Environmental issues and the law

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ABSTRACT This report first briefly reviews the history and lessons learned from our legislation regarding protection of our environment. Then, these lessons are combined with principles of general jurisprudence to suggest avenues for regulation of industrial ecology. Even though the law has important limitations, it can be used as a tool to identify national goals and to promote their achievement by means of incentives or sanctions.

Modern societies depend upon effective legal systems to satisfy numerous social needs. The American legal system, for example, attempts, among other things, to define property rights, to enable its citizens to redress their wrongs, to uphold contracts made in the marketplace, and to protect its citizens from harm. In addition, the American legal system, coexisting as it does with a free-market economy, spends a significant portion of its resources addressing the problem of economic externalities.

Externalities are those costs and benefits, generated by individual decision makers in our society, that primarily affect third persons. Environmental pollution is the classic example of a negative externality or external cost. Whenever waste products of production processes are discharged into the public environment, their treatment (or lack thereof) is transformed from a cost to the producer to a cost to society.* Much of our environmental legislation, therefore, has been directed toward redistributing these costs back to producers, so that they, rather than society, take responsibility for the consequences of their actions.

Because the problem of externalities spans the fields of both industrial ecology and environmental management and because the regulation of our environment represents one of our first (and grandest) attempts to solve this type of problem, prospective legislators in the field of industrial ecology would do well to review the history of environmental law. In this way, past mistakes can be avoided and past successes can be repeated.

Floating sewage, fiery rivers, and disintegrating buildings were the public images of industry’s impact on our environment. In an effort to encourage more environment-friendly industry, regulators in the late 1960s began to develop our environmental law. That development reflects our primary experience in using the law as a tool to promote newly defined goals in this area and illustrates how the law may be brought to bear on the topic of industrial ecology.

Some 20 years ago, there was little law that directly addressed the environment. Rather, the law governing environmental concerns was largely the same common law that governs other types of injury and damage. It focused on recovery of damages for specific instances of intentional or negligent wrongdoing that resulted in harm to specific indivi-

*Positive externalities, or external benefits, exist as well. For example, whenever a producer employs processes that are cleaner than necessary to efficiently produce the product, all of society benefits, even though the public at large didn’t pay for the benefit. The producer alone absorbed the cost.

†Each act authorizes some exemptions from the general prohibition.
mine permit limits are developed in rule-making proceedings conducted according to directives of each act and are either technology-based or health-based. Generally, permits require permittees to monitor their compliance with the permit limits and to report monitoring results to the regulatory agency. Failure to have a required permit and noncompliance with permit limits are statutory violations that are enforceable by the regulatory agencies and, in some instances, by citizens.

These statutes, and other similar statutes, regulate operations. Since pollution-generating operations cannot be conducted except with, and in compliance with, a permit, permit programs have resulted in significant advance planning to address environmental concerns.

The introduction of advance planning was but one element of the revolution in the legal framework governing the environment. The series of new laws also assigned clear responsibility for compliance and established sanctions for failure to comply. The obligation to have a permit and to meet its requirements established responsibility in the permittee. To apply a sanction for unacceptable conduct, the enforcer no longer needed to establish that pollution resulted in a specific harm or damage, nor was he required to find the specific “cause” of a harm or damage. Under this new system, a system wherein the permit constituted a public determination of both responsibility and acceptable conduct, sanctions could easily be applied to violations of the permit, regardless of whether harm resulted.

In 1980, with the advent of the Comprehensive, Environmental Response, Compensation and Liability Act (CERCLA or Superfund) (6), Congress used the concept of assignment of clear responsibility to create a system for cleanup of past contamination. Under CERCLA, without regard to fault, any person who is in a statutorily defined relationship to the contaminated site is responsible for its cleanup.

The legal framework described above instituted a new approach to environmental regulation and established regulatory direction. Implementation of the policy, however, was dependent on scientific and technological data and decision making, much of which had not yet been developed at the time the legal framework was put into place. As a result, the legal “solution” was proceeding before the factual information was fully available.

At first, progress was possible despite the lag in scientific knowledge and technology because the problems were immense and obvious. The public was concerned about fiery rivers, floating ammonia, and air spitting buildings and causing statutes to fall off their pedestals.

The fiery rivers are now gone, and some of the other more obvious problems are not seen very often. Though legal solutions still precede technology (and this continues to present certain problems), technological barriers today represent only half the battle. Our most difficult contemporary environmental problems are frequently those that, though equally significant, are perhaps less visible and less concrete. As an example, one current legislative struggle is with the concept of toxicity.

Though our legal framework is broad enough to encompass the regulation of toxic substances, the substantive debate spans several planes simultaneously, including the political plane. A particularly challenging initial problem is public understanding of these substances. The very word “toxic” or “hazardous” triggers a public reaction without reference to the quantity of the material, the nature of its effects, or any other equally fundamental issues. Toxics are such a volatile issue in the public psyche that scientific distinctions often carry little weight, and the regulation of these substances is transformed into an issue of public perception. In our democratic system of government, these public perceptions are not only critical, they are decisional. In the 1970s, there was a greater understanding and consensus regarding the elimination of the obvious environmental problems than exists today on the subject of toxics, perhaps because those earlier problems were so obvious (recall, e.g., the fiery rivers and floating sewage).

In contemporary attempts to define what, if any, level of toxicity is acceptable, there is also a serious problem of communication with the public. The questions of “what is harmful?” and “how should harmful substances, or potentially harmful substances, be regulated?” are very emotional issues in permit proceedings and other environmental adjudications. Today, an unfamiliar chemical name, or such a name attached to a measurable detection of the substance, creates fear in the public. It is not necessarily a logical fear—not a fear resulting from an understanding of what the material is and how it will affect either the individual or the environment—but a fear that results from the aforementioned lack of understanding. On a scientific basis, perhaps such a fear could be dismissed because it is not supported by facts. Under these circumstances, a scientist would probably conclude that such a fear is illogical and ignorant and has no place in a rational system. However, politically, such a position is wrong.

The problems of understanding and communication are vividly demonstrated during regulatory determinations, which today are often motivated by public perceptions and the public’s concept of what should be regulated and protected. With respect to toxics, the public has discovered that a determination regarding a safe level of a chemical substance is no longer simply a matter of comparing the quantity of that chemical to a clearly stated, quantitative regulatory standard (e.g., vinyl chloride at 2 parts per billion). Instead, decisions may be based on a risk assessment where risk is no longer measured in terms of quantity of the substance, but instead in terms of potential cancer deaths. To the technical and scientific communities, these approaches represent different ways to say the same thing. To the public, the statements carry considerably different emotional weight and the emotional overtones interfere with the degree of communication and understanding needed to address the issues.

Because the essence of environmental pollution is the transfer (or “dumping”) of cleanup costs to society, environmental laws generally begin at the plant boundary. That is, they have generally applied to activity that surrounds the outside of a manufacturing or production facility. The focus has been away from determining what a particular facility’s products must be, the nature and extent of a product’s toxicity, and how much product is manufactured. Congress has been generally reluctant to curb the market system, and it has been considered sufficient to begin regulation at the perimeter of the facility. To the extent industry affects those in the environment beyond the facility with its emissions, discharges, spills, and waste disposal, the present system controls, or attempts to control, the pollution. There are exceptions; in particular, regulation of the work place has been instituted to protect the health and safety of workers. Further, some environmental regulation extends inside the plant door. As a general matter, however, it seldom mandates process or product.

When our present environmental laws were enacted, industry fought hard to keep the regulators away from the manufacturing lines. Products and process as primary elements of competition were considered proprietary and inviolate. Concerns about industrial espionage and loss of trade secrets carried decisive weight and doubtless would be of considerable influence even now. Likely the greatest impediment to enactment of an environmental permit program designed to assure industrial ecology would be fear of the anticompetitive impact. With this in mind, a permit program may not be a politically acceptable mechanism for assuring commitment to a system of industrial ecology.
However, apart from all the baggage of a permit program, the law can still be used to serve several purposes without invading the internal processes of industry. It can define the subject matter, determine action requirements, and apply universal motivating forces to assure compliance with the program desired.

Industrial ecology is a new and undefined area of endeavor. If it is to be addressed from a legal perspective, it will require a definition of the scope of the industrial sector to which the concept applies, a determination of goals to be addressed by the endeavor, selection of acceptable mechanisms for achieving the goals, and institution of incentives or sanctions to assure universal commitment to following the selected path. To assure commitment toward a policy to establish industrial ecology as a norm, the law can be used as a tool to identify and define consistent national goals and promote their achievement. Its strictures create economic incentives and penalties and may even create a market, albeit artificial at least at the outset, conducive to achieving the desired goals.

There are important limitations on use of the law as a tool. First, its effectiveness is largely limited to national boundaries. Further, to be an effective tool—that is, to be enforceable—the law must have clearly and specifically identified provisions. When this need for specificity is joined with developing technology, the law commonly finds itself lagging significantly behind the development of technology. In addition, the law is a product of our democratic society and is a creature of compromise. As such, it may not reflect the best either in terms of goals or mechanisms to achieve those goals. Its choices in regard to science and technology are generally conservative and give great, if not exclusive, weight to proven information. The law, therefore, provides a very powerful and effective tool for achieving goals, but its limitations must also be recognized.

In considering future approaches for regulating the environmental system, attention should be given to the motivating forces included in our laws. Generally, these include alternatives in the form of a carrot and a stick, or incentives and sanctions. Our experience with these motivating forces as used to date provides guidance for the selection of an approach in future regulation.

The major motivating force imposed by the law for conduct that violates its standards is the sanction. Sanctions come in the form of several types of enforcement actions including penalties and fines, jail time, and court or agency orders to comply. A public sanction is intended (i) to cost money and (ii) to represent a public judgment with respect to the morality of the conduct addressed. The growth of and interest in application of the criminal law as a tool is powerful evidence of the public’s view of the moral judgment related to the misconduct.

As a practical matter, enforcement itself is not the key sanction; it is the fear of enforcement. From a statistical perspective, enforcement actions are merely a check to assure that the self-motivating factors that result in compliance will be at work. The system of environmental enforcement can be compared to enforcement under the internal revenue system. Compliance is self-generated for the most part. Sanctions are applied to only a few facilities because of limited agency and other government enforcement personnel. Environmental enforcement requires a significant investment of both technical and legal time and is very costly. In the environmental area, enforcement actions are complicated. It is often necessary to take samples, do testing, and ensure that the testing is quality-controlled to serve as reliable evidence. The government must carry the burden of proof that a violation has in fact taken place. As a result, enforcement in this area is sporadic. The publicity about enforcement actions is a far greater deterrent than the actual enforcement actions.

The other type of motivating force the law considers is the incentive. Our present laws are not generous with incentives. They have been used largely to encourage states and local government to take over administration and enforcement of permit programs delegated to the states. Although incentives have not been used extensively, when applied, they are effective. There are indications, however, that future Environmental Protection Agency regulatory schemes may include economic incentives (7). Incentives reflect legislative and policy judgments. They are not determinations of morality or of whether conduct is right or wrong. Therefore, they involve a much simpler system for enforcement. Two examples may be helpful.

During the 1980s, New York State imposed a fee on hazardous waste transactions. The fee was intended to generate revenue, and a budget line item for the revenue was based on the volume of hazardous waste transactions in previous years. The transactions were well documented by manifest information collected under RCRA. The program involved use of the manifest information to calculate the volume of waste and imposition of a volume-related fee on the generator. The State found its revenue projection was vastly overestimated even though it was based on past manifest information and a continuing rate of industrial activity. The revenue projection fell short because the regulated community immediately changed its conduct in reaction to the economic incentive. There was increased recycling and substantial changes occurred in the use of raw materials. The fee did not eliminate the existence of hazardous waste in New York State but had a significant and immediate impact on the volume generated.

Another type of incentive can be found in a program area. As an example, the stringent regulation of hazardous wastes has made it very difficult and very expensive to dispose of certain material that previously had been considered of no economic consequence. The cost of proper disposal of hazardous waste, both the direct cost of disposal and the potential future cleanup liability related to it, is now sufficiently high to result in at least two possibilities for change of conduct. First, a generator may self-regulate its volume of waste produced. This reaction is the same as that to the fee discussed above. Here, the economic incentive is not in the form of a fee, but an increased cost of doing business. In addition to increasing cost, however, the regulation has also created an opportunity for third-party economic gain. Recycling of certain hazardous wastes has become a profitable business opportunity. Previously, recycling of many wastes was not economically competitive with use of virgin materials. This changed when the regulatory program created an artificial market. Now the comparison of the profitability of some recycled products is measured not in competition with virgin product, but rather in competition with cost of disposal. Recycling is viable today and the economic incentive stems from the stringent regulation of the waste.

An important element related to both sanctions and incentives is the certainty with which they can be applied. Whenever reasonable, the law attempts to provide certainty in the measure of conduct. Certainty results from clear definitions, with minimal reliance on judgment and subjective considerations.

The failure to provide certain standards of conduct results in two costs to society. (i) Whenever there is an alleged violation, the legal process is delayed as the litigants pro- pounded and the courts resolve disparate interpretations of the regulations. (ii) Without such certainty, there is delay and additional cost for decision makers attempting to comply.

Finally, with certainty, as in the case of CERCLA liability, responsive action follows. Whether the judgments made in imposing that certainty are right or wrong can be discussed in the political halls, but, in the meantime, the system generates responsive action.
In conclusion, in formulating a legal tool to encourage industrial ecology, we can learn from our experience with environmental law. Based on such experience, the use of incentives to achieve clearly defined goals appears to offer the greatest opportunity to meet our targets and yet offers the least intrusion into the operating plant’s domain.