Environmental Liability and the Limits of Insurance

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Environmental liability\(^1\) has become one of the leading legal problems of this decade. It has garnered as much publicity, energy, capital, and emotion as any other contender, and for good reason. The risks of property damage, personal injury, and disease addressed by the “new” environmental liability—the common-law and statutory expansions of liability that have been developing during the 1980s—are deeply serious, for they involve at their heart our relation to the powerful technologies upon which our society increasingly has come to rely. Yet the effects of these developing legal rules are also severe: they threaten to disrupt and even to reorder established investments, long-standing methods of doing business, and pre-existing expectations about legal rights and responsibilities.

The impact of the new environmental liability on the liability insurance market, and the role that liability insurance might play in furthering the goals of a regime of environmental liability, have generated much controversy. But much of the public discourse about the appropriate relationship between environmental liability law and liability insurance, unfortunately, has produced more heat than light. Interested parties have mainly traded accusations about responsibility for the current predicament and painted opposing portraits of the future. Persuasive analysis of underlying causes and realistic policy options has too often been missing.

The problems that now trouble environmental liability insurance have their roots in the crisis that afflicted almost the entire commercial and professional liability insurance field in 1985 and 1986. The causes of that crisis have been much debated.\(^2\) Although that debate contin-

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1. This Article defines the term “environmental liability” broadly, to include not only liability for damage to natural resources, but also for property damage and injury or disease caused by exposure to hazardous materials or products in the environment. This definition excludes consideration of products liability actions brought by those directly or indirectly in the chain of distribution of the product, although many of the issues raised by such actions are similar to those discussed below.

environmental liability that have increased the frequency and severity of tort claims in a variety of fields, including products, municipal, medical malpractice, and general commercial liability; increased incentives to litigate tort claims created by the contingent fee system, and by incomplete private and social insurance against health-care expenses and wage losses associated with accidental injury and disease; and a general uncertainty about the future of tort liability.\(^3\) Directly or indirectly, all of these factors tend to raise the price of liability insurance.

In addition, the property/casualty industry’s profitability—and along with it, total insurance capacity—fluctuates through what is known as the “underwriting cycle.”\(^4\) This cycle is driven by variation in the supply of capital (which is, in part, a product of changes in underwriting profits), by interest rates, and by the cost of reinsurance. Changes in the intensity of competition also affect premiums and underwriting profits, which in turn influence the evolution of the cycle. Between 1981 and 1984, for example, competition was strong and interest rates (and thus investment profits) were high. As a result, commercial liability insurance premiums generally remained level despite the double-digit inflation of the period. The progression of the underwriting cycle during 1985 and 1986 brought about a tighter market that triggered the crisis, creating a shock that resulted in the temporary unavailability of some coverage and enabling the other factors that affect the underlying cost of insuring once again to influence premium levels.

As the dust has settled, the market for most forms of liability insurance has stabilized. Although premium levels have not declined, at this point coverage generally appears to be available to most lines of business.\(^5\) The agitation for tort reform that produced legislation in several dozen states has quieted somewhat, though steady pressure for further reform continues; and Congress seems unlikely to enter the field, despite the importuning of the administration.\(^6\) Yet unlike virtually every other line of insurance affected by the recent crisis, the problems that

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3. For a discussion of the role played by these factors, see Abraham, supra note 2, at 404–09. In addition, as this Article goes to press, the Attorneys General of eight states have filed antitrust actions against a number of major primary insurers and reinsurers alleging (inter alia) that they conspired to cause the removal of pollution liability coverage from the standard Commercial General Liability policy (CGL) discussed infra at text following note 27. See California v. Hartford Fire Ins. Co., No. 88-0981 WWS (N.D. Cal. complaint filed Mar. 22, 1988). Although that suit obviously is unresolved, this Article explains why these and other insurers might reasonably have been concerned about the difficulty of insuring against environmental liability.

4. See Abraham, supra note 2, at 400–01.

5. See U.S. Tort Policy Working Group, supra note 2, at 8–18.

6. See id. at 97.
troubled environmental liability insurance at the height of the crisis have not ameliorated: they remain severe and fundamental. In the past two years, for example, not only has the cost of the little environmental liability insurance that is still available skyrocketed; more importantly, for most businesses in the United States insurance against environmental liability is completely unavailable.

In the long run, the unavailability of environmental liability insurance is bound to discourage productive enterprise. Productive activities that have potential environmental impacts may be reduced or abandoned; enterprises may simply flee to jurisdictions with less demanding environmental laws; and new activity that otherwise would have occurred may not. The decline in the number of hazardous waste treatment, storage, and disposal facilities seeking renewed licensure may be one example of such abandonment. Yet it is impossible to document what simply does not occur because of uncertain and uninsurable environmental liabilities: there is no way to determine how much real estate transfer and development, formation of new business entities, or expansion of existing enterprises into new fields, for example, has been or will be discouraged because of the new environmental liability.

Of course, it is possible to argue that the new environmental liability is creating optimal levels of safety by discouraging activities that are unduly dangerous. However, the threat of uncertain liability can promote optimal safety levels only by mere chance, because risk-optimizing behavior requires cost-benefit calculations that are necessarily impossible in the face of great uncertainty. Even optimally safe activities require a reasonable degree of certainty about the future to operate effectively.

The thesis of this Article is that the demise of the environmental liability insurance market is a symptom of the high levels of legal uncertainty that are being created by the new environmental liability. In order to demonstrate this relationship, the Article explores the way in which the new environmental liability has produced effects that are more severe and enduring than those produced by the liability insurance crisis that struck broadly in 1985 and 1986. Admittedly, the health of the insurance market is not the only goal that should be pursued by a


8. Only a very limited amount of pollution liability insurance is currently available, see id. at 17–20, and virtually all coverage against such liability is now excluded by standard commercial general liability (CGL) insurance policies. See infra notes 58–73 and accompanying text.

9. See C. Harris, W. Want & M. Ward, Hazardous Waste: Confronting the Challenge xiii (1987). As the number of facilities capable of receiving hazardous waste declines, the development of enterprises that would otherwise find it most efficient to make use of such facilities may be impeded.
ENVIRONMENTAL LIABILITY

regime of environmental liability. Compensation of victims, deterrence of catastrophic loss, and even the symbolism entailed in imposing legal responsibility are important goals as well. But each of these goals depends in some measure on a functioning liability insurance market, and the availability of environmental liability insurance is also important to a wide variety of enterprises that contribute to social well-being. The needs of the liability insurance market, therefore, cannot be completely separated from other goals.

The Article explores the relationship between environmental liability and liability insurance in several stages. Part I develops a framework for analyzing insurability problems, including the kinds of problems that have arisen in the environmental liability field in recent years. This Part also examines the ways in which an environmental liability insurance system that is not threatened by uninsurable forms of liability can create the kinds of safety incentives that are a major reason for imposing environmental liability. Part II then identifies the features of the new environmental liability that ignore the limits of insurance, and examines the impact of the rise of uninsurable forms of liability on the market for conventional insurance coverage.

Finally, Part III explores several possible solutions to the conflict between the new environmental liability and the insurance function, and reflects on the strengths and weaknesses of these proposed solutions. One solution would require adopting a more measured approach to environmental liability by softening some of the liabilities that are most difficult to insure, and by using other systems of regulation and insurance to play a greater role in the deterrence and compensation of the injuries that would otherwise become the focus of environmental liability. To the extent that changing the direction of developments in environmental liability is considered undesirable or impractical, however, consideration of more innovative approaches to the insurance of new environmental liabilities than the market has yet produced seems not only appropriate, but necessary. Part III, therefore, also proposes and analyzes a second solution, a system for "retroactive indexing" of liability insurance premiums as a method of avoiding some of the legal uncertainties that so trouble this field. A third solution examined in Part III involves deregulation of high-uncertainty liability insurance, with the goal of promoting a market that would be more risky for both insurers and insureds, but potentially superior to the nearly complete absence of coverage that now plagues the field.

1. THE INCENTIVE EFFECTS OF ENVIRONMENTAL LIABILITY INSURANCE

A. Insurability, Information, and the Cost of Risk-Bearing

Most types of insurance perform three related but distinct functions. First, insurance transfers risk from parties who are comparatively
risk averse to enterprises more willing to bear risk. Second, insurance spreads risk by combining individual risks in a pool created by the insurer. By covering a large number of insureds against uncorrelated risks, the insurer diversifies its own risk and operates a risk-sharing arrangement. Third, insurance performs a risk-allocation function by charging premiums that reflect the level of risk posed by each individual or enterprise that is insured.

Insurance can perform these functions effectively only under very special conditions of uncertainty. At one extreme—complete ignorance about the scope of the risk to be insured—insurance would resemble a naked gamble; at the other extreme—a world in which the future were completely predictable—there would be no point in insuring. Liability insurance may operate effectively between these two extremes, but it can be undermined in several ways: by adverse selection, moral hazard, or generalized uncertainty.

Adverse selection occurs when applicants for insurance possess substantially more information than insurers about the level of risk the applicants pose. A disproportionate number of high-risk applicants then seek to obtain coverage, low-risk policyholders drop out of the pool, and the cost of coverage rises. Obviously, insurance operates best when adverse selection is minimized. In addition, insurance is impeded when insurers cannot obtain information about changes in the risk posed by insureds after they are covered by insurance. The resulting diminution in an insured's incentive to avoid losses is known as moral hazard.

Adverse selection and moral hazard are examples of asymmetrical uncertainty: they arise when the insured has more information than the insurer. Even in the absence of such information imbalances, however, uncertainty can pose a problem for insurance markets. To use Frank Knight's famous distinction, insurance deals best with risk, or predictable probabilities, and not with uncertainty, or unpredictable probability of loss. Insurance operates most comfortably with


stochastic events, in which the probability of the frequency and magnitude of insured losses that will be suffered by a group of policyholders is highly predictable. When faced with excessive uncertainty regarding these probabilities, an insurer may be as risk averse as individual policyholders because it cannot estimate its probable success in diversifying risk through pooling, and because it cannot determine the correct price to charge for its risk-bearing services.\textsuperscript{14}

Adverse selection and moral hazard can be understood as examples of the “agency” costs that result when the interests of a principal and an agent diverge.\textsuperscript{15} Typically these costs are reduced in corporate and commercial settings through devices that allow the principal to monitor the agent’s actions, or through methods of bonding that align the interests of principal and agent.\textsuperscript{16} In agency-cost terms, the insurer is a principal confronting the divergent interests of its agent, the insured; this conflict of interest is reflected by the risk of adverse selection and moral hazard.

Insurers combat these agency costs through a variety of monitoring and bonding devices designed specifically to meet traditional insurability problems. Adverse selection can be combated by using both applicant screening through risk assessment and the exclusion of coverage against specialized risks from general insurance policies. Moral hazard can be mitigated through risk classification—especially experience rating, which is a form of monitoring. The exclusion of coverage against risks peculiarly susceptible to moral hazard and the use of deductibles—both of which function as a form of bonding—can also aid in this effort. Of course, these devices are not costless, and insurers employ them only when the benefit they generate exceeds their cost.\textsuperscript{17}

Thus, the cost of risk bearing through insurance turns in part on factors independent of the underlying level of risk posed by an activity. The costs of combating the threats of adverse selection and moral hazard contribute to the cost of insuring the activity; and the costs of adverse selection and moral hazard themselves drive up the price of insurance when these problems are too costly to combat completely. As adverse selection and moral hazard increase, the cost of coverage rises, sometimes to a level higher than potential buyers can or would be willing to pay.

One conception of this phenomenon is that it reflects scarcity of an important factor of production. This conception has dominated much of the debate about the liability insurance crisis, and it is in many ways

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\textsuperscript{14} See Epstein, supra note 11, at 648–50.
\textsuperscript{15} See Jensen & Meckling, Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure, 3 J. Fin. Econ. 305, 308 (1976).
\textsuperscript{17} See K. Abraham, supra note 10, at 78.
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an accurate one. Because liability insurance is as important to many enterprises as electricity, the unaffordability or unavailability of insurance makes it nearly impossible for them to continue their operations. On the other hand, an alternative and in some ways superior conception of insurance is that it is merely an element in the capital structure of the firm. Under this conception, the purchase of market insurance may be attractive in certain conditions; but when the extra costs resulting from agency-cost problems push the price of market insurance above a firm's cost of bearing its own risks, then it will pay to self-insure instead. Thus, as the flaws that plague the market for insurance increase, a firm may find that vertical integration of the insurance function is a superior method of handling risk.

Neither of these conceptions, however, satisfactorily accounts for the other factor that can affect the cost of risk bearing. This factor—excessive uncertainty as to the frequency and severity of the losses that may be suffered—impedes the diversification of risk sought by all risk-averse actors. Self-insured individuals and enterprises therefore are affected by the problem of uncertain liability just as severely as commercial insurance companies and their policyholders. In short, by raising the cost of pooling risk, adverse selection and moral hazard tend to trouble market insurance schemes. By contrast, excessive uncertainty regarding possible future losses will trouble all risk bearers, including

21. See generally Klein, Crawford & Alchian, Vertical Integration, Appropriable Rents, and the Competitive Contracting Process, 21 J. L. & Econ. 297, 298–302 (1978) (vertical integration can alleviate problems caused by opportunistic behavior of contracting parties). Thus, a firm may be better able to monitor its own risk levels than its former insurers, unable to signal the insurer of its below-average risk, or sufficiently large to be able to diversify its risks across a large number of losses. Two characteristics of small firms, however, make it difficult for them to self-insure: first, their expected losses are not sufficiently frequent to allow them to diversify risk on their own; second, they tend not to have large numbers of shareholders who can diversify the risk of loss through their own investment portfolios. If a firm is unable to diversify on its own, it still may be able to avoid the problems of adverse selection and moral hazard by cooperating with a small number of homogeneous firms in a more "private" risk pool of the sort now authorized by the Liability Risk Retention Act Amendments of 1986. See 15 U.S.C. §§ 3901–3904 (Supp. IV 1986). It is worth noting that this theory would also seem to suggest that absent regulatory obstacles, the informational uncertainties described above would encourage vertical integration by the insurance industry as well. Thus, one might expect to find insurers acquiring firms for whom market insurance is inefficient in order to take advantage of the efficiencies that might accrue from the "in-house" supply of insurance. Such acquisitions would be most likely in those industries where insurance is a relatively important factor of production—that is, where potential liabilities are relatively great. Firms posing the risk of environmental liability seem as likely as any to satisfy this criterion.
self-insurers who do not participate in the risk pooling that constitutes market insurance.  

B. Insurance Devices for Controlling Incentives

To assess the threat to insurability posed by the new environmental liability, it is necessary first to understand how insurers deal with conventional information deficiencies. Despite the asymmetries in risk-related information that tend to trouble insurance markets, environmental liability insurance has the potential to create loss prevention incentives through various methods of risk allocation. Each of these is a version or a combination of the monitoring and bonding devices described above. Because of the incentive-creating potential of these devices, forms of environmental liability that preclude their use not only hinder the risk-spreading function of insurance; they impede its risk-allocation function as well. The first method of risk allocation is through variable risk classification and pricing; the second is through such devices as deductibles and policy exclusions that combat adverse selection and moral hazard; and the third is through a form of "surrogate regulation"—risk assessment, ongoing inspection, and risk management assistance provided by the insurer to the insured.

1. Risk Classification. — From the insurer’s point of view, risk classification is a competitive pricing device. By classifying insureds based on their expected losses, the insurer can offer low-risk insureds a low price and thereby compete for their business. An important by-product of risk classification, however, is its effect on the risk-creating behavior of insureds. There are two general forms of classification, although in practice they often are combined. Feature rating bases premiums on objective features of the insured’s operations—gross revenues, total production, the volume of waste generated or received, miles driven while transporting waste, and the like. In contrast, experience rating bases premiums on the loss experience of the insured during a previous period. These forms of risk classification have different impacts on incentives in different situations. Feature rating can influence safety levels if the marginal savings in premiums that would result from altering the features on which premiums are based would exceed the marginal cost of alteration. For example, if rates are affected by the volume of waste an insured generates, feature rating creates an incentive for the

22. Because the uncertainty created by the new environmental liability affects both market insurance and other forms of risk bearing, the present inquiry into the state of the commercial environmental liability insurance market simply isolates a single exemplar of a larger problem. Focusing on insurance provides a useful lens through which to study the problems that arise when a civil liability regime expands beyond its useful limits and loses the capacity to achieve its goals.


24. See id. at 79–82.
insured to reduce the volume generated in order to secure a lower premium during a subsequent policy period. On the other hand, when feature rating is based on a variable that the insured cannot or will not control, then feature rating has no impact on safety levels. A rating based on production or sales levels—which may well be a reliable proxy for the level of risk posed by certain enterprises—falls in this category.25

An additional virtue of feature rating based on controllable variables is that it can serve an informational function by indicating to the insured the features of its activities that affect the level of risk those activities pose. In contrast, experience rating provides the insured with no such information; it simply gives the insured an incentive to reduce its loss experience in order to reduce future premiums. But unlike feature rating, experience rating always creates risk-reduction incentives, because a reduction in losses produces a reduction in premiums.

Feature and experience rating have the potential not only to influence safety levels, but to affect activity levels as well. For example, although feature rating based on gross sales does not influence the level of safety at which a particular activity is conducted, it may influence the amount of that activity in which an insured enterprise engages. Similarly, experience rating always provides the insured enterprise the incentive to optimize activity as well as safety levels, since the former may influence loss experience (and thereby affect premium rates) as much as the latter.

In practice, the way in which the enterprises threatened by environmental liability are risk classified varies with the activity and line of insurance in question. When primary pollution liability insurance was still reasonably available, insurers used a combination of feature and experience rating, with the former predominating. The two most important features were the nature of the insured's operations and the types of hazardous materials handled during the course of operations. Rating variables included quantities of hazardous materials handled, existence and condition of underground storage tanks, types of containment systems used, physical characteristics of the site or sites in question, results of engineering surveys, quality of management, and waste sites currently or formerly used.26 Between 1985 and 1987, primary coverage of this sort largely disappeared from the market; only excess coverage is now available, generally with deductibles in the millions of dollars.27

25. For example, rating the products liability insurance of a flour mill based on the tons of flour it produces, or a fertilizer manufacturer based on its gross receipts, creates no safety incentives, since neither has any reason to reduce the amount of its sales.


27. See Insurance Availability, supra note 7, at 20-25. Special purpose primary coverage—against liability for leaking underground storage tanks, for example—also ap-
In contrast to classification by forms of insurance targeted exclusively at environmental liability, the risk classification adopted by general liability insurance typically is much less concerned with the environmental risk posed by the insured. Until recently, three other major forms of coverage also provided a measure of protection against pollution liability. They are Products Liability, Comprehensive General Liability (CGL), and the latter’s successor, Commercial General Liability (also referred to as CGL) insurance. Each of these provides, among other things, more general liability insurance to business enterprises than special-purpose pollution liability insurance. In the past these forms of insurance generally excluded coverage of liability for losses caused by gradual pollution, while covering liability for damages caused by sudden and accidental pollution. Because they provided some coverage against liability for a range of environmental liability, a component of the premium charged enterprises covered by such policies was based on the environmental risk they posed. However, almost all such policies now exclude coverage against virtually all forms of pollution liability and cleanup expenses. The pollution liability coverage they provide therefore is extremely limited, and the risk classifications they use necessarily are much less dependent on pollution risks than are risk classifications used in special purpose pollution liability insurance.

2. Deductibles and Exclusions.—Moral hazard is in essence an information problem that afflicts all forms of market insurance and risk pooling. Because insurers cannot costlessly monitor the quality of an insured’s behavior, an insured party has less incentive to avoid losses than an uninsured or underinsured party. Risk classification is one method of combating moral hazard. Two other methods are the use of deductibles and the exclusion of coverage of losses where moral hazard is particularly severe.

Deductibles operate in pollution liability insurance much as they do in other forms of coverage. A deductible gives the insured a stake in the avoidance of losses notwithstanding the existence of coverage be-
cause the insured is responsible for the deductible amount even if a loss is otherwise covered. In effect, a deductible is a method of bonding. A party purchasing coverage subject to a deductible aligns its interests with those of the insurer, because both will suffer if the insured incurs a loss. The greater the moral hazard that would exist in the absence of the deductible—for example, the more costly the safety precautions that would reduce the risk of loss—the larger the deductible, or bond, that is necessary to combat moral hazard effectively.

In contrast to deductibles, which use bonding to promote safety, exclusions promote safety by precluding coverage of certain kinds of losses or losses caused by certain kinds of behavior. Although exclusions have multiple purposes, the principal purpose of many exclusions is to combat moral hazard. Three common exclusions address the moral hazard associated with insurance against environmental liability. Each of these exclusions reflects the basic purpose of nearly all insurance: the provision of protection against harm that is fortuitous rather than caused intentionally by the insured. The first excludes coverage of liability for damages arising out of intentional violation of statutes, and the second excludes liability for harm either expected or intended from the standpoint of the insured. The role of the first two exclusions in encouraging (or at least not discouraging) safety is obvious: there is no coverage against liability for harm that is caused intentionally or nearly intentionally.

The third exclusion was so typical in environmental liability insurance and CGL policies until recently that it has come to be known as the “pollution exclusion.” Despite its name, this clause does not exclude coverage of liability for all pollution. Rather, it excludes all pollution liability except for damages caused by “sudden and accidental” discharges or releases. The function of this exclusion is less obvious,

30. That is, deductibles and coinsurance (insurance of only a percentage of each loss) are expenditures by an agent—the insured—to “guarantee” that it will not do anything to harm the principal—the insurer. Cf. Jensen & Meckling, supra note 15, at 308 (defining agency costs as the sum of monitoring expenses by the principal, bonding expenses by the agent, and the residual loss).

31. For example, many exclusions are designed to coordinate the coverage available under different kinds of policies, so that insurance for a particular kind of loss is excluded under one type but included under another type of policy. Products liability policies exclude coverage of liability for the sale of alcoholic beverages, but liquor liability policies include it. This makes risk classification simpler and reduces adverse selection, since some insureds face the risk of fewer categories of loss than others.


33. In some policies this limitation is incorporated into the definition of insured “occurrences” rather than in a separately designated exclusion. The effect tends to be the same in each case.

34. Recent versions of the CGL policy appear to exclude coverage not only for gradual pollution, but for sudden and accidental pollution as well. See Hendrick & Wiezel, supra note 28, at 343–47. In theory the insured can buy an endorsement to these standard form policies that provides some of the otherwise excluded coverage.
but it appears to be an effort to neutralize the information asymmetries that generate both adverse selection and moral hazard. Three characteristics of gradual pollution support such an interpretation.

First, gradual pollution is much more likely than a sudden and accidental discharge to result from the inherent character of the insured's operations than from an unintended mishap. If gradual pollution were nonetheless insured, losses that in effect are predictable costs of doing business would be charged against the insurer rather than the business. The risk of adverse selection by firms that could predict such losses would thereby be increased. In addition, firms insured against liability for gradual pollution would have a reduced incentive to structure new operations so as to optimize the risk of gradual pollution. The pollution exclusion reduces this moral hazard.

Second, other things being equal, gradual pollution is much more likely to be either expected or intended by the insured than a sudden and accidental discharge. By definition, gradual pollution takes place over time. Once gradual pollution is discovered, its continuation is certainly expected, and in some sense, therefore, also "intended." Yet case-by-case determinations of whether an instance of gradual pollution damage was expected or intended by the insured would pose difficult and costly problems of proof. Consequently, some claims that are not in fact insured would nonetheless receive coverage. A bright-line exclusion eliminates the moral hazard that would otherwise be associated with such coverage.

Finally, in large measure the liability associated with gradual pollution is likely to depend on the extent to which the party responsible takes steps to eliminate the discharge or mitigate the damage once the pollution is discovered. Yet because standards governing the removal of potential dangers and the remediation of damage caused by gradual pollution (at hazardous waste storage facilities, for example) are not well developed, disputes over the level of care necessary for the insured to remain covered after discovering a discharge would be common.\textsuperscript{35}

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See, e.g., id. at 349-50. However, the number of insurers willing at this time to write such endorsements appears to be small.

35. For discussion of the issues associated with remediation, see generally Office of Technology Assessment, Superfund Strategy (1985). Some of these issues were intended to be resolved by the Superfund Amendments and Reauthorization Act of 1986 ("SARA"), Pub. L. No. 99-499, § 121(a), 100 Stat. 1672 (codified at 42 U.S.C.A. § 9621 (West Supp. 1988)), governing cleanup standards at Superfund sites, but many people working in the field believe that such a resolution actually has not been achieved. For examples of debate about the scope of remedial obligations, see Matthews, Conflict in Superfund Remedy Selections: "Permanent" Solutions Versus Cost-Effectiveness, 2 Toxics L. Rep. (BNA) No. 21, at 597 (Oct. 21, 1987); Quarles, The 1987 Airlie Superfund Conference of the Superfund Settlements Project, 2 Toxics L. Rep. (BNA) No. 30, at 820 (Dec. 23, 1987). Because the issues are complex and the conditions at different sites are varied, it still would be very difficult for an insurer to specify an insured's remedial obligations in a standard policy.
The pollution exclusion thus also avoids the moral hazard that would be generated by uncertainty regarding an insured's remedial obligations under a policy that covered liability for gradual pollution.

3. Surrogate Regulation. — The monitoring and bonding devices described above are designed to deal with the impact of adverse selection and moral hazard on insurers' profitability. One important side effect of these devices, of course, is the creation of safety incentives for insureds. In the environmental field such incentives are often created by conventional command and control regulation—governmental setting of standards applicable to the private sector, and the enforcement of those standards by administrative or executive agencies. The creation of such incentives by insurers, however, is a form of "surrogate regulation" that involves private standard setting and enforcement resembling command and control regulation.

The process involves both risk assessment and risk management. In the pollution liability insurance field, risk assessment often begins with an engineering study of the prospective insured's activities, including both the unique features of the applicant's operations and those characteristics that it shares with other enterprises in the same business. This study is followed by an evaluation of the insurability of the risks posed by those activities.

The risk assessment and risk management processes can generate several quasi-regulatory effects. First, the prospect that a positive risk assessment will be a prerequisite to insurability is likely to create initial and ongoing safety incentives for any potentially insured enterprise. Second, the risk assessment process informs potential insureds of the insurer's conclusions about the relative risk posed by their operations. Once an application for insurance is accepted, risk management may involve continuing risk assessment and advice to the insured regarding effective safety measures. Simultaneously, the threat of cancellation, nonrenewal, or reclassification upon the expiration of coverage, or the denial of coverage for events caused by the insured's engagement in

36. For a theoretical proof that the insurer's engagement in loss prevention activities such as risk assessment and risk management may improve profitability, see Schlesinger & Venezian, Insurance Markets with Loss-Prevention Activity: Profits, Market Structure, and Consumer Welfare, 17 Rand J. Econ. 227 (1986).

37. These terms are generally used to distinguish between the empirical and normative components of the process of risk regulation in public law. For the origin of this distinction, see Committee on the Institutional Means for Assessment of Risks to the Public Health, Commission on Life Sciences, National Research Council, Risk Assessment in the Federal Government: Managing the Process 18-20 (1983). This distinction was quickly adopted by William Ruckleshaus, then Administrator of the Environmental Protection Agency.

38. See Pollution Liability, supra note 26, at 26-29 (significant number of insurers require site inspections prior to offering pollution insurance); Advisory Comm. on Envtl. Liab. Ins., National Ass'n of Ins. Comm'rs, Environmental Liability Insurance IV-4 (1986) (describing engineering surveys).
activities for which coverage is excluded, can create incentives for the insured to follow that advice.

Neither risk assessment nor risk management involves the mandatory commands that are embodied in conventional public law regulation; the insured is not fined, for example, for failing to follow the insurer's advice or standards. Nonetheless, both risk assessment and risk management can have the same behavioral impact as regulation, since the costs the insurer can impose on the insured in the event that risk management advice is not followed are likely to create significant incentives for the insured to manage risk as directed by the insurer. This is especially true in the environmental field, where proof of liability insurance coverage is often a prerequisite to licensure.39

In sum, the marketing of environmental liability insurance and the employment of monitoring and bonding devices by insurers not only serve risk-spreading goals; they also allocate risk and thereby serve safety-regulation goals as well. With the disappearance of environmental liability insurance, the potentially beneficial effects of surrogate regulation also are lost.

II. THE NEW ENVIRONMENTAL LIABILITY AND THE INSURANCE PROBLEM

Insurers make their living relying on the certainty afforded by the law of large numbers. To achieve that certainty, insurers must assess the risk to their insureds posed by existing law and potential legal changes. It is not enough, however, for an insurer to determine the current state of the law or to predict legal change in some general way. The crucial problem for the insurer is to quantify the future impact of existing liability rules on the parties whom it insures and to anticipate potential changes in those rules.

The new environmental liability tests the limits of insurance in three ways. First, it has created new forms of statutory liability against which it is difficult to insure. Second, judicial strategies of interpretation have made it difficult for insurers to rely on the meaning of insurance policy language designed to avoid covering uninsurable risks. Third, the distinct threat of other, common-law expansions of liability creating additional uninsurable risks that cannot be reliably excluded by policy language renders the scope of an insurer's future obligations uncertain.

All three developments, however, have much the same result: they

create forms of liability whose potential frequency and severity is extremely difficult to predict because the information upon which such calculations should be based is unavailable. The result is an increase in the level of uncertainty that environmental liability insurers would have to tolerate in order to underwrite the risk of environmental liability. In addition, these forms of liability often interfere with the functioning of the insurance devices that combat adverse selection and moral hazard and thereby create the safety incentives on the part of insured enterprises analyzed above. As the new environmental liability has developed, therefore, the safety incentives that insurance against more conventional environmental liabilities might create have tended to disappear.

These developments are not unique to the law of environmental liability, but they are an order of magnitude more severe in this field than in any other. No field of liability involves more far-reaching statutory civil liabilities than those imposed by the federal Superfund and similar state regimes. And while judge-made insurance is a common phenomenon, many of the most expansive readings of policy provisions appear in environmental liability coverage disputes, and these readings have more impact because of the enormous sums that are so often at stake. Finally, only the law of products liability is threatened by a radical expansion of common-law liability similar to the inchoate new forms of environmental tort liability.

This combination of developments on all three fronts goes a long way toward explaining why environmental liability insurance has been hindered more severely during the past several years than the other forms of insurance that were subject to the crisis of the mid-1980s. Because the availability of property/casualty insurance is dependent in part on the swings in the underwriting cycle described above, at times there may be more environmental liability insurance available than there is at present. But the new environmental liability makes it highly likely that this form of insurance will be the first to disappear when the market becomes tight, that it will be the last to return when the market softens, and that even when it is available it will provide extremely limited protection.

A. Developments in Statutory Liability

The impact of environmental liability on the liability insurance market is partly the product of a series of statutory developments creat-

40. In addition, of course, they are likely to create more liability. The best available data on this question suggest an escalation in claim frequency and consequent liability, but the data are not conclusive. For example, a survey of pollution liability insurance claims undertaken by the U.S. General Accounting Office determined that in 1985, 382 such claims were closed with payment, but that 11,915 claims remained open. See Insurance Availability, supra note 7, at 75.

41. See supra note 4 and accompanying text.
ing liabilities of such uncertain scope that they are inordinately difficult to insure. The two most graphic developments are the rise of retroactive strict liability and the accelerated imposition of joint and several liability.

1. "Retroactive" Strict Liability Under Superfund. — The Federal Superfund Act imposes strict liability for the costs of cleaning up hazardous waste storage sites on the generators and transporters of the waste, and on the owners and operators of the sites. This liability attaches regardless of the time when the material was deposited and regardless of the absence of fault by the party held liable.

Liability of this sort confounds the insurance function in two ways. First, when a statute (or a common-law rule) imposing such liability is first adopted, it is largely unanticipated. Ordinary strict liability is a cost of doing business that enterprises and their insurers can anticipate and finance, even when the damages imposed are not worth avoiding. For the most part, however, retroactive strict liability—the imposition of liability for the consequences of actions that were not subject to strict liability at the time they were taken—could not have been readily anticipated or financed by the enterprises subject to this form of liability. Insurers, of course, will not have charged for any coverage that liability policies turn out to provide against this form of liability. The introduction of such an unanticipated liability necessarily undermines insurers' confidence in their ability to predict the legal future. This loss of confidence is likely both to influence insurers' future willingness to market lines of insurance that seem especially susceptible to legal change and to affect the price of coverage in the lines insurers do continue to offer.

Second, retroactive strict liability, including Superfund liability, is extremely difficult to insure even if it is commonplace. By its very nature, this form of liability is unpredictable both by environmental actors and by their insurers. It is, after all, retroactive strict liability: liability for the failure to reduce risks that could not have been discovered through the exercise of reasonable care. In theory all strict liability is retroactive in this way; in practice, however, strict liability is often used merely to circumvent the cost and difficulty of proving negligence, or a state-of-the-art defense is made available to limit its retroactive effect.

In the case of Superfund, however, the retroactive effect of strict liability assures that the operators of waste storage sites and depositors in the sites are held liable for the cost of any cleanup that later becomes


necessary, even if these parties employed state-of-the-art technology and their actions were reasonable in all other respects. Thus, under the Superfund regime, liability for the consequences of risks that were undiscovered and largely undiscoverable at the time the actions creating them were taken may be imposed twenty or more years later. Because the magnitude of such risks is inestimable—they are unknowable when insured against—it is impossible confidently to set a price for insurance against them.

It is important to recognize that this is not simply a problem for insurers under old policies that were written before the enactment of the Superfund regime. These insurers were subjected to the additional surprise of finding a new form of liability introduced after their policies were in force. But any insurer offering coverage against Superfund liability today faces the possibility that dangers neither it nor its insured can reasonably anticipate will produce an unexpected liability sometime in the future.45

The result, when environmental liability insurance is available despite the threat of retroactive strict liability, is the imposition of an "uncertainty tax" on all those purchasing coverage that potentially insures against this new liability. The insurer must impose such a tax indiscriminately, because there is no way to determine which enterprises are more likely than others to be subjected to the liability the tax finances. Better containment methods and other safety precautions may help to lower liability, but they cannot guarantee it, because liability may be imposed later anyway. There is no reliable way to classify risks in connection with this form of liability, and the use of deductibles or surrogate regulation is somewhat beside the point: when an enterprise cannot calculate risk-and-safety tradeoffs about unknown risks, insurers cannot create effective incentives for them to make such calculations.46

Alternatively, the best insurers can do to combat the threat posed by retroactive strict liability is to avoid insuring it. They have done this

45. Nor can the use of claims-made instead of occurrence coverage solve the problem. By insuring only claims to be made in the policy year following sale of the coverage, see infra note 70 and accompanying text, the claims-made approach shifts most of the risk of uncertainty as to future strict liability to the insured—in effect, claims-made coverage simply does not insure retroactive strict liability.

46. For this reason, Professor Priest's argument that adverse selection is largely responsible for the insurance crisis in this and other liability fields is implausible. See Priest, supra note 2, at 1550-63. Adverse selection is the product of an information asymmetry between insurers and insureds. See supra note 12 and accompanying text. Although this phenomenon may explain some of the less important features of the insurability problem noted in later sections, see, e.g., infra text following note 60, doctrines such as retroactive strict liability make insuring difficult precisely because they create symmetrical uncertainties. Neither insurers nor insureds can calculate their liability risk under such doctrines with any certainty; consequently, insureds are not in a superior position to determine the scope of the risk they pose, and no deliberately "adverse" selection of insurance by comparatively high-risk insureds can occur, because high-risk insureds do not know who they are.

HeinOnline -- 88 Colum. L. Rev. 958 1988
in two ways. In recently issued CGL policies they have begun specifically to exclude coverage of liability for cleanup expenses, since such liability may be imposed under the Superfund Act's retroactive strict liability provisions; and many insurers simply have withdrawn from the environmental liability insurance market or excluded all pollution coverage from CGL policies. This withdrawal seems to have been caused at least in part by the threat that retroactive strict liability will become a prominent feature on the environmental liability landscape.

2. Joint and Several Liability. — Independent concurrent tortfeasors have long been held jointly and severally liable for indivisible injuries caused by their combined activities. As long as joint and several liability represents a small percentage of total liabilities insured, it need not disrupt liability insurance premium calculations unduly, because the level of uncertainty it poses is minimal. The enactment of the Superfund Act, however, has substantially expanded the threat of joint and several environmental liability, since the Act holds generators and transporters of hazardous substances as well as owners and operators of hazardous waste storage sites jointly and severally liable for the expenses of cleaning up these sites.

The threat of joint and several liability creates special uncertainty, because the probability of liability—and of consequent loss for the insurer—is affected by the behavior of nonpolicyholders whom the insurer cannot necessarily identify in advance. When the scope of liability is potentially very large, that uncertainty is magnified. The Superfund Act creates liabilities that pose both problems of uncertainty and magnitude. A single generator of a portion of the waste deposited in a site, for example, may be held liable for all the costs of cleanup despite that generator's lack of fault, despite the presence of waste contributed by other generators, and despite the partial responsibility of the owner or operator of the sites for the release of material requiring a cleanup response; the aggregate cost can be staggering.

Although the Act as amended in 1986 details rights of contribution, and although some courts have created rights of indemnity for

47. See Hendrick & Wiezel, supra note 28, at 3346-47.
Superfund liabilities under special circumstances, joint and several liability has bite under the same conditions as it always has—when rights of contribution and indemnity are meaningless because other jointly liable parties are insolvent and uninsured. In order to insure against this threat, insurers would have to make nearly impossible calculations based on both the potential behavior of the other parties whose activities might combine with the insured's to cause damage, and on the probability that these parties would prove to be judgment proof. Given the uncertainties that would be associated with insuring against Superfund liability under these circumstances, it is no surprise that such coverage has virtually disappeared from the market.

B. Developments in Insurance Law: Judge-Made Insurance

The second area in which legal developments have reduced insurers' ability to write environmental liability insurance involves the interpretation and application of insurance policy language. Not only do new statutory obligations create uncertainties that undermine insurers' actuarial calculations; in addition, judicial interpretations of policy language that insurers had regarded as fixed, clear, and limiting have expanded the scope of coverage against both the old and new forms of environmental liability. The threat posed by the prospect that environmental liability policies increasingly will be interpreted to incorporate this "judge-made insurance" also destabilizes the insuring function.

Of course, the creation of insurance coverage through judicial interpretation is a long-standing practice. But traditionally this practice has been used as a kind of consumer protection device in cases where policy language was arguably ambiguous. Even in cases where that language was not ambiguous, the courts have tended to intervene mainly where the policyholder was an individual without ready access to legal counsel, without a strong incentive to shop for coverage, and without enormous potential liability. Judicial decisions in a number of environmental liability insurance disputes, however, have departed from these traditional constraints. They have created coverage even in the face of contrary policy language, where the policyholder was a business entity with access to counsel, and where potential liabilities were enor-

52. Moreover, in light of the potential liabilities at stake, the magnitude of this threat may be enormous. For example, United Technologies Corp. recently filed suit over environmental liability coverage against 240 property and liability insurers, Westinghouse Electric Corp. filed suit against 140 of its insurers, and Shell Oil Co. sued 270 of its insurers. See Greenwald, Superfund Unleashes Flurry of Coverage Suits, Bus. Ins., Feb. 1, 1988, at 1, 27.
53. For a more general discussion of the phenomenon of judge-made insurance, see K. Abraham, supra note 10, at 101-32.
54. See id. at 103-13.
As will be seen, this expansion of coverage is integrally related to the creation of new common law and statutory environmental liabilities.\textsuperscript{55}

In part, the negative effects of judge-made insurance on the environmental liability insurance market are similar to those already discussed. An unexpected judicial interpretation extending coverage beyond what was intended works like a mandatory retroactive price decrease. Insurers suffer an immediate financial loss, lose a measure of confidence in the fairness of the judicial system, and come to doubt their ability to predict future judicial developments.

In addition, judge-made insurance destabilizes the market in a way that extends beyond the effects of expansions of common-law and statutory liability. Environmental liability insurers can attempt to draft around uninsurable tort or statutory liabilities by incorporating exclusions, coverage limitations, and the like in their policies. In this way, insurers can try to maintain the level of certainty necessary for effective performance of their function, and enterprises seeking insurance against conventional environmental liabilities can obtain it. By contrast, there is no completely reliable way to draft around the threat of judge-made insurance, because by definition this is coverage that ignores the apparent meaning of the policy language itself. In an atmosphere already saturated with doubt about the stability of insurer obligations, judge-made insurance pushes the environmental insurance function another large step closer to the limits of insurability. The result is that insurance against a set of liabilities that might otherwise be insurable disappears. Several examples of the interpretive process that generates this result follow.\textsuperscript{57}

1. The Pollution Exclusion. — Until recently, the standard general liability policy sold to businesses and municipal governments contained provisions designed to provide some protection against pollution liability, but also to limit that protection. Products liability policies contained similar coverage. For example, the CGL afforded protection against bodily injury or property damage caused by an “occurrence,” defined as “an accident, including continuous or repeated exposure to


\textsuperscript{56} See infra note 72 and accompanying text.

\textsuperscript{57} The choice of examples is not meant to imply that others not included are unimportant. For instance, a mass of claims alleging insurer liability under CGL policies for the costs of removing asbestos insulation from schools and other public buildings is accumulating. The courts are likely to exhibit the same tendency to read coverage obligations into the policies at issue in those cases that can be seen in the examples set out in the following pages. For a discussion of the insurance problems associated with the asbestos removal cases, see Arness & Eliason, Insurance Coverage for “Property Damage” in Asbestos and Other Toxic Tort Cases, 72 Va. L. Rev. 943 (1986).
conditions, which results in bodily injury or property damage neither expected nor intended from the standpoint of the insured."\(^5\) The CGL excluded coverage, however, of

bodily injury or property damage arising out of the discharge, dispersal, release, or escape of smoke, vapors, soot, fumes, acids, alkalis, toxic chemicals, liquids, and gases, or waste materials or other irritants, contaminants or pollutants into or upon land, the atmosphere or any watercourse or body of water; but this exclusion does not apply if such discharge, dispersal, release or escape is sudden and accidental.\(^6\)

The combined meaning of the definition of "occurrence" and the "pollution exclusion" was that the policy afforded coverage against liability for bodily injury or property damage caused by continuous or repeated exposure to risks, unless that exposure was the result of any of the various forms of pollution detailed in the exclusion. Coverage against liability for damages caused by pollution exposures was excluded except when the exposure resulted from "sudden and accidental" pollution.\(^6\)

The rationale behind the provision of such an exclusion in a CGL policy (and in other forms of coverage containing the exclusion) is two-fold. First, the CGL is a general liability policy. If insureds can determine which risk or risks their operations pose, the threat of adverse selection increases, and there may be cross-subsidization of insureds whose operations create a special risk of gradual pollution by those whose operations pose only (or mainly) the risk of sudden and accidental pollution. The insurer whose policies do not contain the pollution exclusion will then be unable to compete effectively with insurers whose policies contain the exclusion. Second, gradual pollution is more likely to be controllable after it begins; yet the cost of after-the-fact identifications of situations in which control was or was not feasible is likely to be high. Consequently, a policy that provided coverage against liability for gradual pollution could be subject to considerable moral hazard as well as to adverse selection.

Some judicial decisions, however, have emasculated the pollution exclusion. The consequence of these decisions is that the pollution exclusion often is of no effect unless the pollution in question was intentional, or nearly so. A few of the more notable decisions are worth examining, because they suggest how dangerous it may be for insurers

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58. See Hendrick & Wiezel, supra note 28, at 328.

59. See id. at 344.

to rely on the language of their own policies in evaluating the insurability of the risks they cover and in setting a price for the coverage they sell.

In *Jackson Township Municipal Utilities Authority v. Hartford Accident & Indemnity Co.*\(^61\) the insured Municipal Utilities Authority was sued for depositing waste in a landfill that allegedly contaminated the wells of residents near the landfill. The Authority brought an action against its insurers, claiming that they had a duty to defend the suit and indemnify the Authority in the event the residents' suit was successful. The Authority's liability insurance policies contained the insuring clause and pollution exclusion quoted above.\(^62\) The court rejected the insurers' argument that because the pollution in question was not sudden and accidental, they had no duty to defend or indemnify. The court held that the pollution exclusion was simply a restatement of the definition of the term "occurrence" in the insuring clause, reflecting the principle that "coverage will not be provided for intended results of intentional acts but will be provided for the unintended results of intentional acts."\(^63\) As to the meaning of the terms "sudden and accidental" in the pollution exclusion itself, the court simply read them out of existence.\(^64\)

Similarly, in *Buckeye Union Insurance Co. v. Liberty Solvents and Chemical Co.*\(^65\) the insured was sued as a generator of hazardous waste for cleanup expenses under the Superfund Act. The court quoted extensively from *Jackson Township* in ruling that the pollution exclusion provided the insurer no protection.\(^66\)

The decisions in both these cases reflect the common, though admittedly not universal, fate of the pollution exclusion. It is interpreted as a mere elaboration of the phrase "neither expected nor intended from the standpoint of the insured" in the definition of insured occurrences. So long as it is neither expected nor intended, then, damage caused by gradual pollution is covered notwithstanding the exclusion,\(^67\)

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62. See supra text accompanying notes 58-59.
63. 186 N.J. Super. at 164, 451 A.2d at 994.
64. [T]he act or acts are sudden and accidental regardless of how many deposits or dispersals may have occurred, and although the permeation of pollution into the groundwater may have been gradual rather than sudden, the behavior of the pollutants as they seeped into the acquirer is irrelevant if the permeation was unexpected.

Id. at 165, 451 A.2d at 994.
66. There are no allegations in the complaint that compel the conclusion that Liberty Solvents intended or expected the releases of hazardous waste substances by Chem-Dyne or the damages that such release would cause. Construing the words "sudden and accidental" most favorably to the insured . . . we conclude that the release and resultant property damages could be found to be "sudden and accidental" from the standpoint of Liberty Solvents.

Id. at 134, 477 N.E.2d at 1235.
even though the pollution in question is not sudden. Even taken out of context, this interpretation is implausible because it makes an entire paragraph in the CGL and similar policies superfluous. There would have been no reason to include the pollution exclusion if it merely reiterated the definition of an insured "occurrence." The interpretation therefore seems forced. Taken in context, this interpretation is even more egregious, because it ignores the concern for adverse selection and moral hazard that lies behind the exclusion. If the exclusion is operative only when the pollution is expected or intended, then insurers and insureds must bear the cost of case-by-case determinations of what caused the incident and at what point the insured might have controlled it.

In some situations insurers can adjust to the importation of new meanings into old policy provisions. The two conventional adjustments to an unexpected interpretation are either to increase premiums charged for all new policies that will be subject to the unexpected interpretation or to redraft the provision in question to preclude the new judicial gloss on the provision's meaning. Unfortunately, both responses are likely to be much less effective in environmental liability insurance than in the typical setting.

Because of the long-tail on liability claims involving gradual pollution, neither increases in premiums nor changes in policy language can have much impact for years. Until recently, for example, the standard CGL always had been an occurrence policy—it provided coverage against liability arising out of activities occurring during the policy period, regardless of the time when a claim or suit alleging such liability was made. When judge-made insurance is added to occurrence policies applicable to long-tail claims, the new interpretation applies to


68. There are admittedly statements in commentaries on the exclusion suggesting that reiteration of the definition of "occurrence" was precisely its purpose. See, e.g., Chesler, Rodburg & Smith, supra note 60, at 36.

69. Long-tail claims are those which are not brought (or if brought, not resolved) for some years after the action by the defendant that gives rise to the claim. Thus, gradual pollution might begin in one year but not be discovered for five; or pollution (whether or not sudden) might occur and be discovered in one year, but diseases resulting from exposure to the pollution might not manifest themselves for ten or more years.

70. See Priest, supra note 2, at 1575-76 (describing use of claims-made coverage as response to weaknesses of occurrence coverage). In contrast to occurrence coverage, claims-made coverage protects the insured against liability arising out of claims made during the policy period. Generally it is easier to set a price for claims-made coverage, because the insurer need predict only claims to be made in the near future. See K. Abraham, supra note 10, at 49-51.
ENVIRONMENTAL LIABILITY

claims arising out of activities that may have occurred years ago.71

Consequently, the occurrence insurer faced with an unexpected interpretation of its policy cannot simply take an unanticipated loss on one or two year’s policies and immediately preclude further losses by redrafting the policy or increasing its price. On the contrary, losses may continue to accrue on policies that had been written over a period of many years and that are now subject to the new interpretation. Redrafting of new policies can only cut losses that would otherwise have begun to strike the insurer several years in the future.

This predicament is exacerbated by the development of new common law and statutory liabilities for environmental injuries. Not only do these new liabilities multiply insurers’ losses on preexisting policies whose language expressly covers them; as new liabilities are created, courts also will tend to hold that they are covered by preexisting policies notwithstanding contrary policy language. This tendency should not be surprising; from even the early period in the expansion of modern tort liability, the availability of liability insurance to defendants has been a major component of the rationales given for imposing liability.72 Once a new environmental liability has been created, the interpretation of insurance policies to provide coverage against that liability seems inevitable and is almost a necessary part of the decision to impose liability in the first place.

In short, prudent insurers cannot ignore the threat that the judicial treatment of the pollution exclusion will not be an isolated phenomenon and that future courts will strive to assure that even redrafted policies cover new environmental liabilities.73 The insurance law developments surveyed in the following two sections, though less firmly entrenched than the new interpretation of the pollution exclu-

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71. A recent General Accounting Office survey of pollution liability insurance claims, for instance, found that the average claim was not closed until seven years after the end of the policy period and that almost 25 percent were not closed for 12 years. See Insurance Availability, supra note 7, at 79-80.

72. This rationale can be traced at least as far back as Justice Traynor’s concurrence in Escola v. Coca Cola Bottling Co., 24 Cal. 2d 453, 462, 150 P.2d 436, 441 (1944) (manufacturer of defective product can insure against risk of loss and distribute the cost to the public as a cost of doing business). The most explicit modern invocation of the insurance rationale can be found in an asbestos case that straddles the line between products and environmental liability. See Beshada v. Johns-Manville Prods. Corp., 90 N.J. 191, 205, 447 A.2d 539, 547 (1982).

73. The property/casualty industry’s action prior to the nearly complete disappearance of primary environmental liability insurance—the effort to replace the old occurrence CGL with a “claims-made” form affording coverage only for claims actually made during the policy period—was a natural response to the problems posed by judge-made insurance in the environmental liability field. See Hendrick & Wiezel, supra note 28, at 336-43. The effort to introduce a claims-made CGL, however, has not met with success. See Finlayson, Insurers Restricting Use of Claims-Made CGL Form, Bus. Ins., Feb. 9, 1987, at 1. Some state regulators have been reluctant to approve the new policy for general use, and the consuming public has not reacted favorably to its introduction.
sion, suggest that this threat could prove to be substantial and that marketing of environmental liability insurance would be a risky use of insurers' underwriting capacity.

2. Damage to the Insured's Property and Cleanup Liability. — With the advent of the federal Superfund and analogous state cleanup regimes, property owners have begun to claim reimbursement from their insurers for the costs of cleaning up property in accordance with the requirements of these new regimes. The claims arise from cleanups undertaken by the owners themselves in response to governmental orders, or from governmental cleanups followed by reimbursement actions brought against property owners and offsite generators. CGL policies typically contain two provisions relevant to these disputes. The first excludes coverage for damage to "property owned or occupied by ... the insured." The second is the basic coverage provision itself, which extends coverage against liability for sums that the insured "shall become legally obligated to pay as damages because of ... bodily injury or ... property damage ..." The function of both provisions is undermined by judicial decisions holding that cleanup expenses are covered by the CGL policy.

Decisions regarding the applicability of the owned-property exclusion to the costs of cleanup are by no means uniform. Several cases apply the literal language of the exclusion and deny coverage; others conclude that the exclusion is inapplicable to costs expended to prevent greater damage for which the insurer would be liable; and a number of others read the exclusion virtually out of existence.

To date, the high-water mark of the tendency to create judge-made insurance through interpretation of the owned-property exclusion is Summit Associates, Inc. v. Liberty Mutual Fire Insurance Co. The case is admittedly only a trial court decision, it is currently on appeal, and it was decided in New Jersey, a state at the forefront of the new environ-

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74. The authority to issue such orders under the Superfund Act, for example, is contained in CERCLA § 106, 42 U.S.C. § 9606 (1982).
76. See, e.g., Alliance of Am. Insurers, 1986 Policy Kit 250.
77. Id.
mental liability. Consequently, it would be misleading to suggest that the decision necessarily represents the mainstream judicial approach to the interpretation of environmental liability insurance provisions. On the other hand, uncertainty on the part of insurers about whether decisions expanding their liabilities are aberrations or the beginnings of important new trends is part of what has been confounding the environmental liability insurance market. Examining the judicial attitude that Summit Associates may presage is therefore as appropriate for the analyst as it is necessary for the insurance industry.

Summit received a governmental order to remove sewage from property it had purchased; Summit had been unaware that the sewage was present at the time it purchased the property. Liberty Mutual denied coverage of the costs of cleanup and defended against Summit's suit for reimbursement of cleanup costs on the basis of the owned-property exclusion. The court rejected the defense on the following grounds:

"The health, safety and welfare of the people of this state must outweigh the express provisions of the insurance policy in issue. . . .

. . . To impose such cleanup costs on government agencies would certainly create an undue burden on taxpayers . . . .

. . . Thus, exclusions denying coverage for damage to property owned by the insured should not be applied under these circumstances . . . .

This policy must control over the plain meaning doctrine in situations such as that presented in this case, because of the nature of the case, the potential damage which may result, and the cost which may be imposed on the landowner. 82

The opinion is a remarkable document, because its analysis appears to be entirely retrospective. Liberty Mutual may or may not be in a better position to pay cleanup costs than the state's taxpayers and the insured property owner. But the relevant question is larger than this: it concerns the impact that voiding owned-property exclusions will have on the environmental liability insurance market of the future. To the extent that the court considered the future effects of its decision—a point on which the opinion is silent—it must have assumed that if insurers must pay for damage to an insured's property notwithstanding the owned-property exclusion, then future insurance policies could be adjusted to take account of the new rule without undue adverse effects.

Yet there is little basis for such an assumption. Insurers incorporate the owned-property exclusion to avoid the dangers of adverse selection and moral hazard. When insurers can rely on the exclusion, they may be able to insure against cleanup expenses and damage to owned property through other types of policies or through separate

82. Id. at 8-10.
endorsements to the basic policy. When courts void the owned-property exclusion, they run the risk of creating adverse selection and moral hazard problems sufficiently severe that general liability insurance becomes much more expensive or much less available. These considerations do not simply disappear when a court adopts an interpretation that emasculates a policy provision designed to implement them.

Such judicial action will almost inevitably produce attempts by insurers to preclude coverage of damage to owned property through even broader exclusions that result in far more restrictive coverage—or no coverage at all. The nearly complete disappearance of pollution liability coverage from the new CGL policy—whether the damage is sudden or gradual, and whether the damage is to the insured’s property or to that of another—is evidence that this prospect is not merely theoretical. On the contrary, decisions such as Summit Associates can have a pronounced impact on the availability of coverage. The candor of the decision and its blatant disregard for accepted doctrine regarding contractual obligations may remain exceptional; but insurers may reasonably fear that the attitude and underlying assumptions of the Summit Associates opinion are indeed widespread. It is little comfort for insurers to know that courts with similar motivations may find more doctrinally acceptable methods of achieving the same result.

The second CGL provision bearing on the insurer’s liability for cleanup expenses is the basic coverage provision extending insurance to sums the insured must pay as “damages because of . . . property damage.” Some courts have held that this provision does not cover liability for cleanup expenses, even when the obligation is incurred in a suit by the government against the insured. These decisions hold that since a suit for reimbursement of cleanup expenses seeks restitution, it is not a suit seeking “damages” within the meaning of the provision, and in any case that these expenses are not owing “because of . . . property damage,” but for economic loss alone.

A number of other courts, rejecting this interpretation, have held that the CGL policy does in fact cover liability for cleanup expenses, either self-incurred in response to an injunctive order or payable as reimbursement to the federal government or a state. Even apart from

83. See supra note 77 and accompanying text.


their debatable interpretation of the relevant policy language. These latter decisions make a critical error, for they entirely ignore the actuarial concerns that can shed light on the purpose of these coverage provisions.

It long has been recognized that potential liability for economic loss independent of any liability for personal injury or property damage is relatively indeterminate and therefore difficult to insure. Superfund liability is a classic case of this form of liability because the cost of cleaning up a hazardous waste site may far exceed the value of the property to be cleaned up, yet nonetheless be required by the Superfund regime. In addition, because this regime now requires cleanup in accordance with extremely high safety standards, the cost of cleanup may far exceed the discounted present value of the potential future bodily injury and property damage that cleanup prevents.

The nature of the costs involved in Superfund cleanups thus points up the weaknesses of the rationales typically used to impose liability on insurers. The argument that because the cost of cleanup is incurred in connection with a particular piece of property it constitutes "damages because of... property damage" misses the point. The lion's share of cleanup costs are likely to be incurred not "because of" property damage, but because of the threat to the health of persons residing off the property to be cleaned up. Similarly, the avoidance-of-greater-damage

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86. The term "damages" might be taken to include cleanup expenses; in addition, payment of such expenses could conceivably be considered damages "because of... property damage," even if they are not compensation for property damage. However, both of these interpretations must be correct for the provision to afford coverage.

87. The classic statement of the point is Cardozo's. He noted that such liability may expose a defendant (in this case an accountant) "to a liability in an indeterminate amount for an indeterminate time to an indeterminate class." Ultramares v. Touche, Niven & Co., 255 N.Y. 170, 179, 174 N.E. 441, 444 (1931); see also James, Limitations on Liability for Economic Loss Caused by Negligence: A Pragmatic Appraisal, 25 Vand. L. Rev. 43 (1972) (arguing against liability for indirect economic consequences of negligence). Modern cases, including those involving environmental liability, reiterate this concern along with assurances that there are definable limits on liability, even when they extend liability beyond its traditional limits. See, e.g., Union Oil Co. v. Oppen, 501 F.2d 558, 570 (9th Cir. 1974) (liability for economic losses resulting from oil spill suffered by commercial but not recreational fishermen); Pruitt v. Allied Chem. Corp., 523 F. Supp. 975, 980 (E.D. Va. 1981) (liability imposed for economic losses suffered only by certain commercial enterprises as a result of Kepone spillage); Rosenblum, Inc. v. Adler, 93 N.J. 324, 349, 461 A.2d 138, 151 (1983) (auditors could obtain insurance against the risks in question).

88. For the first six years of the Superfund regime, cleanup standards were uncertain. The problem was commonly referred to as the "How clean is clean?" question. Cleanup standards have now been prescribed by SARA § 121(a), 42 U.S.C.A. § 9621 (West Supp. 1988). The statute requires that the level of hazardous waste remaining on site after any cleanup comply with the requirements of a wide variety of federal and state environmental standards. Id. The obligations created by the standards, however, are still subject to debate. See supra note 35.
rationale that has sometimes allowed recovery in older insurance cases notwithstanding policy limitations on coverage is untenable here: from the standpoint of costs, cleanup may be the more expensive route.

In sum, to impose liability for cleanup expenses under policies issued before the enactment of the statutes that created such liability is to ignore the calculations that entered into the pricing of those policies, and thereby to ignore the underlying purpose of the provisions whose meaning is at issue. The result is twofold: a windfall for insureds, who receive benefits for which they never paid, and still another set of uncertainties regarding the magnitude of the liability an insurer providing environmental liability coverage may face.

3. The Trigger of Coverage. — The third example of how judge-made insurance confounds the environmental liability insurance market is drawn from long-latency disease cases. Defendants in many of these cases—asbestos claims are typical, but the problem is equally troubling in hazardous waste and other environmental liability claims—are charged with liability for exposing plaintiffs to a hazardous substance that eventually caused the plaintiff to manifest a disease. The period from the time of exposure to the time of manifestation is often several decades, during which the defendant has been covered by a number of different liability policies. The issue is which policy or policies provide coverage.

The problem is difficult because the language in many of the policies does not speak expressly to the issue. The policies tend to cover liability for “bodily injury during the policy period,” but their language arguably treats this insured event as though it will always take place at a discernable time. The language of most potentially applicable liability insurance policies neither contemplates nor clearly excludes coverage against liability for a disease that does not occur at a particular time, but instead develops after an initial exposure, sometimes because of the continued presence of the hazardous substance in a potential plaintiff’s system.

In contrast to the first two examples of judge-made insurance, the trigger-of-coverage decisions do not destabilize insurer expectations by ignoring clear coverage limitations. Rather, the problem arises because the language of the policies was not drafted with such long-latency

cases in mind. The question of which insurer or insurers should bear the risk of liability under such circumstances has no obvious solution. However, for insurers there is a threatening trend in the decisions that nonetheless bears underscoring.

There are three prominent theories for determining the event that triggers coverage, known as the exposure, manifestation, and "continuous trigger" theories. The first holds issuers of policies that were in effect during the plaintiff's exposure to defendant's actions or to a substance manufactured or handled by the defendant responsible for coverage;\(^9\) the second holds issuers of policies in effect at the time of manifestation of the plaintiff's disease or injury responsible;\(^9\) and the third holds issuers of all policies in effect from time of exposure through the time of manifestation responsible.\(^9\) There are plausible arguments for each theory. Yet, perhaps unsurprisingly, each of the three leading cases adopting one of these theories embraced the theory that maximized the insurance coverage available to the insured litigating the case.\(^9\)

In one sense, these pro-coverage results are merely a reflection of the maxim that ambiguities in an insurance policy are to be interpreted against its drafter. However, two out of the three leading decisions not only rely on the ambiguity of the policy language as a ground for decision, but also on a substantive analysis of the proper approach to the problem.\(^9\) Under such circumstances insurers have reason to wonder whether these legal conclusions reflect legitimate differences of opinion on a substantive issue, or instead represent evidence of the length courts dealing with environmental liability insurance are willing to go to assure that insurance is available to protect defendants and compensate plaintiffs in environmental litigation.

Ironically, although the substantive analysis undertaken by each court renders its individual decision more plausible, it also renders the decisions as a group less credible. The trigger-of-coverage decisions raise the same concern raised by the entire body of judge-made insur-


\(^9\) See, e.g., Keene, 667 F.2d at 1045.

\(^9\) See Chesler, Rodburg & Smith, supra note 60, at 19 n.47. Of course, the continuous trigger theory will always maximize coverage. In two of the three leading cases, however, coverage had been provided either at the time of manifestation or at the point of exposure, but not continuously. Id. Since all three cases are decisions by federal courts in diversity actions, it will be important to see whether the states whose law these courts were applying adopt similar approaches. Moreover, whether a manifestation or exposure rule will be applied in a future case even though it would deprive the policyholder of coverage remains to be seen.

\(^9\) In the third case, the parties had stipulated that the contract was not ambiguous. See Eagle-Picher, 682 F.2d at 18.
ance decisions in this field: the fear that the exigencies of the particular case may come to dominate the language of the insurance policy applicable to the case. Under such circumstances serious uncertainty about the future of the interpretive process itself is inevitable, and the market for environmental liability insurance is affected accordingly.

C. The Expanding Common Law of Environmental Liability

Environmental tort liability is a dynamic field of law. Commentary commonly focuses on doctrinal changes governing proof of causation,\(^9\) class action procedures,\(^9\) and other trends that have an impact on the underlying basis of liability. Yet other developments discussed less frequently in the literature affect not only the magnitude of environmental liabilities, but the difficulty of insuring against them as well. Many of these developments are only beginning to evolve; it is too early to say whether they will become firmly entrenched or will be rejected by the mainstream. But for insurers, already reeling from the effects of Superfund liability and judge-made insurance, the legal cauldron shows no sign of cooling off; the threat of new expansions of liability further undermines the goal of attaining tolerable levels of certainty in this field. Because this threat is real, its potential impact on insurers’ decision to enter, remain in, or abandon the environmental liability insurance market cannot be ignored.

1. Liability for Risk-Creation Without Injury. — The first inchoate change in common-law environmental liability threatens to dissolve a long-standing feature of the law of torts: the requirement that a plaintiff prove bodily injury to recover damages from a defendant who has unintentionally risked injuring the plaintiff.\(^9\) No major court has yet imposed tort liability solely for the creation of risk without any accompanying injury whatsoever. Plaintiffs still must allege and prove some actual damages in order to prevail in an environmental tort claim. However, in cases where such liability has been alleged, the courts have adopted alternative theories permitting plaintiffs to recover compensation prior to the occurrence of discernable injury, for imposing fear of contracting cancer,\(^9\) for the occurrence of chromosomal\(^9\) or immune

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\(^9\) See generally P. Schuck, Agent Orange on Trial: Mass Toxic Disasters in the Courts (1986) (presenting a detailed narrative of the Agent Orange products liability litigation).

\(^9\) This requirement has been abolished under certain limited circumstances. See, e.g., Dillon v. Legg, 68 Cal. 2d 728, 730–31, 441 P.2d 912, 914, 69 Cal. Rptr. 72, 74 (1968) (mother may recover damages for emotional distress suffered as a result of witnessing death of her minor child). Until very recently, however, the bodily injury requirement was a fixture in standard cases. See, e.g., Payton v. Abbott Labs, 386 Mass. 540, 556, 437 N.E.2d 171, 181 (1982) (plaintiffs must show physical harm in order to recover for emotional distress).

system damage,\textsuperscript{101} or for creating the need for medical monitoring.\textsuperscript{102} Although courts have thus far avoided imposing liability for risk without injury, academic commentary favoring such liability and developing rationales for it is growing.\textsuperscript{103} In addition, the costs of alleging such liability, proving facts that would support it, and briefing an argument in favor of the claim will sometimes be sufficiently small in light of the potential benefits of success that continued attacks upon the citadel can be forecast confidently. In such a climate, it may be only a matter of time before the citadel falls; in any case, liability insurers would be foolhardy to ignore the possibility of such a major legal change.

Liability for the creation of risk without injury would pose new forms of uncertainty in several respects. The number of persons who may be exposed to the risk of injury or property damage by an environmental hazard is far less determinate than the number that actually suffer injury; the amount of compensation that would be awarded on a risk-only basis would be uncertain and probably unstable for a long period; and refuting claims of risk exposure would be difficult and expensive for insurers defending against such claims. In any case, while some of the intermediate forms of liability created thus far, such as liability for chromosomal or immune system damage, more closely resemble traditionally actionable tangible injury, other types, such as liability for fear of contracting disease and for medical monitoring expenses, are themselves sufficiently open-ended to contribute to the uncertainty now troubling the insurance market.

Furthermore, whether the language of existing liability policies would encompass coverage against liability for risk creation alone is uncertain. Most policies cover liability for "bodily injury," but others


cover the apparently broader liability for "personal injury." Insurers would undoubtedly rely on the terms of their policies to negate any obligation they might otherwise have to provide coverage against liability for risk creation. But in light of the treatment that policy language and limitations have received from the courts, such reliance could be unwarranted. The safer course is to sidestep the problem entirely by excluding all pollution-related coverage from general liability policies, as most insurers recently have done.

2. Retroactive Strict Liability in Tort. — Retroactive strict liability is already a fact of legal life under Superfund,104 and several courts have imposed strict liability in tort for a manufacturer’s failure to warn of or reduce a product risk that was undiscoverable at the time of manufacture.105 Such a rule would seem equally applicable to liability for exposure to hazardous waste or other forms of environmental exposure. If retroactive strict liability became the rule in environmental litigation, however, it would greatly complicate the insurer’s task of predicting the scope of its insured’s future liabilities.

There are plausible arguments for imposing retroactive strict liability in this area. Some of those held liable in such actions may indeed be culpable—they may have known at the time they took actions ultimately culminating in harm that these actions were unduly risky; or the actions may have been negligent when judged by the standards of the time even if they were not consciously wrongful. On the other hand, not all the defendants who would be held liable in retroactive strict liability actions are culpable. Knowledge about the risks of certain kinds of activities may not have been well developed at the time actions were taken, and standards of behavior may have become more stringent since that time. The difficulty and unfairness of judging decades-old behavior by present-day standards of what constitutes negligence is in fact part of what has prompted the application of strict liability standards to such behavior.106

104. See supra notes 42–47 and accompanying text.
106. For an invocation of precisely this rationale in the leading retroactive strict liability case, see Beshada, 90 N.J. at 207–08, 447 A.2d at 548–49 (1982). The problem is that our standards and sensitivities regarding environmental health and harm have gradually but firmly developed over a period of several decades. Thus, at what might be called “time one” (during the 1950s, for example), not only were certain behaviors not regarded as wrongful, but the prospect that strict liability might be imposed for their consequences was farfetched, if not inconceivable. Yet by “time three” (perhaps the late 1970s), the same behavior had become arguably wrongful, and in any event the prospect that strict liability might be imposed for its consequences was foreseeable, though it may or may not have been probable. At some point in between these periods—at “time two”—a transition in social and legal attitudes occurred, and enterprises that might in
Regardless of how sensible this approach and its statutory counterpart under Superfund may seem from an exclusively tort or environmental law point of view, however, it could further disrupt the environmental liability insurance market by creating additional uncertainties about the scope of liability that might be imposed on parties covered by such insurance.

3. **Superfund Tort Liability.** — Major tort suits often are initiated in the wake of a site's listing on the National Priority List\(^{107}\) for Superfund cleanup;\(^{108}\) and the parties to these suits are permitted to make use of the detailed findings regarding the danger to health posed by the site that are prepared in connection with the cleanup.\(^{109}\) While the imposition of tort liability on a nonnegligent off-site generator of a hazardous substance for injuries caused by exposure to that substance after it has left the generator's possession and ownership would have been unheard of at common law, it is only a short conceptual step from the Superfund's imposition of cleanup liability on such a generator to the judicial imposition of tort liability on the generator.\(^{110}\) And as scrutiny of the role of off-site generators becomes commonplace in cleanup actions and in tort suits focusing on the dangers to health posed by the site as a whole, imposing tort liability on such generators may no longer seem to be extraordinary.

As yet, the wholesale importation of the Superfund liability regime into the law of torts has not occurred, but several courts have flirted with the idea.\(^{111}\) If such liability were joint and several, as it would almost have to be to have any effect,\(^{112}\) the uncertainties associated with insuring against joint and several liability that doomed the market


\(^{110}\) For a discussion of the manner in which the Superfund regime may affect the filing of private liability actions, see Kanner, Superfund and the Future of Toxic Tort Litigation, 2 Toxics L. Rep. (BNA) No. 24, at 671 (Nov. 11, 1987).


\(^{112}\) In the absence of joint and several liability, most plaintiffs would be unable to meet their burden of proving an allocation of damages, and the purpose for which generator tort liability had been created in the first place would be undermined.

HeinOnline -- 88 Colum. L. Rev. 975 1988
for cleanup liability insurance would afflict the tort liability insurance market as well. This prospect, among others, has probably contributed already to the disappearance of any pollution liability protection from standard CGL insurance policies.

III. THREE SOLUTIONS: HOW TO REDUCE UNCERTAINTY

From the standpoint of insurers, the most obvious solution to the problems created by the new environmental liability would be to revise the legal doctrines, statutes, and judicial practices that have caused them. Because the new environmental liability serves a number of goals that could be undermined by a major restriction of liability, however, such a one-sided approach to the problem is unlikely to be adopted. Indeed, none of the tort reforms adopted by statute in forty-two states over the past two years will have any substantial impact on the problem, since for the most part these statutes do not address the factors that are responsible for creating it.

The states, of course, have no authority to amend the Superfund Act, and they have not revised their own supplementary cleanup regimes. Statutes that modify common-law rules governing joint and several liability could conceivably have some impact on the development of tort causes of action paralleling the liabilities imposed under the Superfund Act; however, few of the statutes actually enacted would have this effect. The two most common tort law reforms—modification of the collateral source rule and the adoption of ceilings (generally at $250,000 or more) on recovery of general damages—are more likely to affect substantially the surge in average tort recoveries than to reduce the uncertainties associated with the legal doctrines and practices of the new environmental liability. Neither reform directly affects the probability of suit (although both may have some indirect effect), and neither is likely to inhibit the spread of new forms of environmental liability to any great extent.

In addition, nothing in any state reform is directed at the judge-
made insurance that results from disregarding the terms and purposes of environmental liability insurance policies. In all likelihood, there is little that any legislature could do directly to inhibit this practice, although conceivably more active intervention by state insurance commissioners in shaping the substance of policy provisions would prompt greater deference from the courts.

Finally, state tort reforms have left untouched the prospect that such inchoate doctrines as retroactive strict liability and liability for risk creation prior to injury will evolve into important bases of liability. The uncertainty that has been engendered in the insurance and business community by the new environmental liability is related as much to the threat of new developments such as these as to the law that is already on the books. Yet much of this kind of uncertainty is not suited to a legislative solution, which cannot responsibly foreclose major new areas of legal development through categorical prohibitions. Rather, reassurance would have to come largely from half-a-dozen consecutive years without major tort and insurance law surprises from the courts.

In the meantime, however, some relief could be provided by non-judicial institutions. The following sections suggest three methods of ameliorating the problem. The first is to limit the degree of uncertainty generated by environmental cleanup liabilities. This effort would require legislative and judicial cooperation in the implementation of cleanup regimes, exemplified by the Superfund program at the federal level. The second method would rely largely on the voluntary insurance market; it involves the introduction of a new approach to the pricing of environmental liability insurance called “retroactive indexing” of premiums. The third method would require removing, at the administrative level, some of the regulatory obstacles to the establishment of enterprises specializing in the insurance of high uncertainty liabilities.

A. Statutory Cleanup Obligations: Allocating Responsibilities to Minimize Uncertainty

The Federal Superfund Act and a variety of state hazardous waste cleanup statutes have made substantial contributions to environmental liability uncertainty through the method these regimes use to impose responsibility for cleanup. Most regimes create a fund by assessing surcharges against the enterprises thought to be responsible for the hazardous waste problem. Under the federal approach, these in-

117. Moreover, the terms of legislative liability reforms, like insurance policy provisions, are subject to manipulation by courts desiring to assure compensation for sympathetic plaintiffs and insurance for appealing defendants.
118. 42 U.S.C. § 9607(a).
119. See, e.g., Cal. Health & Safety Code §§ 25342, 25345 (West 1984 & Supp. 1988) (fund created by tax on generators of hazardous waste). At least 36 states have enacted legislation creating funds that may finance hazardous waste cleanup. The funds are financed in a variety of ways: through taxes on the production of hazardous materi-
clude the chemical and petroleum industries and the general corporate community, in different proportions. There is also a contribution to the fund from general revenues. Although the fund itself can be used to pay the cost of cleanups in order to remove threats to health posed by hazardous waste, individual generators and transporters of hazardous waste, together with the owners and operators of hazardous waste storage sites, are ultimately liable for these costs.

From the standpoint of insurability, the structure of responsibility created by the fund would make some sense if liability were "individual" rather than joint and several. A specific enterprise creating a threat to health at a particular site would be held liable for the costs of removing the threat whenever the enterprise was solvent and identifiable; a fund, comprised of contributions from enterprises not directly responsible for the problem at that site but nonetheless responsible for the hazardous waste problem in general would be liable as a last resort. In this way, taxpayers could be saved much of the cost of cleanup, and the enterprises most closely associated with the creation of this national problem would—as a group—bear the cost of solving it.

These cleanup regimes have gone farther, however, and have adopted a curious combination of individual and collective responsibility that confounds the insurance function by creating uncertainty that cannot be handled through traditional approaches. Not only does the federal Superfund Act impose responsibility for the costs of cleanup caused by any individual enterprise; in cases where the allocation of individual responsibility is not feasible, the Act also has been interpreted to impose joint and several liability for all the costs of removing the threat to health posed by a particular site on all enterprises associated with the site. The result is an intermediate version of collective responsibility, in which the fortuity of involvement in a site where individual causal contributions cannot be unraveled can produce massive liability for certain solvent enterprises and their insurers.

This regime of responsibility may be understandable as a solution to the often intractable problems of proof that arise in Superfund cases...
and as an effort to preserve the fund for use on orphan sites or those without solvent responsible parties. But because solvent parties have already contributed cleanup costs on a systematic basis through surcharges assessed by the fund, the argument for a second, less systematic collective responsibility assessment keyed to site involvement is weakened. Since the prospect of this second collective assessment is at the core of the insurability problem in this field, a great deal might be gained without major loss by eliminating that second assessment of responsibility. The entire system would then operate more like a public works program financed by potentially responsible parties than a cleanup liability statute.

A better approach might involve the following: When individual responsibility can be allocated, several (but not joint) liability for cleanup costs still would be imposed. An enterprise still would be held liable for its own causal contribution, but it would not be liable for the contribution of other parties, whether or not they were solvent, except, perhaps, in cases involving deliberate and knowing violation of existing law. Proxies for causal contribution based on a formula combining such factors as the volume, toxicity, persistence, and migratory ability of the waste deposited by each potentially responsible party might be used when a more direct measure is not feasible. On the other hand, when the imposition of individual responsibility, even based on a formula proxy, is not feasible, collective responsibility in the purer form of broad fund surcharges, rather than in the intermediate form of joint and several liability imposed on a site-by-site basis, should be preferred.

Admittedly, this approach would mean that some heavily responsible parties would escape liability if their individual contributions could not be allocated. The use of proxy allocation, however, should reduce the instances in which this problem arises; and placing the burden of proving that a reasonable allocation could not be made on the potentially responsible parties could minimize litigation and reduce the problem even further. In any event, under the current state of the art it will often be impossible to assess responsibility in accord with the microscopic allocations of causal responsibility that would be ideal. In the

125. It might be argued that the rationale behind this approach is that even if joint and several liability is inequitable in a given case, in the long run enterprises with involvement at a greater number of sites will bear a greater portion of cleanup costs. That is probably true. But because there is no reason to suppose that the number of sites in which an enterprise is involved is a very accurate proxy for its causal contribution to the overall national problem, the approach does not necessarily remedy the inequity produced by imposing joint and several liability on a site-by-site basis.

126. There is some warrant in SARA for the Environmental Protection Agency ("EPA") to recommend settlement allocations on the basis of these and other factors. See SARA § 122(a), 42 U.S.C.A. § 9622(e)(3) (West Supp. 1987). Since allocation on this basis is nonbinding, however, the availability of this approach is unlikely to increase substantially the predictability of Superfund liabilities.
absence of anything resembling that capacity, an approach that surrenders the effort to impose responsibility in accord with the very crude standards of joint and several liability, in return for a semblance of insurability for the risk of individual liability, seems a better compromise than the current mixed regime.

B. Retroactive Indexing of Premiums

As long as the civil liabilities threatened by environmental law continue in their current form, insurers will be disinclined to offer insurance against those liabilities, and the coverage that they do offer will be exceedingly expensive. Most proposed reforms of environmental liability would strike at this problem by altering legal rules so as to reduce the scope of liability or to render liability more predictable. Such approaches appear logical because standard environmental liability coverage provisions generally do not distinguish between conventional forms of liability, which are reasonably predictable, and new unconventional forms, which are not. Rather, the coverage provided by standard policy provisions necessarily incorporates insurance against both kinds of liability. In theory, this problem could be solved by affording coverage for only those liabilities comprehended by the law in existence on the date the policy takes effect. But this approach would pose enormous practical problems, since determination of where the law stood at a particular time would be difficult and often disputed. Because insurers are generally unable to draw this distinction, the current climate of uncertainty not only has caused the disappearance of coverage against liabilities at the frontier of legal change; it has also eliminated most coverage against conventional, more predictable forms of environmental liability.

Altering environmental liability law, however, is not necessarily the only method of making the sale of environmental liability insurance more feasible and its price more reasonable. One method of dealing with the problem that does not rely on reducing environmental liabilities is to sell only claims-made coverage, under which only liabilities developing during the first few years after the policy is sold need to be predicted. This approach is likely to founder on its inability to solve the problem of judge-made insurance and on the fact that claims-made insurance provides policyholders with little protection against the risk of uncertain new liabilities. Another method might be for insurers to

127. In addition, even if this difficulty were circumvented, the approach still could be undermined by judicial interpretations designed to expand the coverage intended by the insurer. See supra notes 52–57.

128. Coverage against liability for sudden and accidental pollution, for example, has all but disappeared from CGL policies, although in the past this conventional form of coverage was readily available. This is largely the result of the interpretations of the “pollution exclusion” discussed earlier. See supra Part II.

129. See supra note 73.
be compensated for bearing the extraordinary risk now posed by the threat of environmental liability through new forms of payment more satisfactory to both insurers and insureds than the astronomical prices that now seem to be the only alternative to the absence of a market for environmental liability insurance. But it is no surprise that such an approach has not emerged, since most adjustments in the form of payment for insurance can have little impact on the amount of such payment. Risk that is too costly to bear because of its uncertainty does not become less costly when the form of payment changes.  

A system of retroactive indexing of premiums, however, could achieve effects similar to a system of insuring only predictable liabilities. Under retroactive indexing, standard liability insurance would cover both conventional and (within the limits of policy language) unconventional forms of environmental liability, just as standard policies always have done. On the other hand, premiums would be set and paid in two steps: one step at the inception of the policy and the second step after a period of years. The premium at step one would be set by reference to predicted liabilities; the premium at step two would be set by reference to a previously defined index of tort and insurance law development.

130. For example, one potential method of compensating insurers for bearing the risk of environmental liability might be to afford them an equity interest in the businesses they insure. In this way the potential benefits of providing such insurance might be multiplied in cases where insureds profit from low claims experience, and the incentive for insurers to provide coverage thereby might be increased. Furthermore, to the extent that an insured's claims experience affects the value of its shares—because of deductibles or coinsurance, above-policy-limits awards, or diversion of management talent by litigation issues—insurers might also have an increased incentive to engage in monitoring the insured's activities or to use other risk management techniques to reduce the frequency and severity of claims.

Unfortunately, the proposal has the defects of most adjustments that might be made in the form of payment to liability insurers—it adjusts form, not substance. Nothing now precludes liability insurers from purchasing equity interests in their potential policyholders and offering those in whom they have purchased an interest lower premiums. That opportunity obviously has not produced any significant relief for the market. This is largely because an equity interest in an insured is merely an asset, much like the cash premium for which it would substitute. Since that asset has a market value, the value of the interest insurers would require as payment for coverage would almost certainly be equivalent to the cash premium that would otherwise be charged. As a consequence, insureds would still be paying high premiums; payment would simply be in a different currency.

It might be argued that the equity-interest option has not been used because insurers' advantage in monitoring (through risk assessment and risk management, for example) relative to other equity holders would create a free rider problem precluding full compensation to insurers for any monitoring they would otherwise undertake. Under the present system, however, insurers can be paid for their monitoring services through cash premiums without encountering a free rider problem; yet their possible comparative advantage in monitoring has not prevented premiums from escalating. Consequently, there is little reason to suppose that the same comparative advantage would produce greater gains from trade if the trade were made in stock instead of cash.
opments which expand or contract environmental liabilities during the period between step one and step two.

As a consequence of this two-step premium charge, insureds could be protected against all the liabilities that had been insured under the various forms of environmental liability coverage that were available until recently, and insurers could extend such coverage without fear that unexpected developments would render offering such coverage a losing proposition. An individual insured would be able to shift to the insurer the risk that the insured’s own claims experience would be worse than average; but the insurer would not bear the risk that the average claims experience of all those it insured would be above the level predicted because of unexpected developments in environmental liability or insurance law. Instead, insureds as a group would bear the cost of unexpected expansions of liability, just as they would benefit from unexpected contractions of liability, claim frequency, or claim severity.

Although several objections can be lodged against this retroactive indexing system, they are not sufficiently persuasive to preclude serious consideration of the proposal. First, because the step two premium would necessarily be set some years after coverage was purchased, enterprises purchasing insurance each year would face long-term, unliquidated, and potentially large liabilities to their insurers on an annual basis. This is a weakness compared to reasonably priced, traditional forms of liability coverage. However, annual increases of this sort have become increasingly common in an inflationary economy; the variable-rate mortgage market provides a ready example. In insurance markets, annual increases are already an integral part of claims-made coverage, the form of protection insurers prefer to offer in a climate of uncertainty; a claims-made approach to environmental liability therefore cannot offer insureds much more certainty than a retroactive indexing scheme.

Moreover, compared to the current condition of the market, in which coverage is either unavailable or extravagantly priced because of

131. In a sense, such an arrangement would parallel Professor Arrow’s conception of the typical cost-plus contract as divided into two parts: a contract for a fixed price plus insurance against unexpected costs. See K. Arrow, Essays in the Theory of Risk-Bearing 136 (1974).

132. This two-step approach is not unlike the arrangement put in place by the Price-Anderson Act, under which nuclear power plants must purchase commercial liability insurance up to a maximum of $60 million, but also are obliged to contribute up to $5 million each to pay claims lodged against owners of other nuclear plants if these claims exceed the amount of the required coverage. See 42 U.S.C. § 2210(b), (e) (1982). The difference is that total liability at “step two” under the Price-Anderson Act is limited, while the size of the premium that may be assessed each enterprise at step two under the present proposal is not.

133. Much medical malpractice liability insurance, for example, is now sold on a claims-made rather than an occurrence basis.
ENVIRONMENTAL LIABILITY

insurers' fears about the future, the two-step approach could be a decided improvement. It might enable the market to offer coverage that is now unavailable; and if insurers' fears turn out to have been exaggerated and environmental liabilities do not escalate, the two-step approach might even result in lower total costs to insured enterprises. In any case, a retroactive indexing scheme is likely to be less susceptible to judicial interpretations that undermine its reliability than a claims-made approach, since the indexing feature could be set almost mechanically.¹³⁴

A second possible weakness in the retroactive indexing approach is the effect on insurers that might result from the bankruptcy of insured firms in between step one and step two. Several anticipatory responses to this prospect, however, ought to provide sufficient protection for insurers. The risk of an insured's insolvency could be estimated and built into the step one premium, in much the same way that such risks are handled in any long-term contract;¹³⁵ the date at which the step two premium became due could be set earlier than otherwise might be optimal in order to increase its collectability; the step two premium could include a surcharge to deal with the problem based on developments between the two steps; instead of assessing the premium in only two steps, the retroactive component of premiums could be calculated annually and paid in installments; or insurers could be granted a priority in any bankruptcy proceeding that would maximize the likelihood that step two premiums would be paid. In any case, because of the presence of insurance, the probability of bankruptcy would have been reduced and the efficiency of insured firms thereby enhanced.¹³⁶

The third potential weakness in the retroactive indexing proposal is a practical one: it may not be feasible to construct a suitable index of the tort and insurance law developments occurring between step one and step two. The problem would be how to define the developments for which insurers would be entitled to collect a second premium. If such a charge could be levied for all increases in the frequency and severity of claims occurring between step one and step two, constructing an index might be relatively simple. Probably it would be sufficient

¹³⁴. In any event, since the index would be based in part on increased payouts resulting from the creation of judge-made insurance in the period following payment of a step one premium, the step two premium charge would to a large extent protect insurers against the risk of judicial misinterpretation of policy language.

¹³⁵. Of course, even if this risk were estimated ex ante and a charge for it built into the step one premium, the insurer would still bear the risk that it had underestimated the probability of the insured's insolvency. Because of the possibility of strong covariance in the risk of insolvency among insureds—perhaps because of unexpectedly large increases in tort liability after step one—insurers might not be sufficiently attracted to the approach. Surcharging surviving insureds at step two for insolvencies occurring after step one might therefore be preferable.

for such an index to measure state or national increases in claim frequency and severity in the category or categories of claims insured. Such data is not now systematically maintained, but insurers themselves certainly have the capacity to gather it through the Insurance Services Office or other trade associations. Simply measuring general commercial and environmental liability insurance payouts in environmental liability claims might be satisfactory, for example.

On the other hand, it could be argued that insurers should not charge at step two for all increases in the frequency and severity of claims that have occurred since step one, but only for those resulting from new legal developments. Since the retroactive indexing scheme proposed here is largely a suggestion for the insurance market, theoretically this prospect need not be of major concern. If different, reasonably attractive and objective indices could be constructed, insurers could compete for business by attempting to offer the most attractive indexing formula, and potential insureds would be entitled to choose the package of price and protection they most desired. Some would choose an index reflecting all increases in claim frequency and severity after step one, while others would prefer an index reflecting only a discrete component of these increases.

At a more practical level, however, it is not clear that it would be feasible to construct the latter kind of index. For example, a portion of the increases that might be the subject of a step two charge could be caused by an increased willingness of putative victims to bring suit, rather than by exclusively “legal” developments. Yet fashioning an index that could reliably separate the former from the latter could pose enormous problems because there is no obvious way to trace the im-

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137. Data of varying quality regarding some of the factors that should be reflected in such an index is maintained by the Rand Corporation Institute for Civil Justice and by the National Center for State Courts. Much of this data as presently maintained, however, is unlikely to be suited perfectly for use in an index since it is not broken down into the categories that a retroactive index would require.


139. This approach might be criticized because of its susceptibility to moral hazard on the part of insurers—the greater their payouts, the greater the increase in the index, and the larger the step two premiums owed to them. Such moral hazard might be considerable if payouts by only a few insurers comprised the basis for the index. If there were more than a few insurers offering retroactively indexed coverage, however, no single insurer could exert much influence on the index, and any insurer making excessive payments would stand to lose much more than it could gain. Under such conditions, this type of moral hazard would all but disappear.

140. Admittedly, to the extent that the indexing approach comes under regulatory scrutiny, the way in which an index is constructed and the fairness of alternative constructions will be at issue. Since the indexing approach would be used largely in the commercial markets that have traditionally been subject to the least regulation, however, this should be a relatively minor issue.
pact of different legal developments, as distinguished from changes in inclination to sue, on claim frequency and severity.\textsuperscript{141} If potential insureds were willing to pay a step two premium for unexpected legal developments, but preferred to purchase coverage against the risk of mere increases in claim frequency through payment of the step one premium, a market for retroactively indexed coverage might not develop. Thus, the character of the demand for this kind of coverage, and the feasibility of constructing the kind of index it could require, remain to be seen.\textsuperscript{142}

In sum, the use of a retroactive indexed premium has promise as a method of solving some of the problems that now afflict the environmental liability insurance market. There are several obstacles standing in its path, however, and even under optimal conditions it may be unable to solve all the problems troubling the field.

C. Deregulating High-Uncertainty Liability Insurance

Even if all other efforts to revitalize the environmental liability insurance market failed, the return of at least some activity in that market might be anticipated were it not for regulatory obstacles. The last approach to the problems created by the new environmental liability, therefore, is to address these obstacles. One way under which environmental liability insurance might become available would be to create a truly unregulated market for such coverage. Such a market would pose very real dangers for policyholders; as a last resort, though, it might prove superior to the absence of any market at all. In any case, envisioning such a market is a useful heuristic device for understanding in yet another way the relation between the new environmental liability and the limits of insurance.

Suppose that environmental liability insurance could be sold by entrepreneurs who specialized in assessing the legal and technological risks posed by the activities insured. These entrepreneurs might have only modest assets to start, and they could invest premiums received in any manner they desired. If their assessments proved incorrect they would become insolvent and unable to pay their obligations under the liability policies already sold; there would be no separately created in-

\textsuperscript{141} In theory, such effects could be traced through a form of legal epidemiology, under which rates of increase in states with differing legal developments are compared while other, nonlegal developments are held constant. But such an approach would be expensive, possibly unreliable, and probably unsuited for expression in a relatively mechanical index to be used in environmental liability insurance policies.

\textsuperscript{142} In addition, ironically, the availability of fully indexed coverage might well reduce political support for reform of environmental liability. Currently, both the insurance and business communities appear to favor such reform. If retroactively indexed coverage were introduced, however, the insurance industry—a major supporter of tort reform over the past several years—would have much less reason to support such reform because its exposure to the uncertainties of the new environmental liability would have partially disappeared.
surance guaranty fund, privately or publicly financed, to provide protection for policyholders or those with causes of action against these policyholders.

Such a market is inconceivable under the insurance regulation regimes that now exist in all fifty states. Insurers cannot be licensed without satisfying minimum capital requirements; and insurers must maintain a reserve to assure that claims can be paid. As a practical matter, because most insurers write many lines of coverage, profits in one line can offset losses in others. State insurance commissioners monitor and audit the financial condition of insurance companies to assure solvency, and in virtually every state each insurer must contribute to or is subject to assessment by a "guaranty fund" that stands ready to pay the obligations of an insolvent insurer. In short, there is an array of regulatory protections for the policyholder that guarantees the availability of assets to pay claims. Moreover, insurers themselves are discouraged from engaging in the kind of competition that itself might marginally increase insolvencies since they are held liable through guaranty funds when their competitors become insolvent.

All this suggests how radically the market envisioned here differs from the insurance market that currently operates. At present, when a business purchases insurance it may shop for price, terms of coverage, and service reputation; but the purchaser need not worry about the reliability of the insurer's promise to pay, because solvency is virtually assured. Current regulatory schemes discourage insurers from writing high uncertainty environmental liability coverage because all the assets of multiple-line insurers are vulnerable if one line suffers a loss. Similarly, nontraditional entrepreneurs are not permitted to enter ordinary insurance markets and compete with regulated insurers because they cannot provide the kind of assurances of solvency and reliability that actually have come to be part of the definition of modern insurance.

144. See id.
145. See id.
146. See id.
147. See id.
148. The typical regulatory scheme also makes it extremely difficult for a prospective policyholder to defeat these regulatory limitations by seeking insurance outside the jurisdiction. Typically an applicant can purchase coverage from an unlicensed insurer through a licensed broker only if the broker certifies that the coverage cannot be obtained within the state and even then only from unlicensed insurers that are approved by the home state regulatory authorities. See, e.g., N.Y. Ins. Law § 2118(b)(1)–(3) (McKinney 1985 & Supp. 1988) ("excess" lines brokers); Va. Code Ann. §§ 38.2-4806, 4811 (1950) ("surplus lines" brokers). Direct purchase without a broker is also extremely difficult. Unlicensed insurers are prohibited from doing business in the state themselves, see N.Y. Ins. Law § 1102(a) (McKinney 1985), and that activity is defined very broadly to include transacting business by mail from outside the state, see N.Y. Ins. Law § 1101(b)(1) (McKinney 1985 & Supp. 1988). Since similar requirements apply in
If these barriers to entry were relaxed, however, the obvious demand for environmental liability insurance might well trigger the supply of such coverage. Some of this coverage might be sold by existing insurance companies operating through affiliates to protect their other assets; some would be sold by new, entrepreneurial entrants in the market who believed they could do a better job than the existing companies of assessing the legal and technological risks of high-uncertainty environmental liability. Of course, although the insurance that would be provided under such conditions might appear similar to traditional insurance, in fact it would be very different. The terms of the coverage sold by each set of enterprises would probably be recognizable, but the coverage itself would be far less reliable than conventional insurance because the insurer that sold the coverage might be insolvent when the time to pay a claim arose.

At the very least, there would have to be very clear and conspicuous disclosure in the market of the difference between this unregulated coverage and traditional insurance; even full disclosure would do little to soften the economic disruption that would inevitably occur when an insurer did become insolvent. If full disclosure could be obtained, it would probably make sense to impose minimum capital requirements and investment limitations on such insurers, but to exempt them from other regulatory requirements such as contribution to guaranty funds. Policyholders would then know what they were getting into—just as they now know when they join risk retention groups that pool risk among their members, but which do not have sufficient surpluses to avoid serious risk to their members if one suffers a catastrophic judgment. If such an approach were permitted, vibrations would be felt throughout the system—and it would be a very different system than is now in place—as some policyholders themselves became insolvent as a result of the insolvency of their insurers. But as long as there were disclosure of the risk of this eventuality, the system might well prove to be an improvement over the current, nearly complete absence of a working market for environmental liability insurance.

The lesson of this analysis is simply that, like all modern liability insurance, the environmental liability insurance that has disappeared in recent years not only transferred the risk of liability from the policy-
holder to the insurer; through regulatory controls, it also relieved the insured of the risk of the insurer's insolvency. It has now become extremely difficult for the market to offer high-uncertainty environmental liability insurance because one of the uncertainties associated with such coverage is the risk of insurer insolvency—a risk that regulation precludes. If the insured could bear the risk of the insurer's insolvency even while transferring the risk of liability, however, insuring environmental liability might become more feasible, though not through "insurance" as we now know it and perhaps not without substantial social costs. On the other hand, so long as the two risks are tied together, both will have to be shouldered by the enterprises threatened with the new environmental liability, and no part of the risk of environmental liability will be transferred, because insurers will be unwilling to accept the transfer.

In sum, the new environmental liability shifts much of the risk of uncertainty about environmental injuries from potential victims to potential injurers. That uncertainty can be untied from more predictable risks through the use of reliable exclusions in insurance policies, shifted to health and disability insurers by restricting tort liability and encouraging the extension of such first party insurance, transferred from present to future through retroactive indexing, or sliced up in new ways as a result of deregulation. Each approach may provide some relief. But an uncertain future cannot be made more certain by law, whether risk is shouldered by victims or injurers. Many of the ill effects that are created by this uncertainty will therefore have to be tolerated, in one domain or another, as long as the concerns that lie behind the new environmental liability are a fixture on the legal scene.

**Conclusion**

Although insurance considerations have long been used to support extensions of tort and other forms of liability, where liability goes, insurance is not always sure to follow. Thoughtful courts and legislatures as well as scholars must face this fact, since the impact of the new environmental liability on insurance is extensive. Admittedly, the merits of the new environmental liability cannot be evaluated exclusively by reference to its insurability. But since the rationales for the imposition of civil liability depend so heavily on the availability and technology of insurance to achieve the goals they postulate, neither can the courts and legislatures afford any longer to ignore the limits of insurance in fashioning environmental liabilities.