 $(.10 * [\$13.4 \text{ million}]) / (1.10)^{20} = \$200,000$

4.4.2 Financial Accounting

Financial accounting analysis does not work well in the gray areas of uncertainty and contingent probability. Accountancy is based on accepted rules and procedures, and on categorizing financial consequences into well-defined groups.

The primary accounting rule governing contingencies is in the *Statement of Financial Accounting Standards No. 5*.⁶⁶ It is this rule that governs accountants' decisions on inclusion of environmental liabilities. The interpretation made by accountants to date appears to be to wait until very late in the legal process before acknowledging liabilities. A recent Price Waterhouse study of firms disclosure activities confirms the speculation that firms are pushing FAS #5 to the limit to keep environmental liabilities off the books.⁶⁷ Managerial incentives such as stock options and other financial performance-based incentives may play a role in this extreme interpretation of FAS #5. Decreased (or underestimated) liabilities on a firm's balance sheet can keep stock prices artificially high, and can improve other performance measures such as return on equity.

Since the rules accountants follow are well known, it is very easy for managers, lawyers, or engineers to manipulate the data inputs to guarantee a specific outcome. Understating the probability of a liability, or even affirmatively asserting that the timing and seriousness are not now known could be sufficient to make a financial accounting determination weigh toward omitting it from a company's financial statements.

The important implication of this disclosure issue is that if accountants and financial managers are not accounting for future liabilities in their financial statements, these same liabilities may not be making it to the capital budgeting or cost accounting processes. In firms where financial accounting interpretations are used as inputs for the other tools, this would cause pollution projects to be undervalued, and implemented less often.

4.4.3 Managerial Accounting

Managerial accounting also may limit the acknowledgement of liabilities that might result in more pollution prevention investment. A manager in charge of a product or process ideally wants as much revenue and as little cost assigned to his or her unit. While most direct costs, such as labor and material, are directly assigned to the unit who uses them, the indirect costs for the entire firm are usually pooled together. In many firms, environmental departments are assigned the costs of compliance, leaving little or no incentive for units generating the waste to reduce it. The environmental offices costs would most likely be placed in an indirect cost pool shared among many units.

Modifying the status quo to more accurately assign costs of environmental compliance (including potential liability) would require a substantial change. Managers who are currently not charged for their environmental costs would suddenly be required to incorporate them. This is likely to cause resistance, and in many cases might require a modification of already complex incentive systems for the managers.

⁶⁶ Financial Accounting Standards Board, *Statement of Financial Accounting Standards No. 5, "Accounting for Contingencies,"* 1975.

⁶⁷ Price Waterhouse, 1992.

5.0 Conclusions

Analysis of liability laws and the practice of managerial accounting indicates that considerable barriers must be overcome before considerations of future liability are likely to drive pollution prevention activities. While pollution prevention is better for the environment than any other industrial pollution control method and there is a broad consensus that pollution prevention is in the best interests of any company undertaking the effort, at the decision level there are a variety of factors that inhibit the pollution prevention incentives of future liability.

For future liability to be considered in a decision to undertake a pollution prevention activity, there must be an accurate assessment of the costs of liability. Accurately estimating these costs requires a thorough engineering, legal, and financial analysis. The technical analysis alone can be costly. It may also uncover certain problems which require immediate remedial action, and may discover particular situations which require disclosure to federal, state and local governments. This fact may lead attorneys or management to advise against engaging in the technical analysis in the first place.

Once the appropriate data is gathered, it must be analyzed and presented to management in a form that can be clearly understood. This entails quantifying data that is essentially qualitative and speculative using tools with inherent biases that may be aggravated by the very nature of the data being analyzed. In the best case, with all managers trying to develop the most complete objective report, it is not clear that capital budgeting or financial accounting analysis will deliver it. In the worst case, however, managers may act in their self-interest. Since all inputs and outputs of the system can be directly manipulated, the analyses can yield virtually any result desired.

For example, acknowledging a liability could require reporting in company financial statements. This disclosure, either as a line item in a company's balance sheet, or in the notes could have a detrimental effect on the value of the firm and therefore on its share price. Since most senior corporate managers are compensated in some way on share price and existing shareholders also desire higher share prices, there is clearly an incentive on managers to minimize explicit acknowledgement and valuation of the potential liability.

The odds appear stacked against potential liability information contributing to the case for pollution prevention without considerable incentive for managers. Without an objective third party striving for the objectivity and thoroughness of the technical, financial, accounting, and legal analysis, results from these types of analyses are likely to remain imperfect.

Analysis of the legal issues showed that there is very little incentive for managers to consider the future liability impacts of operations. There even appear to be significant disincentives. Fear of criminal prosecution is certainly the most compelling liability consideration for a manager. The prospect of going to jail should provide a strong incentive for managers to avoid activities that can lead to conviction. Many pollution prevention activities are effective crime avoidance mechanisms. But unfortunately, other activities, such as avoiding knowledge of potential violations or of ways to reduce violations, may be, or be perceived to be, as effective at protecting a manager from conviction as pollution prevention activities. Passive behavior is generally easier than actively working to implement pollution prevention and thus may be a more likely response to the increased focus on criminal prosecutions of violations of environmental law. Reporting likely future liabilities may also provide additional impetus for future citizen's suits and toxic tort cases.

SEC penalties for failing to disclose environmental liabilities are a potential countervailing force which may provide incentive to more explicitly recognize the cost of potential liability. The SEC is now in the process of establishing policy in this area, but it is unlikely that sanctions for failing to disclose future liabilities will carry enough weight to influence a change in behavior.

Furthermore, there are alternatives to protecting a firm from future liability which may be simpler, and in many cases are already in place. Largely in response to the proliferation of CERCLA actions in the 1980's firms established better procedures for managing and disposing of hazardous waste. With these procedures in place, firms may not feel vulnerable to future action. Consequently, such firms may not see themselves as vulnerable to any serious future liabilities and thus have little incentive to reduce their use of toxic substances.

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