8. Liability Approaches

The purpose of liability mechanisms in environmental management is twofold: first, to give polluters an economic incentive to make more careful decisions; and second, to compensate the victims of pollution. The incentive effect is clear, since environmental values in effect become part of the overall cost of doing business. Avoiding harm to the environment is a good practice for companies when it reduces the overall cost of doing business.

Liability for harm to the environment acts as a financial incentive, much like a fee on emissions, with at least two important exceptions. One, liability for harm creates much greater uncertainty as to the magnitude of the payment that will be due for a given release of pollutants. Two, liability for harm can generate relatively large costs in terms of assessing environmental damage and the amounts due. These concerns aside, liability is an important incentive mechanism, one that is seeing increasing use in environmental policy.

8.1 Introduction

Two federal environmental statutes, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Oil Pollution Act of 1990 (OPA), provide liability for the cleanup of releases of hazardous substances and petroleum, respectively, that pose a threat to human health and the environment. The statutes also provide for compensation for the lost use of polluted natural resources and for the restoration of the environment.

Several of the federal environmental statutes provide for civil and criminal liability for failure to comply with environmental regulations. The incentive effect of civil and criminal liability is to encourage individuals to comply with what are largely traditional forms of regulation. Such an incentive is qualitatively different from the subject matter contained in this report: incentives that put a price on pollution that harms health, the environment, or natural resources.

No study has attempted to address whether the existing combination of liability, penalties, and enforcement produce the correct incentive effect, which would encourage an optimal level of investment in pollution control. Excessive investment in pollution control is possible if entities seek to avoid penalties that are too harsh. It is also possible that firms will expend too little effort at pollution control if penalties are low and enforcement is lax. One recent study found that some types of chemical spills are more numerous in states that have imposed strict liability, an unexpected finding that calls into question many of the assumptions that policy makers have made regarding the effects of liability mechanisms as a tool of environmental management.[200]

In addition to liability for cleanup, and civil and criminal liability for violating environmental laws, individuals may use tort law to seek compensation from polluters for harm to their property or person. The difficulty of proving harm caused by pollution, particularly chronic health effects, creates a severe barrier to such cases.


Pollution Charges, Fees, Taxes


Deposit-Refund Systems


Trading Programs


Subsidies for Pollution Control


Liability Approaches

Information Disclosure


Voluntary Programs

Consequently, tort law has serious deficiencies as a mechanism to make polluters pay for the harms they cause. In fact, it was largely the failure of tort law to address many types of environmental harm that led to the passage of the principal environmental statutes.

8.2 Liability for Cleanup Costs

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 responded to an issue without precedent: the legacy of sites contaminated with hazardous wastes. Love Canal in New York was the most celebrated case, although others such as Times Beach, Missouri, also attracted national media attention. CERCLA established a trust fund (the Superfund) that was financed primarily by three mechanisms: (1) a tax on corporate income; (2) a tax on crude oil and certain chemicals; and (3) general appropriations. (The taxing authority expired in the 1990s, leaving the Superfund reliant on annual Congressional appropriations, cost recoveries, and interest on the existing fund.) EPA uses the fund to pay for cleanup and restoration activities at sites where no solvent responsible party can be identified or at sites where an immediate response is deemed necessary.

Section 107(a) of CERCLA provides for liability for anyone who caused, or threatened to cause, a release of a hazardous substance or for anyone who has threatened to cause a release that creates a need for cleanup actions. The courts have interpreted this section of the law as requiring strict, joint and several liability for parties that have been deemed responsible for disposing of—or generators that arranged for the disposal of—hazardous wastes that pose risks to human health and the environment. The term "joint and several liability" means that if the government can identify just one party out of many that contributed wastes to a site, then that one party can be held responsible, potentially, for all cleanup costs. In turn, any potentially responsible parties that have been identified by the government may seek to involve other potentially responsible parties. The term "strict liability" is a standard that holds parties responsible, regardless of the circumstances of their action, e.g., without regard to whether the party acted negligently.

The most important feature of CERCLA centers on the cleanup of hazardous waste sites that pose a threat to human health and the environment. CERCLA is unique among the principal environmental statutes in that it looks backward, seeking to remedy problems stemming from past actions, rather than forward by trying to prevent damage from current or future activities. Cleanup costs paid by the private sector under CERCLA could amount to several tens of billions of dollars. The incentive effects of being held responsible for cleanup must lie outside of the actual costs of cleanup, since the actions that precipitated the need for cleanup are historical, not contemporaneous. But the mere prospect of CERCLA cleanup liability is affecting current and future decisions regarding the disposal of hazardous waste.[201] Large firms are managing most of their hazardous wastes on-site so as not to commingle their wastes with others and face the possibility of strict, joint and several cleanup liabilities for wastes from other generators. At present, minimizing wastes and preventing pollution are definitely more attractive strategies for businesses than risking liability under CERCLA.

The Resource Conservation and Recovery Act (RCRA) creates cradle-to-grave responsibility for managing hazardous wastes. Generators, transporters, and disposal facilities face strict, joint and several liability for the ultimate disposition of hazardous waste into a federally permitted facility. Each shipment of hazardous waste must be accompanied by a manifest to facilitate enforcement. The system creates powerful incentives for each actor in the hazardous waste management chain

to know the other parties and to be satisfied that they are acting responsibly. With this approach, Congress effectively multiplied the enforcement capabilities of EPA.

8.3 Liability for Damage to Natural Resources

Until 1990, damage to natural resources resulting from oil spills was within the scope of CERCLA. Where responsible parties can be identified, CERCLA provides for compensation to the public by the responsible party for the loss of services from natural resources. These so-called "interim lost uses" persist after a release of pollution until restoration is complete. Residual damages may exist if restoration is not complete.[202] CERCLA designates federal and state authorities as trustees for natural resources.

Trustees, in conjunction with the U.S. Justice Department, pursue damage assessments of natural resources. At the federal level, the U.S. Department of the Interior is the trustee for freshwater anadromous fish, migratory birds and waterfowl, and endangered species. The National Oceanic and Atmospheric Administration (NOAA) is trustee for the coastal and marine environment, including commercial and recreational fisheries, marine mammals, and anadromous fish in salt water.[203]

The Oil Pollution Act of 1990 (OPA), was enacted following the 1989 Exxon Valdez spill in Prince William Sound, Alaska. This Act created an independent statute separate from CERCLA for addressing damages resulting from oil spills. In Section 1006(e)(1), OPA directed NOAA, a part of the U.S. Department of Commerce, to promulgate regulations for assessing natural resource damages. On January 5, 1996, NOAA issued final regulations on natural resource damage assessment (NRDA) that was conducted under OPA. Later in 1996, the U.S. Department of the Interior issued regulations governing NRDA under CERCLA. These regulations were patterned closely after NOAA's approach.[204]

The OPA and NOAA regulations have two goals. First, they seek to restore the natural resources and services to their baseline condition. Second, they seek to compensate the victims of pollution for the interim lost use of natural resources and services through restoration, rehabilitation, or replacement, and through the acquisition of comparable resources, comparable services, or both. Damage assessments conducted by trustees in conformance with the NOAA regulations are accorded the status of a rebuttable presumption. This term, "rebuttable presumption," means that the parties responsible for the damage bear the burden of showing that damage claims presented by trustees are inappropriate.

The two components of a natural resource damage assessment ensure that the public is made whole following an oil spill: The resource and its services are restored, and the public is compensated for any lost use of the resource and resource services. OPA gives potentially responsible parties a financial incentive not to spill oil. Enforcement of the Act ensures that the responsible parties will pay the amounts necessary to restore the natural resource and compensate the public for lost use.

By 1996, under provisions of CERCLA, OPA, and the Clean Water Act, federal agencies had settled more than 100 natural resource damage cases. Awards for total damages reached well over $700 million. By that date, state agencies acting as trustees also had settled several cases on their own, with their awards totaling at least another $20 million.

In comparison, cleanup settlements by that date under CERCLA alone totaled at least $10 billion, approximately 10 times the magnitude of the natural resource damage settlements. If no settlement agreement can be reached with the responsible party, OPA authorizes the trustee to file a civil action for the damages in federal district court or to seek funds from the Oil Spill Liability Trust Fund administered by the Coast Guard.[205] The fund was financed by a fee of five cents per barrel on imported and domestic petroleum. Collection of the fee ceased at the end of 1994 as the trust fund had reached its funding limit. Because it is far easier to file a claim against the fund than to identify and pursue those responsible for "mystery" spills, this mechanism may reduce incentives for states to pursue those parties that are responsible for large numbers of small spills.

A number of large NRDA cases are still pending, at least three of which could amount to at least $500 million in awards. In addition, several important cases involving the federal government as a responsible party are outstanding. Table 8-1 summarizes the largest cases reported as settled (or partially settled) by 1996. The list excludes both the Exxon Valdez and the Shell Oil spill at Martinez, California. NOAA does not list the $620 million (present value) award in the Exxon Valdez case because it was settled before the NOAA Damage Assessment Center was established. The Martinez case is not listed because it was brought by the State of California, not by the U.S. government.

Table 8-1. Largest Natural Resource Damage Settlements Brought by the U.S. Government

CASE NAME	LOCATION OF DAMAGE	AMOUNT OF AWARD (in dollars)
Southern California	Palos Verdes Shelf, CA	$54,200,000
City of Seattle	Elliott Bay, WA	24,250,000
AVX	New Bedford, MA	21,127,000
Southern Pacific	Cantara Loop Derailment, CA	14,000,000
Simpson/Port of Tacoma	Commencement Bay, WA	13,035,000
Exxon Bayway	Arthur Kill, NY	11,113,000
Blackbird Mine	Salmon, ID	7,200,000
Apex Houston	San Francisco, CA	5,416,000
Tenyo Maru	Olympic Peninsula, WA	5,160,000
Eagle Pitcher Industries	Tri-State Site: MO, KS, OK	4,734,000
Nautilus	Kill Van Kull, NY/NJ	3,300,000
Sharon Steel Corp.	Midvale Tailing Site, UT	2,600,000
Schlumberger	Crab Orchard Wildlife Refuge, IL	2,500,000
New York Trap Rock Co.	Portland Cement Site, UT	2,207,510
Presidente Rivera	Delaware River, PA	2,141,000
Greenhill	Timbalier Bay, LA	1,878,000
Elepis	Florida Keys National Marine Sanctuary, FL	1,660,000
Charles George Trucking Co.	Charles George Reclamation Trust Landfill, IL	1,378,350

Sources: Guerrero. 1995; NOAA. 1996.

It is clear that liability for natural resources is having an effect on corporate behavior. Shortly after the Exxon Valdez incident and about the same time as the passage of OPA, the petroleum industry announced the creation of the $600 million, industry-funded Marine Spill Response Corporation, an organization that would develop response capabilities specifically for large

spills. Another sign of change is the care taken when tankers transit congested waterways and load or offload petroleum. In the Arthur Kill and Kill Van Kull waterways of New York and New Jersey, tug escorts now accompany tankers, and offloading tankers are surrounded by booms.

One largely unresolved issue concerns oil spills and releases that are too small to justify a natural resource damage assessment under either CERCLA or OPA. For example, the Coast Guard has record of between 5,000 and 10,000 oil spills occurring per year, but fewer than 20 are followed by an assessment of natural resource damage. While the expected damage from many of the smaller spills may not justify the costs of a traditional damage assessment, some natural resource damage may nonetheless exist. Not charging for natural resource damage gives incorrect price signals to potential polluters, since pollution is free rather than costing the responsible source an amount equal to the damage that is caused.

The petroleum industry has argued that the magnitude of the fines assessed in all assessments, including those for small spills, should closely match the actual damage to the environment. The reason they take this position probably has more to do with their attempts to avoid damage assessments that are calculated according to a formula than with their quarrel over the incentive effect of such a formula. The correct economic incentive for a given spill is provided to potential polluters if the calculated value of the assessment equals the average harm done by such a spill.

Alaska, Washington, Florida, and Texas have enacted compensation formulas or tables that assess charges based on the volume spilled, the nature of the receiving waters, and other factors. In 1995, NOAA proposed a similar approach for small spills. NOAA later withdrew the initiative for further study when it was pointed out that the proposed method resulted in unrealistically large assessments in some cases.

8.4 Civil and Criminal Liability

Congress first decreed pollution of the environment to be a federal crime in the Refuse Act of 1899. This Act made it a misdemeanor to “throw, discharge, or deposit” refuse of any kind other than runoff from streets and discharge from sewers into navigable waters of the United States. Violators convicted of violating the Act could be punished by fines not less than $500 and not more than $2,500, or by imprisonment for not less than 30 days nor more than one year. The court had the discretion to reward persons who provided information leading to the conviction of responsible parties with one-half of the fine.

More recently, the 1970 Amendments to the Clean Air Act punished violations of the Act as a misdemeanor. The 1970 Amendments to the Federal Water Pollution Control Act established misdemeanor penalties for “negligent or willful” release of pollutants into navigable waters without a permit or in violation of a permit. The Resource Conservation and Recovery Act of 1976, as amended by the Solid Waste Disposal Act Amendments of 1980, provides felony penalties for treatment, storage, or disposal of hazardous waste without a permit.

Continuing through the 1980s, Congress further refined the scope of environmental crimes, as well as the maximum fines and terms of imprisonment, in the Hazardous and Solid Waste Amendments of 1984, the Superfund Amendments and Reauthorization Act of 1986, and the Water Quality Act of 1990. In the Clean Air Act Amendments of 1990, Congress included felony provisions in the Act for the first time.

By 1995, the Justice Department had indictments against 443 corporations and 1,068 individuals, and it had recovered $297 million in criminal penalties. Sentences for individuals totaled 561 person-years of prison for those convicted.

State and local prosecutors also can pursue environmental crimes. In fact, they are required to demonstrate such a capacity in order to obtain EPA authorization to locally administer programs of the Clean Air Act, the Clean Water Act, and the Resource Conservation and Recovery Act. While most states are not actively pursuing environmental crimes, there are a number of important exceptions. New Jersey, Ohio, Pennsylvania, and California are active in their prosecution of environmental crimes. Los Angeles maintains its own team of investigators and prosecutes these cases.

An important sanction in addition to fines and prison sentences is the mandatory "blacklisting" of contractors under the Clean Air Act and the Clean Water Act. Both statutes prohibit the federal government from entering into new contracts with, or issuing grants to, any organization convicted of environmental crimes under these laws. Federal agencies and all states also have the authority to temporarily disqualify contractors from new work, pending receipt of further information, when a contractor violates a permit and is suspected of harming the environment. Consequently, environmental violations can adversely affect a firm or individual even if no criminal conviction is imposed.

The remainder of this section describes the principal civil and criminal penalties available under the nation's environmental laws.

8.4.1 Resource Conservation and Recovery Act (RCRA)

The purpose of RCRA is to establish a legal framework for a national system that oversees the management of hazardous waste. Congress included within the RCRA statute several enforcement authorities and penalty provisions. EPA relies on four types of compliance orders as its primary enforcement tools.

1. EPA may issue an order requiring compliance within a set time frame (usually 30 days) to facilities in violation of a regulatory requirement of Subtitle C. Such EPA orders include penalties for any noncompliance period.
2. EPA may require monitoring, testing, analysis, and reporting for facilities that present a substantial threat to human health or the environment.
3. EPA may issue corrective action orders requiring corrective action of other measures to interim status facilities (those without full RCRA permits) to protect human health and the environment.
4. EPA may sue any person who contributes or contributed to solid waste management practices that pose an imminent and substantial threat to human health or the environment.

Beyond forcing compliance with RCRA and making owners of facilities take actions to protect public health and the environment, compliance orders may also assess a civil penalty for past and current violations. Civil penalties can be as large as $25,000 per day for each RCRA violation. Criminal penalties of up to $50,000 per day of violation or imprisonment for as long as 5 years may be meted out to any responsible person who knowingly

- transports hazardous waste to a facility not permitted under RCRA;

- treats, stores, or disposes of hazardous waste without a permit;
- makes a false statement or representation in an application, label, manifest, record, or other document used for compliance with RCRA;
- generates, treats, or disposes of hazardous waste and intentionally destroys records or other documents required for compliance with RCRA;
- transports hazardous waste without a manifest; or
- exports hazardous waste without the consent of, or in violation of, procedures of the receiving county.

8.4.2 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

Any person in charge of a vessel or a facility who knows of a release of hazardous substances from a vessel (other than a federally permitted release) must notify the National Response Center. Anyone who fails to provide notification "immediately," or who knowingly supplies false or misleading information, may be imprisoned for not more than 3 years (5 years in the case of a subsequent conviction) and fined in accordance with Title 18 of the Act. In addition, the Emergency Planning and Community Right-to-Know Act (EPCRA) requires that the person notify state and local emergency response officials.

8.4.3 Clean Water Act (CWA)

EPA can begin civil actions against violators of CWA permits and seek appropriate relief, which includes the use of permanent or temporary injunctions. EPA can seek criminal penalties including fines, imprisonment, or both, as shown in Table 8-2. After a person's first conviction, the fines and prison terms for subsequent convictions can be doubled.

Table 8-2. Criminal Penalties for Violations of the Clean Water Act

SEVERITY OF VIOLATION	FINE	IMPRISONMENT
Parties who negligently violate permit conditions and limitations	Not less than $2,500 per day of violation nor more than $25,000 per day of violation	Not more than 1 year
Parties who knowingly violate permit conditions and limitations	Not less than $5,000 per day of violation nor more than $50,000 per day of violation	Not more than 3 years
Parties who violate permit conditions and limitations and knowingly place another person in danger of death or serious bodily injury	Not more than $250,000	Not more than 15 years
Organizations that violate permit conditions and limitations and knowingly endanger human health	Not more than $1,000,000	Not applicable

Source: Clean Water Act

The CWA also provides for civil penalties for offenses other than permit violations, offenses that include making false statements on records, reports, and other documents filed under the CWA and wrongfully introducing pollutants into public sewage treatment facilities.

8.4.4 Clean Air Act (CAA)

The Administrator of EPA can seek a permanent or temporary injunction and civil penalties of not more than $25,000 per day for permit violations by major stationary sources (in general, those emitting more than 100 tons per year of a regulated pollutant). Criminal penalties that include both fines and imprisonment for up to 2 years may be sought for any person who knowingly violates permit terms and conditions through such actions as making material false statements or omitting material information. Convicted second-time violators can have their fines and sentences doubled.

Parties who *negligently* place another human in imminent danger of death or serious bodily injury are liable, upon conviction, for fines and prison sentences of up to 1 year. Parties who *knowingly* endanger human health may, upon conviction, receive fines, prison sentences of up to 15 years, or both. Finally, organizations can be liable for fines of up to $1,000,000 for knowingly committing permit violations and similarly endangering human health.

8.5 Tort Liability

Litigation concerning claims of personal injury from chronic exposures to toxic agents in the environment is a relatively recent phenomenon. It is, for the most part, the domain of asbestos workers. Workplace-related injury claims are not within the scope of this paper. However, a few cases involve alleged exposure to toxic substances in ambient air and water supplies.

The law under which these tort actions are brought has undergone considerable evolution in recent years. These modifications are due to several factors, which include the following: (1) the need to accommodate improved scientific information on the effects of human exposure to toxic agents; (2) the recognition of the potentially long latency periods between exposure and onset of a disease; and (3) a growing desire by the courts to hold defendants to a standard of strict liability. Despite the evolution of tort law in favor of plaintiffs, relatively few cases that claim harm from pollution in the environment have been filed. Of these cases, very few that involve the effects of pollution on human health have been decided in favor of plaintiffs.

The statute of limitations is an important barrier to litigation in a few states. However, most states have struck down this once-important obstacle by allowing plaintiffs to file a case from 1 to 3 years *after* the discovery of an injury, rather than starting the clock at the date of initial exposure.

In many situations of environmental harm, plaintiffs find it difficult to identify the party responsible for the harm. Identifying the source of contamination in well water would be a challenge for most households. Even if the contamination could be traced to a waste disposal facility, it might be very hard to identify whose wastes caused the contamination. For toxic pollutants in the air, identifying the parties responsible for such releases is even more difficult.

Demonstrating causation represents a major challenge because most diseases that have been linked to toxic substance exposure can be caused by multiple factors. In general, tort law requires plaintiffs to demonstrate that the harm they experienced was “more likely than not” caused by the defendant. Courts usually interpret this phrase to mean that the probability that the defendant caused the harm was at least 50%. Imagine a situation in which a polluter increased the risk of cancer by 20% in a nearby residential area. Rather than 100 people dying of cancer each year, 120 die. None of the 120 cases would receive compensation under the “more likely than not”

criterion. Two other issues should be noted: (1) that statistical data regarding causation are not likely to be accepted by courts, no matter what the standard of proof; and (2) that epidemiology is limited in its ability to detect elevated incidence of a disease, the smallest detectable rate of excess incidence being on the order of 30%.

In sum, the legal norms under which tort actions for harms caused by exposure to pollution are such that few cases can satisfy the burdens of identifying the responsible party and proving causation.

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