

# Externalities and the Matching Principle: The Case for Reallocating Environmental Regulatory Authority

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INTRODUCTION

Our current environmental regulatory system was an understandable response to a perceived need for immediate controls to prevent a pollution crisis. But the system has grown to the point where it amounts to nothing less than a massive effort at Soviet-style central planning of the economy to achieve environmental goals. It strangles investment and innovation. It encourages costly and divisive litigation and delay. It unduly limits private initiative and choice. The centralized command system is simply unacceptable as a long-term environmental protection strategy for a large and diverse nation committed to the market and decentralized ordering.<sup>1</sup>

The extreme centralization of environmental regulation is the result of interest group politics and dramatic political developments rather than a sober analysis of the major trade-offs involved in moving to federal domination of environmental protection. During the late 1960s and early 1970s, many environmental concerns that had previously been thought of as purely local issues, such as solid waste disposal, became federal issues. Although there is little doubt that national politicians were ahead of the curve in terms of responding to environmental concerns, one must not then assume that state and local politicians would have continued to be unresponsive to environmental issues arising in their own backyards. Nevertheless, there appears to be a one-way ratchet in the federal system—once a federal issue, always a federal issue. Moreover, among many environmentalists, there remains a deep distrust of state and local control of environmental quality. An analysis of the incentives

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1. Richard B. Stewart, *Controlling Environmental Risks Through Economic Incentives*, 13 COLUM. J. ENVTL. L. 153, 154 (1988).

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of state and local politicians suggests that this distrust may not be justified.

This study considers whether environmental policy can be improved by reallocating authority for environmental regulation within our federal system. Our primary focus is on the institutional setting in which environmental policies are adopted. A fundamental issue is how to allocate regulatory authority so that political institutions and processes will yield policies that achieve the optimal or efficient level of pollution without imposing unnecessary costs on productive economic activity.<sup>2</sup> Because there is no known answer to the critical question, “What is the optimal level of pollution?,” policy analysts often assert that the determination of the tolerated amount of pollution is a political question. Although “invocations of the superiority of political processes for resolving issues of social and economic policy”<sup>3</sup> are commonplace, the assertion that a policy issue is a political problem does not solve the policy issue because alternative political institutions are likely to yield different answers.

Alternative political policymaking institutions, such as state and national legislatures, can be analyzed to determine which institutions are best suited to weighing costs and benefits in the determination of the optimal level of pollution. To the extent that all relevant costs and benefits are taken into account in the political decisionmaking process, “better” policies should emerge. In this regard, we develop the *Matching Principle* as a guide to determining the most efficient governmental level for regulation of different types of environmental concerns.<sup>4</sup> The Matching Principle suggests that, in general, the size of the geographic area affected by a specific pollution source should determine the appropriate governmental level for responding to the pollution. There is no need for the regulating jurisdiction to be larger than the regulated activity. In other words, when a particular polluting activity is limited to a particular locality or state, there is very little justification for federal environmental regulation. When a federal government response is justified, it should be the most limited response possible.

Although the Matching Principle may seem radical to some environmental-

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2. Unfortunately, standard economic definitions of efficiency often are difficult to apply to environmental issues because of widely divergent views of the costs of pollution (or the benefits of pollution reduction). One definition of efficiency is straightforward: Do not waste resources. Bruce Ackerman and Richard Stewart, for example, have shown that the adoption of a combination of pollution-based statutes with market-based incentives could achieve at least the *same* level of environmental quality at dramatically lower costs. Bruce A. Ackerman & Richard B. Stewart, *Reforming Environmental Law: The Democratic Case for Market Incentives*, 13 COLUM. J. ENVTL. L. 171 (1988). But determining the *optimal* level of environmental quality—where the marginal benefit of additional pollution abatement is equal to the marginal cost—is an entirely different matter than determining the lowest-cost way of achieving some identified quality level.

3. Richard B. Stewart, *Madison's Nightmare*, 57 U. CHI. L. REV. 335, 348 (1990).

4. Our Matching Principle is suggested by JAMES M. BUCHANAN & GORDON TULLOCH, *THE CALCULUS OF CONSENT: LOGICAL FOUNDATIONS OF CONSTITUTIONAL GOVERNMENT* 113-16 (1962) (seminal public choice analysis of “optimal size of government”).

ists, this idea has a long history in American constitutional law and theory. As James Wilson explained at the Pennsylvania ratifying convention, "Whatever object of government is confined in its operation and effect, *within the bounds* of a particular State, should be considered as belonging to the government of that State."<sup>5</sup> As Professor McConnell has observed, Wilson's view, which was the dominant perspective in the debates of the period, "stands in marked contrast to the modern tendency to resolve all doubts in favor of federal control."<sup>6</sup> And, as we will show, many important environmental problems are problems of purely local concern, and should be regulated at the local level. In particular, many of the sites targeted by Superfund are contained within the confines of a single state. The cleanup of these sites presents issues of purely local concern, and the economic theory of federalism articulated in this paper, which is entirely consistent with the Framers' design, would confine authority over these issues to local regulators. Under our Matching Principle, if the federal government wants to intrude on local decision-making authority over the cleanup of local sites, it should confine itself to lending expertise and providing funding. It should refrain from imposing substantive standards or imposing legal liability.

Our discussion proceeds as follows. In Part I, we review the economic rationale for environmental regulation and consider the incentives of politicians at different levels of government to meet the environmental quality preferences of their constituents. We work along a continuum that ranges from pollution that does not result in externalities (because the property owner incurs, or internalizes, all the costs associated with the pollution) to pollution that is exported across state and international boundaries. This analysis bolsters the Matching Principle.

In Part II, we summarize and critique the leading rationales for federal environmental regulation. We conclude that most broadbased arguments for federal environmental regulation do not recognize the obvious fact that the effects of an externality often do not extend across state boundaries. In general, the most compelling argument for federal regulation is to deal with interstate externalities that cannot be adequately addressed by state and local regulations.<sup>7</sup>

In Part III, we use the Matching Principle and our model of environmental regulatory federalism to critique and make suggestions for improving the

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5. Quoted in Michael McConnell, *Federalism: Evaluating the Founders' Design*, 54 U. CHI. L. REV. 1484, 1495 (1987) (emphasis in original).

6. *Id.* at 1495-96.

7. For analysis of the role for federal regulation of interstate externalities as well as an identification of perverse incentives for state regulators under current federal regulations, see Richard L. Revesz, *Federalism and Interstate Environmental Externalities* (paper delivered to Yale Journal on Regulation/Yale Law & Policy Review Symposium: Constructing a New Federalism, Mar. 1-2, 1996).

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existing pattern of environmental regulation in air pollution, water pollution, and land pollution. We conclude that, in every area of pollution, environmental regulation has been centralized beyond any possible justification, resulting in tremendous costs.

In Part IV, we summarize our analysis and offer several recommendations for change in the allocation of regulatory authority. There is a fairly general consensus among policy analysts that the current allocation of regulatory authority is unsatisfactory,<sup>8</sup> and we conclude that decentralization through either greater reliance on market incentives<sup>9</sup> and economic property rights,<sup>10</sup> or greater state control over environmental policy,<sup>11</sup> or both, appears to hold promise as a source for more flexible, dynamic, and responsive environmental policy. Our analysis indicates that greater state and local control of environmental regulation would lead to a larger net benefit from environmental regulation because of the institutional incentives to find the lowest cost methods of reducing pollution and protecting the environment. Although the public is unwilling to oversee the intricacies of federal environmental regulation,<sup>12</sup> we believe that the public would be receptive to the logic of our arguments.<sup>13</sup> Moreover, we think that the American public's desire for aggressive environmental enforcement<sup>14</sup> can be satisfied better by radical restructuring of environmental regulatory authority.

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8. There is no shortage of policy proposals for improving environmental quality by changing these federal strategies. See RALPH A. LUKEN, *EFFICIENCY IN ENVIRONMENTAL REGULATION: A BENEFIT-COST ANALYSIS OF ALTERNATIVE APPROACHES* (1990). Indeed, on many issues there is a surprising consensus on how to change current policies. Thus, the real question is why has the federal government been so slow to respond to both the widely identified problems and the widely recognized solutions. Part of the answer is that the high degree of centralization in federal environmental regulation has led to inflexibility and inertia. There is also, however, the self-interest of the regulators and the regulated alike in maintaining the status quo. The possible administrative and political routes past these obstacles to reform are beyond the scope of this paper. Our purpose is to demonstrate that it is indeed a legitimate goal to motivate such reform.

9. See Ackerman & Stewart, *supra* note 2.

10. See TERRY L. ANDERSON & DONALD R. LEAL, *FREE MARKET ENVIRONMENTALISM* (1991) (arguing that private property rights provide alternative to governmental regulation for environmental control).

11. See James P. Young, *Expanding State Initiation and Enforcement Under Superfund*, 57 U. CHI. L. REV. 985 (1990).

12. See, e.g., EVERETT C. LADD & KARLYN H. BOWMAN, *ATTITUDES TOWARD THE ENVIRONMENT: TWENTY-FIVE YEARS AFTER EARTH DAY 50* (1995) ("[T]he public points to the ends that public policy makers should work to achieve. The public does not think much about the means."); Dwight R. Lee, *Politics, Ideology, and the Power of Public Choice*, 74 VA. L. REV. 191, 197 (1988) ("Predictably, there is little genuine public surveillance of environmental protection programs, and organized groups have significant latitude to influence [such] programs in ways that serve their private interests. This means of course that these programs are far less effective . . . than they could be.").

13. The American public has been disillusioned about the ability of the federal government to solve problems. See, e.g., LADD & BOWMAN, *supra* note 12, at 1-2 ("Only 18 percent of Americans in a late February 1995 CBS News/New York Times poll say that they trust the government in Washington to do what is right just about always or most of the time.").

14. *Id.* at 50.

## I. THE EFFICIENT ALLOCATION OF ENVIRONMENTAL REGULATORY AUTHORITY

The experience of over twenty years of intensive federal regulation of environmental risks has demonstrated the severe drawbacks of centralized environmental policy. The "command and control" regulatory strategy that dominates environmental policy has proven to be inadequate: it has not set intelligent priorities, it has squandered resources devoted to environmental quality, it has discouraged environmentally superior technologies, and it has imposed unnecessary penalties on innovation and investment.<sup>15</sup>

Of course, there are numerous tradeoffs in the allocation of environmental regulatory authority within a federal system. For example, widely different levels of interest in environmental quality across states lead to the development of a hodgepodge of state regulations, which creates confusion and inefficiencies in businesses' production and nationwide marketing strategies.<sup>16</sup> On the other hand, there are problems with federal preemption of state environmental regulations. First, federal preemption may reduce the ability and incentives of state regulators to experiment with creative solutions to local environmental problems. Second, federal preemption centralizes many environmental decisions in Washington, where interest groups dominate decisionmaking, and economic consequences, particularly at the local level, often are ignored. Related to this insensitivity to economic consequences is a third problem with federal preemption: it fails to provide sufficient funding for required local actions. Our analysis suggests that the current problem with environmental regulation derives from an imbalance in the allocation of governmental functions.

This Part begins with an introduction to externalities and the economic justification for environmental regulation. This is followed by a survey of the economics of federalism, which focuses on the conditions under which competition between jurisdictions will tend to produce optimal environmental laws and regulations. We then consider a variety of situations where the federalism conditions are satisfied to differing degrees. Our analysis supports the Matching Principle as a benchmark for determining which level of government should be granted regulatory authority to deal with different types of externalities.

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15. See generally Bruce A. Ackerman & Richard B. Stewart, *Reforming Environmental Law*, 37 STAN. L. REV. 1333 (1985).

16. The strict California air pollution regulations are but one of the many examples of this confusion. Thus, it is not surprising that in recent years there has been a substantial amount of discussion among business groups about whether they are better off with state or federal environmental regulations. In general, business groups are in favor of federal preemption of the hodgepodge of state regulations.

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### A. *Externalities and the Economics of Pollution Control*

The economic goal of government regulation of pollution is to force polluters to bear the full costs of their activities. In economic jargon, the regulatory goal should be to force the internalization of externalities. Externalities are costs and benefits that are not directly priced by the market system. Since individuals in a market system respond only to the benefits and costs that they actually receive and pay for, the market system may be inadequate to deal with externalities. The market failure that results when market participants do not internalize the external costs of their activities causes resources to be misallocated. Thus, the negative externalities—or spillover costs—associated with pollution are an economic problem because they lead to an inefficient allocation of resources. Externalities in the use of resources often arise where property rights are either nonexistent or poorly specified, as is the case with resources such as the atmosphere. From the perspective of users, such resources are free. Those who manufacture products creating externalities do not pay the full cost of the resources consumed by the production of such goods. Because producers will manufacture the quantity of goods that reflects their private costs of production, externalities lead to overproduction, which in turn leads to an inefficient overallocation of resources to the production of the good. This is the economic justification for government regulation of pollution.

The economic justification for government intervention must be tempered by at least five caveats. First, not all pollution creates an externality. If a property owner bears all the costs of polluting his or her property, then there is no externality and no justification for government regulation. Second, externalities that affect a small number of economic actors (so that transaction costs are low) can be internalized by Coasian bargaining. In this situation, the proper role of government intervention is the clear assignment and enforcement of property rights. Third, government regulation is not free and is not perfect. Thus, the benefits of regulating the externality must be greater than the costs of the regulation. This implies that social welfare is maximized by a government policy that does not attempt to deal with all externalities.

Fourth, the economics of pollution control demonstrate that it would be undesirable to prevent all externalities because many externalities are the result of socially desirable economic activity.<sup>17</sup> Even if all negative externalities are internalized and the private cost of production equals the social cost of production, pollution will not be eliminated. Instead, the result of internalization will be that those causing pollution will be required to pay the full social costs associated with their activities. Pollution is a necessary by-product of our

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17. James M. Buchanan & Craig Stubblebine, *Externality*, 29 *ECONOMICA* 371 (1962).

modern lifestyle. Getting rid of waste is not free in terms of either monetary costs or the productive capacity of the nation. One of the costs of producing more man-made goods is sacrificing some environmental quality. Similarly, the cost of a cleaner environment is sacrificing some man-made goods. These observations represent the basic economic problem of scarcity—our resources simply are not sufficient to satisfy all of our demands. Thus, we are forced to make trade-offs. For example, only the most devout environmentalists would give up the personal freedom associated with the use of an automobile because of the fact that use of the automobile causes air pollution.

The economic goal of pollution control regulation should not be to reduce the level of pollution to zero. The goal of regulation should be to set the level of pollution produced to the level it would be if producers bore all of the costs created by their pollution. In this regard, however, it is important to recognize that the combination of small externalities and nontrivial costs of government intervention suggests that many externalities cannot be internalized.

Fifth, it is unclear that the presence of an externality is sufficient to justify government intervention. In reality, “externality” is a slippery concept, used more often to achieve the categorization of an event as a “problem” than to justify government intervention to solve the problem. Put another way, virtually everything that anybody does is an externality when viewed from some perspective or other.<sup>18</sup> An example is an externality argument in favor of federal regulation that concerns a type of psychological externality that arguably arises even when pollution does not physically cross state lines. This argument is based on the notion that all citizens of the United States may justifiably be concerned about environmental quality throughout the United States, although they are not physically exposed to local externalities in other localities. For example, devoted environmentalists in Oregon may be deeply concerned about the local environmental effects of chemical plants and oil refineries in Louisiana. They may argue that Louisiana’s environmental laws do not adequately address the local environmental risks and therefore should be preempted by more stringent federal regulations. Thus, according to this “externality” argument, federal regulation to require more stringent local environmental regulations may be justified on the efficiency ground that purely local pollution (local in its physical damage) actually imposes additional costs in other states where citizens have stronger preferences for environmental purity. These costs can take the form of lost utility of environmentalists in states with more stringent regulations as well as exit by polluting industries to less restrictive states. Although the existence of such “interdependencies” raises

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18. When an entrepreneur creates a better manufacturing process for a particular product, rivals who are using the inferior process are harmed. From their perspective, the technological improvement is an externality. See David D. Haddock et al., *Property Rights in Assets and Resistance to Tender Offers*, 73 VA. L. REV. 701, 723 (1987).



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provocative questions about the demand for regulations and who should bear the burden of their implementation, this argument for federal intervention is flawed for a number of reasons.

The major problem with this argument is that the local residents in Louisiana, not the Oregon environmentalists, would bear all the costs of reducing pollution. The Louisiana political process would have already indicated that the local residents believe the costs of a cleaner Louisiana to be greater than the benefits. It is tempting to assert that we are simply dealing with different sets of preferences about environmental quality, and that the national consensus is for greater environmental quality than that preferred in Louisiana. But this is not necessarily the case. In fact, every state has evinced a strong interest in environmental quality. Even Louisiana, which is often cited as an example of a state having an environmentally insensitive regulatory regime, takes great pride in its environment. This pride is evidenced by Louisiana's state motto—the Sportsman's Paradise. The citizens of Louisiana probably would be happy with even higher environmental quality if they did not have to pay for it with reduced economic opportunities. Similarly, it is not surprising that the people who do not pay for higher environmental quality are in favor of more stringent standards than the local citizens who must bear the costs. Allocation of regulatory authority over local externalities to local governments allows decisions to be made by the representatives of the citizens who benefit the most from and pay the most for higher environmental quality. This analysis supports the Matching Principle that we described in the Introduction.

### B. *Jurisdictional Competition and Environmental Quality*

In most areas of economic activity, competition tends to produce the efficient or optimal allocation of resources. It is at least plausible that competition among states for environmental quality may generate the optimal mix of environmental regulations across the country.<sup>19</sup> Competition among political jurisdictions is likely to generate optimal laws if four conditions are fulfilled: (1) the economic entities affected by the law must be able to move to alternative jurisdictions at a relatively low cost; (2) all of the consequences of one jurisdiction's laws must be felt within that jurisdiction; (3) lawmakers must be forced to respond to adverse events such as falling population, real estate prices, market share or revenue, and other manifestations of voter discontent that result from inefficient regulations; and (4) jurisdictions must be able to

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19. For a recent statement of this position, with a concise summary of the relevant literature, see Richard L. Revesz, *Rehabilitating Interstate Competition: Rethinking the "Race-to-the-Bottom" Rationale for Federal Environmental Regulation*, 67 N.Y.U. L. REV. 1210, 1233-44 (1992).

select any set of laws they desire.<sup>20</sup> Of course, in the real world there are no purely local externalities, no perfect markets, and no perfect governments. As a consequence, failure to achieve all four conditions is not a mandate for federal government intervention, but rather merely an indication that local regulation may be imperfect.

The first federalism condition requires that the economic entities affected by the law must be able to move to alternative jurisdictions at a relatively low cost. With respect to environmental protection laws and regulations, this condition applies to two types of economic entities. The first includes the parties adversely affected by the pollution, such as individuals and households, as well as businesses which must pay higher wages to attract workers to a polluted area. The second type of economic entity includes the polluters adversely affected by the high cost of compliance with the jurisdiction's environmental laws and regulations. Most economic entities are mobile, at least in the long run, and both types of entities always will contain a substantial portion of marginal entities which are very mobile. However, regulators at both the state and the national levels will be aware that some firms are more mobile than others. Firms lacking mobility are particularly vulnerable targets to governmental regulation that threatens to expropriate investments in immobile capital. In determining how regulatory authority should be allocated between state and federal authorities, we should be concerned about the ability of governmental actors to expropriate fixed investments.

Government expropriation of fixed investments can take a variety of forms. For example, an industry might spend considerable resources simply learning the details of a particular state's environmental law prior to entering that state to do business. The firm's investment in learning that law is a fixed investment that would be expropriated if the law changed or was preempted by Congress. Hence, beneficiaries of a particular regulatory regime might prefer to keep an existing regulatory structure in place even where a marginally superior alternative exists if the benefits of the new regulations are outweighed by the costs of learning how to cope with the new regime.

Similarly, a firm might make a considerable investment in configuring its plant and equipment in reliance on the assumption that a particular set of environmental laws will remain in place for a certain period of time. The ability of politicians to change—or threaten to change—the applicable environmental laws reduces the incentives of firms to make investments in capital assets. Thus, a sensible environmental policy will seek to allocate authority among state and federal regulators to reduce the possibility of

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20. This list represents our summary of the literature. The seminal article in this literature is Charles M. Tiebout, *A Pure Theory of Local Expenditures*, 64 J. POL. ECON. 416 (1956). Other important contributions include ROBERTA ROMANO, *THE GENIUS OF AMERICAN CORPORATE LAW* (1993); Frank H. Easterbrook, *Antitrust and the Economics of Federalism*, 26 J.L. & ECON. 23 (1983).

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expropriation of fixed capital investments by industry. This can only be done by establishing clear spheres of authority between state and federal actors and limiting the incidence of overlapping regulatory authority. In general, however, if a state is able to expropriate capital because of the inability of a firm to leave the state, then the federal government is in an even more advantageous position because it is usually more difficult to leave the country than to leave the state.

Although the discussion of the mobility condition tends to focus on exit from unfavorable jurisdictions, the entry of mobile economic entities into more favorable jurisdictions also is a significant factor. It is important to note that the two types of economic entities identified here may have conflicting preferences. For example, individuals affected by pollution are likely to favor strict environmental laws, while polluters are likely to favor lax environmental laws. The federalism model is designed to find the optimal balance between these conflicting preferences at the local level.

The second federalism condition requires that all of the consequences of one jurisdiction's laws must be felt within that jurisdiction. Some types of local externalities involve the location of a stationary pollution source, such as a factory, within the local jurisdiction. Where this is the case, the local political decisionmakers will take the costs imposed on the factory into account when devising local environmental policy.

This condition is violated where a state has lax environmental regulation and pollution spills over from one jurisdiction to another. As discussed above, this interstate externality is a strong justification for some form of federal intervention. If the pollution allowed by one state's lax regulation crosses the relevant political boundaries, and if there is reason to believe that the out-of-state victims are not represented in the polluting states' decisionmaking processes, then there will be a political market failure, regardless of whether the regulation is passed in the name of economic development.<sup>21</sup> Local governments can be prevented from playing this game by state regulations or policies, and states can be prevented by federal regulations or policies. The extent of the response could be fairly minimal when compared to today's command and control regulation. For example, states or even individuals could be given the right to sue neighboring states that fail to meet minimum federal standards.<sup>22</sup> Alternatively, the federal government could arbitrate claims between states involving interstate pollution.

The third federalism condition requires that the political process be sufficiently competitive that lawmakers must be forced to respond to adverse events, such as falling population, real estate prices, market share, or revenue.

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21. See discussion of definition of property rights among states, *infra* text accompanying notes 27-33.

22. See *infra* text accompanying notes 65-75.

The basic federalism model is based on the belief that lawmakers enact laws that reflect local preferences *as reflected in the political process*. Thus, constituents who are not on the margin with respect to mobility or exit can still exert considerable influence by exercising their voice option in the political process.

State and local environmental regulation often is claimed to be inadequate because states and localities are under pressure to relax environmental controls in order to attract industry.<sup>23</sup> To the extent that such pressures influence environmental policy, many of the costs (negative externalities) and benefits (economic growth) are borne locally. If the pollution is purely local in all respects, then competition between states can be viewed as beneficial because it forces politicians to consider the costs as well as the benefits of environmental regulations:

[S]ome may object that state and local governments will compete for industries by offering lax environmental standards. We suspect that this is a very real possibility and welcome its effects. In particular, state and local governments will balance voters' interests in economic activity and environmental quality more closely than the federal government will. Therefore, a few states may offer themselves as sinks and sewers, but that will save the rest of the nation from these deprecations. Similarly, many states may have residents who want a much higher environmental quality than federal regulations now mandate. This higher quality is more likely to prevail under local control.<sup>24</sup>

Allowing for local decisionmaking at least leaves the choice for whether there should or should not be a given level of pollution with the people most likely to be affected by it.

The fourth federalism condition is that jurisdictions must be able to select any set of laws they desire. If the first three federalism conditions are met, then the economics of federalism suggests that local governments should retain discretion in selecting the level of environmental quality they prefer as well as

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23. For a summary and critique of the "race to the bottom" analysis, see Revesz, *supra* note 19.

24. Peter H. Aranson, *Pollution Control: The Case for Competition*, in *INSTEAD OF REGULATION: ALTERNATIVES TO FEDERAL REGULATORY AGENCIES* 383-84 (Robert W. Poole, Jr., ed., 1982). A concern about "sinks and sewers" under marketable-permit plans suggests that some concentrations of pollution may not be especially harmful for most localities:

Charges and marketable permit systems are designed to induce an aggregate reduction in pollution or risk without ensuring a particular level of control at any given facility or location. It may therefore not be appropriate in dealing with pollutants or chemical risks that have localized "threshold" effects, causing serious damage only if they exceed a given concentration at a particular location. But many, perhaps most, environmental risks do not involve such thresholds.

Stewart, *Controlling Environmental Risks*, *supra* note 1, at 161.

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the regulatory policies used to achieve those goals. Granting local jurisdictions this authority should generate benefits from several sources:

First, public policy toward environmental policy would more accurately reflect the preferences of those affected. Second, where serious divergences from individual preferences do occur, people have the option of moving to more favorable locations. Third, a real interpolity competition in public policy toward the environment would emerge, as would productive experimentation with governmental alternatives. A veritable marketplace of governments would give the citizen, the consumer of public services, a choice among the competing units. Fourth, decentralization would also generate competition in the use of externality-abatement techniques. Fifth, decentralization would help to ensure that resources flow to their highest-valued use, because those who would receive the benefits of an improved environment would also have to pay the cost. Finally, by reducing substantially the number of people involved with particular environmental problems, decentralization would markedly diminish transactions costs, which, in turn, would allow for the use of market-like abatement policies. We should not deceive ourselves that state and local governors are better than EPA officials. However, decentralization allows other people to visit on legislators and regulators the content of their preferences and the rigors of the marketplace.<sup>25</sup>

Thus, decentralization would encourage the adoption of the optimal pollution-abatement policies.

Although jurisdictional competition in environmental regulation is not perfect, it must be compared with the relevant alternative: federal preemption of state regulation with centralized, monopoly regulation. In fact, one of the primary benefits of federalism—the ability of states to experiment with new policies—is all but eliminated by centralization. Moreover, the political accountability that drives jurisdictional competition is replaced by the necessary delegation of major legislative decisions to federal bureaucracies. The result is an excessively litigious system combined with a decisionmaking process in which “[c]hoices about environmental protection priorities and goals are buried in thousands of highly technical standard-setting decisions made by agencies

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25. Aranson, *supra* note 24, at 384; see also Richard B. Stewart, *Pyramids of Sacrifice? Problems of Federalism in Mandating State Implementation of National Environmental Policy*, 86 *YALE L.J.* 1196, 1210-11 (1977) (considering strategies for federal conscription of state environmental enforcement resources).

and reviewed by courts.”<sup>26</sup> This observation reinforces the lesson of the economics of federalism that there should always be a presumption in favor of local solutions to local externalities. In the final analysis, and consistent with our Matching Principle, purely local externalities can best be dealt with locally.

### C. *Minimal Federal Regulation of Interstate Environmental Externalities*

The presence of interstate externalities means that the political and regulatory processes of states with pollution sources will not take all costs into account when formulating their environmental policies.<sup>27</sup> The optimal state regulation, which controls pollution up to the point where marginal benefit equals marginal cost, will tend to allow more pollution than would be optimal if all costs were internalized in the state’s political process.<sup>28</sup> The neighboring state or states must bear the costs of pollution coming from outside their state. This situation is analogous to the primary justification of all environmental regulation—forcing decisionmakers to bear or internalize the full costs of their decisions.

The excessive pollution generated by interstate environmental externalities is the consequence of poorly defined property rights in the political marketplace. This property rights perspective suggests that the basis for cost internalization could be found through a productive, minimal role for the federal government—the assignment of property rights to states, either to clean air (no pollution from neighboring states) or to pollute across state lines. For example, when only a very small number of states are involved, the federal government’s intervention could be limited to the assignment and enforcement of property rights among the states. However, when the number of states involved is too large for effective bargaining among the states, or when states evince a proclivity for acting strategically to obtain payoffs from out-of-state interests, a more interventionist role might be justified. The key to our position

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26. Stewart, *supra* note 1, at 158. Stewart has also stated:

A combination of bureaucratic hearings and review by unelected judges is an unlikely process for selecting and implementing measures in the general interest. Courts and agencies are buried in lengthy adversary hearings that often take many years to resolve. Federalism values are severely undermined because interest groups can circumvent state and local political processes by bringing federal court actions to force local officials to carry out national directives. No one bears clear responsibility for decisions. The already severe fragmentation of central authority is exacerbated by treating each agency decision as an isolated event to be judicially reviewed on the basis of its separate evidentiary record. The result is a self-contradictory attempt at “central planning through litigation.”

Stewart, *supra* note 3, at 346-47 (quoting Richard B. Stewart, *The Discontents of Legalism: Interest Group Relations in Administrative Regulation*, 1985 WIS. L. REV. 655, 655).

27. See Revesz, *supra* note 7.

28. An alternative way of stating the problem is that state decisionmakers are unwilling to eliminate the externality because all of the costs are borne in their state and some of the benefits accrue to citizens in other states. See, e.g., Revesz, *supra* note 19, at 1210 (“[T]he other prominent market-failure argument for federal environmental regulation is that, in the absence of such regulation, interstate externalities will lead states to underregulate because some of the benefits will accrue to other states.”).

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is that local governments ought to be allowed to make judgments about their own interests, even if those judgments turn out to be misguided, as long as the costs of these decisions are fully internalized by the particular communities served by the local government.

### 1. *Assignment and Exchange of Property Rights*

Assume two neighboring states, A and B, where industrial air pollution from state A lowers the quality of air in state B. There are two possible allocations of property rights. First, if state A were assigned the right to pollute, state B could still obtain an improvement in its environmental air quality by paying state A to enact and enforce more stringent air quality laws. Citizens in state B would be taxed to pay for their cleaner air. Obviously, this would involve tremendous political battles, but it would force the politicians to assess the actual costs of their actions, a necessary first step for better government. If state B is unwilling to raise the necessary funds to induce A to agree to stop or reduce pollution across the state boundary, then state A would continue to pollute. The opportunity cost to state A of polluting would be the amount that state B is willing to pay for A to stop. Thus, state A's decision to pollute is not free, and political competition in state A is likely to inform constituents of the costs associated with continued pollution.

Second, and more likely in today's political environment, state B might be assigned the legal right to be free of pollution coming from state A. This right could be enforced by either a property rule (through an injunction) or a liability rule (through a suit for damages against state A). Either rule would force the internalization of pollution externalities in state A. A property rule would allow state A to negotiate with state B for the right to pollute state B. One can envision state B holding out for progressively higher prices in return for accepting more pollution in the form of lower pollution standards in state A. State A could raise revenues for this right by taxing its polluting industries or, if the state is concerned about adverse consequences on state industries, through the use of general fund tax revenues. Taxing the polluting industry on the basis of the pollution emitted would give some polluters the incentive to reduce pollution. Alternatively, state B's right to clean air could be protected by a liability rule under which state A would be forced to compensate state B for damages resulting from excessive pollution from state A. A liability rule raises problems because of the measurement of damages, which in many cases is subjective. Bargaining under a property rule appears to be the preferred allocation of rights because it requires that all exchanges be mutually beneficial. A liability rule allows for a taking with compensation for objective damages, but not subjective costs.

Although state B might be assigned the legal right to be free from pollution coming from state A, it is certainly possible that pollution sources in state B

also will lower the air quality in state B. The use of Coasian bargaining to protect or compensate state B for pollution emanating from state A is complicated by the combined impact in state B of pollution sources located in both states. For example, when a liability rule to protect state B is assigned, Coasian bargaining will not be possible until there is some objective way to separate and measure the pollution costs imposed from state A from the pollution costs generated in state B. The federal government or federal courts could be called upon to determine responsibility.

Although the Coasian framework predicts that bargaining will result in the optimal level of pollution regardless of the initial allocation of property rights, an important normative policy issue concerns the initial allocation of property rights. Transaction costs can be reduced if the initial allocation is to the party or state with the highest valuation of the resources, but this determination is a difficult one. Moreover, basic conceptions of private property suggest that the initial allocation of rights should include the right to exclude others from using one's resources. Thus, this analysis supports a rule requiring the polluting state to obtain permission from the recipient state before allowing pollution to cross its border into the neighboring state.<sup>29</sup> Such a property rights allocation probably would be popular in today's political environment, but it must be stressed that the determination of the politically feasible rule would depend to a large extent on preexisting pollution patterns across state boundaries. Alternatively, it would seem that a reasonable initial bargaining position would be that the recipient state could force the pollution-exporting state to reduce its pollution to the level that the polluting state would produce if it had the same pollution standards as the recipient state. That is, the recipient state would not be able to hold its neighboring states to a standard higher than it holds polluters in its own backyard.

The potential benefits of such a Coasian system in forcing the internalization of pollution costs across a small number of jurisdictions are substantial. Of course, such a system would have problems. Bargaining costs, in particular, might be high due to political grandstanding. After all, even if the property rights are assigned, the individuals in charge of enforcing them are politicians who do not personally own the property rights. Political competition could force politicians representing states to the bargaining table.

A potential objection to such a Coasian scheme might be the inability of poor states to purchase the right to pollute in rich neighboring states. A clean environment typically becomes more important after basic necessities are met.

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29. In *Georgia v. Tennessee Copper Co.*, 237 U.S. 474 (1915), the Supreme Court prohibited *any* damaging emissions. Such a rule would be much more strict than current environmental law, and it is not obvious that the litigation resulting from such a rule would be more efficient than the current regulatory scheme. The selection of the initial allocation of rights would be an important factor in determining the success of a property rights solution.



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A related objection might be that rich states would be able to continue to pollute if they pay poor states to accept their pollution. Similarly, bargaining problems faced by poor states are exacerbated by allocating all pollution control to the federal government, where larger and wealthier states are likely to have greater influence over policies.

Professor Richard Stewart also has considered the possibility of bargaining among states as a solution to interstate externalities (spillovers). Stewart rejects the use of bargaining on the following grounds:

Bargaining among the states to minimize the losses occasioned by such spillovers is costly (particularly given the complexity and wide dispersion of many forms of environmental degradation), and may do little to improve the lot of states in a weak position (such as those in a downwind or downstream position). These states are likely to favor federal intervention to eliminate the more damaging forms of spillover.<sup>30</sup>

The problem with this analysis is that Stewart fails to take the crucial first step, *the assignment of property rights*, probably to the “weak” states (making them “strong”) and necessarily by the federal government (a very limited form of federal intervention).

Small, weak, and poor states are better off with the ability to trade pollution rights than they would be without this ability. Without the right to sell pollution rights, poor states would have “too little” pollution, in the sense that these states would be willing to accept a bit more pollution if, in turn, they also could get additional money. Depriving poor states of the ability to make these sorts of arrangements makes the residents of such states even worse off. And, of course, if the residents of poor states had a strong preference for high air quality, they could obtain such high air quality by electing officials who imposed tough local standards and refused to sell pollution rights to out-of-state polluters.

### 2. *Regional Effects and Regional Responses*

There are many situations in the United States where several states have common environmental interests because they are part of the same regional environmental system, such as the Chesapeake Bay region and other watersheds. This is a classic commons problem in the sense that the failure to define property rights means that each state’s policies impact on the common resource and in the sense that each state is hesitant to act independently. The federal

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30. Stewart, *supra* note 25, at 1216.

government can play an important role as a catalyst for regional agreements,<sup>31</sup> and can also safeguard against certain regions forming alliances against other regions.

The assignment of enforceable property rights is also a potential solution to regional problems involving even a fairly large number of states. It is often assumed that when the pollution from a source in one state imposes costs on numerous other states, the assignment of property rights and the reliance on bargaining could not provide a practical solution to the externality problem. Transaction costs may be too high for meaningful bargaining among the states. This inability to reach a contractual solution, coupled with the usual presumption in favor of the internalization of externalities, means that a response by the federal government may be justified. In contrast to these traditional assumptions about the limitations of contractual solutions, the federal government's role could be limited to the assignment of property rights and the facilitation of bargaining.

Experimental tests of the Coase theorem with large bargaining groups tend to support such a limited federal role in solving regional environmental problems. A study conducted by Elizabeth Hoffman and Matthew Spitzer to reflect choices made on pollution levels in an externality problem demonstrated that the size of the bargaining group is less of a concern than perhaps traditionally thought.<sup>32</sup> The results indicated that 93% of the bargains among large groups were efficient and that no significant reduction occurred as the group got larger. In fact, bargaining efficiency may have improved as the group size increased. Such information is an affirmation of the potential of federalism to solve environmental problems. The role of the federal government in regional and even nationwide externality situations may be to provide a forum for large groups to organize and rules by which to bargain. The Coasian assumptions of enforceable contracts and assignment of property rights must also be a function of this limited federal intervention.<sup>33</sup>

#### D. *Nationwide Externalities and Federal Regulation*

If Coasian solutions to interstate externalities do not appear workable, then the policy discussion turns to the precise nature of the federal regulation to be enacted. Such regulation can take a variety of forms, including: (1) centralized

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31. In fact, the Clean Air Act Amendments of 1990 envision just such a role for the federal government. See *infra* Section II.A.2.

32. See Elizabeth Hoffman & Matthew Spitzer, *Experimental Tests of the Coase Theorem with Large Bargaining Groups*, 15 J. LEGAL STUD. 149, 151 (1986); Elizabeth Hoffman & Matthew Spitzer, *Experimental Law and Economics*, 85 COLUM. L. REV. 991 (1985).

33. It has been suggested that a system of resource federations that allows the free transfer of property rights and enforceability of contracts among individuals would be the most efficient solution to environmental problems. See, e.g., James L. Huffman, *A North American Water Marketing Federation*, in CONTINENTAL WATER MARKETING 145 (Terry L. Anderson ed., 1994).

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command-and-control regulation; (2) federally mandated pollution-based standards for environmental quality in states, where states are free to design their own regulatory apparatus; (3) federally mandated minimum standards for emissions with market-based incentives, where states play little if any role in implementation; (4) a system of Pigovian taxes, imposed by either the federal government or state governments; or (5) some combination of these and other strategies.

Although determining the optimal federal policy when federal regulation is appropriate is beyond the scope of this study, there can be little doubt that federal policy would be better informed if it could draw on the divergent experiences of states in dealing with other environmental problems. In this regard, governmental intervention on behalf of environmental protection can be viewed as a search for a policy that will produce the optimal amount of pollution. Our Matching Principle suggests that the most appropriate governmental level of environmental regulation is not necessarily the federal government but may be the governmental unit most conterminous with the area subjected to the externalities. The economic model of federalism not only provides a way to analyze existing laws; it is also prescriptive in the sense that it suggests that local laws should satisfy certain conditions. Obviously, all externalities are not national in scope. Thus, the idea of leaving some local control over local externalities seems logical. In fact, the economics of federalism provides strong theoretical arguments for allowing competition among state environmental regulators—such competition may be a source of future wisdom.

## II. THE LIMITED CASE FOR FEDERAL REGULATION

Federal domination of environmental regulation came about in part because environmentalists and others articulated persuasive arguments in favor of federal control. The alleged benefits of centralized federal regulation are related to the ability of the federal government to engage in activities and adopt policies that are beyond the scope of individual state activities and policies.<sup>34</sup>

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34. Professor Richard B. Stewart has stated the general case for national regulation:

[M]arkets alone cannot be relied upon to resolve many of the environmental, health, safety, and consumer problems created by industrialization and mass marketing. Moreover, state and local governments cannot deal effectively with these problems of market failure in the face of economically integrated national markets, products and capital mobility, and the rise of large multi-state businesses. . . . National measures are thus required to deal with problems generated by a national economy.

Stewart, *supra* note 3, at 352. It is difficult to conceive of a statement more antithetical to the standard model of federalism. The federalism model is based on strong assumptions about political incentives which, in turn, are driven by competitive forces. In contrast, Stewart's case for national regulation is based on a policy of granting a monopoly to national legislators and then trusting them to "do good." One should not forget that monopoly is also a market failure. Moreover, Professor Stewart's statement of the problem tends to redefine every local problem as a national problem for the simple reason that

In this Part, we summarize and critique the leading arguments in favor of federal regulation.

A. *Limiting Interstate Externalities*

As discussed earlier, one of the most convincing arguments for federal environmental regulation is the control of interstate externalities. If nontrivial external costs are imposed across political boundaries, then the issue should be addressed by a higher level of government. But the presence of interstate externalities does not imply that they must be corrected by federal regulation that usurps completely the role of local initiatives. Moreover, acceptance of the interstate externalities justification for federal environmental regulation does not necessarily lead one to support a specific type of regulatory response. The current regime of command-and-control regulations is no more justified under this analysis than alternative market-based approaches, such as the property rights framework suggested in the preceding Part of this article or the creation of a market for environmental degradation credits.<sup>35</sup> Rather than having federal regulators impose regulations on polluters, the interstate externalities problem can be addressed by reallocating environmental authority in a manner that would force states and state decisionmakers to bear the full costs of their decisions regarding the regulation of pollution.

B. *Halting the "Race to the Bottom"*

A leading rationale for federal domination of environmental regulation is to prevent states from competing for economic growth opportunities by lowering their environmental standards in a so-called "race to the bottom."<sup>36</sup> The notion is that all states compete for economic growth by lowering environmental standards below the level they would select if they acted

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local lawmakers will have to consider how people in other jurisdictions might react. This in turn transforms every national problem into an international problem.

35. See Revesz, *supra* note 7.

36. For thorough documentation of the influence of this argument, as well as a devastating critique of it, see Revesz, *supra* note 19, at 1233-44. Revesz stresses the importance of separating the interstate externality and race-to-the-bottom rationales for federal regulation:

The distinction between the race-to-the-bottom and interstate externality rationales is critical for determining the appropriate scope of federal regulation. The concern over interstate externalities can be addressed by limiting the amount of pollution that can cross interstate borders, thereby "showing" upwind states the costs that they impose on downwind states. As long as the externality is eliminated, it would not matter that the upwind state chooses to have poor environmental quality—a central concern of the race-to-the-bottom advocates. Conversely, one could imagine a situation in which the environmental quality in the upwind state is very high, but in which there is nonetheless a serious externality problem because the sources in the states have tall stacks and are located near the interstate border, so that their effects are felt only in the downwind state.

*Id.* at 1222-23.

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collectively at the national level.<sup>37</sup> What is individually rational for individual states is collectively irrational at the national level.<sup>38</sup> Professor Richard Stewart describes the implication of this dynamic in concise terms:

Given the mobility of industry and commerce, any individual state or community may rationally decline unilaterally to adopt high environmental standards that entail substantial costs for industry and obstacles to economic development for fear that the resulting environmental gains will be more than offset by movement of capital to other areas with lower standards. *If each locality reasons in the same way*, all will adopt lower standards of environmental quality than they would prefer if there were some binding mechanism that enabled them simultaneously to enact higher standards, thus eliminating the threatened loss of industry or development.<sup>39</sup>

According to this logic, federal regulation is necessary to correct a political market failure at the state level. But there is a faulty link in the syllogism—*each locality does not reason in the same way*. Localities have different preferences for environmental quality, for a variety of economic and aesthetic

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37. For a summary and repackaging of traditional arguments about why state regulation would result in an underprovision of environmental protection, see Peter P. Swire, *The Race to Laxity, the Race to Efficiency, and the Central Role of Public Choice in Justifying Federal Minimum Standards in Environmental Law*, in *YALE LAW AND POLICY REVIEW/YALE JOURNAL ON REGULATION*, SYMPOSIUM: CONSTRUCTING A NEW FEDERALISM 67 (1996). All of Professor Swire's concerns are addressed by Revesz, *supra* note 19, or in this Article. Moreover, Professor Swire does not distinguish between different types of pollution and the extent of their impact across political boundaries. This distinction, of course, is the central point addressed by the Matching Principle.

38. This conclusion would hold even if there were no interstate externalities of the type described in the preceding Part. The presence of interstate externalities and jurisdictional competition for economic growth are necessary for competition to degenerate into a Tragedy of the Commons, the common pool problem. Such common pool problems arise when a large number of firms, individuals, or other economic entities such as states, all consume a single, finite, jointly-owned resource at a faster rate than a single owner of the resource would use it and the resource is unable to replenish itself. Thus, for example, if 100 people each own a single cow, and all 100 cows graze unrestrictedly in a single jointly-owned field, the field's grass will be exhausted far more quickly than if the field had a single owner, because, unlike a single owner, none of the 100 cow-herders has any incentive to conserve or replenish the field's resources. In this regard, the environment can be viewed as a common pool which is "overgrazed" by states competing for economic growth. The Tragedy of the Commons requires two distinct conditions: interstate externalities and jurisdictional competition. Both interstate externalities and jurisdictional competition have been used as separate arguments in support of federal regulation. Hence, we are treating them as separate arguments. Other commentators have tended to combine the two arguments into a single Tragedy of the Commons justification for federal intervention. For example, Richard Stewart has stated that the "characteristic insistence of federal environmental legislation upon geographically uniform standards and controls strongly suggests that escape from the Tragedy of the Commons by reduction of transaction costs . . . has been an important reason for such legislation." Stewart, *supra* note 25, at 1212 (1977). Most of Stewart's Tragedy of the Commons argument is really a "race to the bottom" argument which does not depend on the existence of interstate externalities. In fact, Revesz cites Stewart's argument as a "race to the bottom" rationale. See Revesz, *supra* note 19, at 1210.

39. Stewart, *supra* note 25, at 1212 (emphasis added).

reasons, and it is not at all clear that competition between jurisdictions will lead to a lower level of environmental quality than would a national median voter model.<sup>40</sup>

In fact, competition between jurisdictions may lead to improvements in environmental quality. It is often argued that environmental quality is a luxury good in the sense that individuals develop a greater concern for environmental issues as their incomes rise.<sup>41</sup> If this is true, the key to increases in environmental quality may be found in higher incomes. This point has implications for the desirability of jurisdictional competition, as illustrated by the following example.

Assume that there is no national environmental regulation, and all environmental issues are the prerogative of the state and local governments. Firm "X" operates in New Jersey. As the incomes of those who live in New Jersey increase as a result of industrial growth provided by X, the citizens of New Jersey will place a higher emphasis on environmental quality. State and local government decisionmakers will respond to citizens' demands for better pollution control. Assume that X responds to the increase of pollution standards in New Jersey by moving to Missouri, where pollution control is not as stringent. Missouri's environmental laws could reflect Missourians' preferences given their low relative incomes. Many people in Missouri welcome X's operations even at the expense of environmental problems. As X's industrial production causes Missouri's economy to expand, the incomes of individuals will increase and so will their demand for a cleaner environment. The initial harmful levels of pollution may be a necessary first step toward increasing citizen's demands for a cleaner environment. The competition among different states may enhance economic growth and accelerate the evolution of more efficient pollution abatement equipment.<sup>42</sup>

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40. Revesz makes the same point:

Finally, it is important to stress that the existence of interstate competition for industry is not sufficient, by itself, to produce a race to the bottom or, consequently, to justify federal regulation. Obviously, a race to the bottom requires not just the existence of a "race," but also that the race be to the bottom. The latter element requires, first, that a competitive jurisdiction adopt a less stringent pollution control standard than an otherwise identical island jurisdiction would have adopted. Second, it requires that the less stringent standards that emerge from the competitive process be socially undesirable. Otherwise, the case for federal regulation disappears, or, alternatively, federal regulation must be justified on a different basis.

Revesz, *supra* note 19, at 1219.

41. Studies indicate that environmental awareness begins at an income level of \$5,000. See Bruce Yandle, *Is Free Trade the Enemy of Environmental Quality?*, in *NAFTA AND THE ENVIRONMENT 9* (Terry L. Anderson ed., 1993) (citing GENE M. GROSSMAN & ALAN B. KRUEGER, *ENVIRONMENTAL IMPACTS OF A NORTH AMERICAN FREE TRADE AGREEMENT* (National Bureau of Economic Research Working Paper No. 3914, 1991)).

42. As incomes rise, a cleaner environment will become a good that more people demand. Over time firms would search for new pollution abatement technology instead of moving from state to state. As different jurisdictions identify their proper allocation between environmental quality and economic growth, then X will have the greatest incentive to develop efficient pollution control technologies. At this point any increase in production cannot have a corresponding increase over the optimal level of

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Finally, the race-to-the-bottom rationale for federal government domination of environmental regulation is based on the assumption that the federal government in practice can do a better job at regulating than the state governments. There are strong reasons to believe that this assumption is wrong. The race-to-the-bottom justification for federal intervention, while critical of state political processes, ignores the problem of interest group domination of the legislative process in Washington. The interest group problem is more acute at the federal level than at the state level due to the lack of competition among regulators at the national level.<sup>43</sup> On the other hand, there are numerous reasons to believe that the Washington political market reflects its own regulatory common pool problem, with logrolling for environmental votes with votes on totally unrelated issues. Unfortunately, the race-to-the-bottom rationale underlies much of the federal environmental statutes.<sup>44</sup>

### C. Controlling Political Cost Externalization

State environmental regulations that impose financial costs on out-of-state producers are often cited as a justification for federal intervention.<sup>45</sup> Some

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pollution. Instead, in order to increase production, more efficient technologies must be developed. A dynamic view of the economy sees competition creatively replacing lower valued, inefficient producers with higher valued efficient producers. Current levels of pollution are temporary and will be reduced as our economy grows and individual incomes increase. Cf. Yandle, *supra* note 41, at 1-10 (use of above analysis in context of U.S.-Mexican relations under NAFTA).

43. Of course, Richard Stewart is well aware of the influence of interest group politics on environmental policies. In fact, one of the items he lists as a possible rationale for centralization of environmental regulation is that environmental groups are likely to have relatively greater influence in Washington than in the states. Stewart, *supra* note 25, at 1213. Although this may have been true at some point, it may not always be true. See E. Donald Elliott et al., *Toward a Theory of Statutory Evolution: The Federalization of Environmental Law*, 1 J.L. ECON. & ORG. 313, 316 (1985). Moreover, it is not clear that greater influence for self-styled environmentalists is the best policy for the environment.

44. See Revesz, *supra* note 19, at 1212.

45. Donald Elliott, Bruce Ackerman, and John Millian have argued that a political imbalance led to the development of a peculiar form of state legislation aimed more at transferring wealth from out-of-state businesses to local environmentalists than at reducing pollution in a responsible way:

[T]he period of political cost-externalization . . . is characterized by the formation of organized groups of environmentalists at the state and local level. Industry, however, remains passive and disorganized with regard to pollution issues. Politicians respond to the strategic imbalance created by the local organizational successes of environmentalists by passing laws which place the primary costs of pollution control on out-of-state interests . . . .

Elliott, et. al, *supra* note 43, at 316. However, it did not take long for industry groups to begin to offset the environmentalists' victories at the state and local levels. Elliott, Ackerman and Millian continue:

[F]ederalism opens up the possibility of a distinctive credit-claiming strategy for aspiring politicians on the state level, which we call *cost-externalization*. Quite simply, dividing the nation into fifty geographic zones makes it almost inevitable that some pollution problems will be generated by out-of-staters. Since midwestern auto workers don't vote on whether California should ban the internal combustion engine to control smog and Appalachian coalminers don't vote on whether New York should ban coal to control sulfur oxides from power plant smoke stacks, these issues promise politicians on the state level the equivalent of a free lunch—"tough" legislation allows them to garner public credit for bringing a benefit to *their* constituents at

state environmental regulations restrict local consumption of products produced in other jurisdictions. The classic modern example of cost externalization is California's strict automobile emissions control requirements. But the concern here is that in enacting legislation the local legislators tend to ignore the regulatory costs imposed on out-of-state automobile manufacturers who are unable to pass on all of the cost increase to consumers in the regulating state. In effect, it is alleged that political cost externalization is a political market failure that requires federal regulatory intervention.

Even if the cost-externalization analysis is correct, the implications of the analysis for the structure of federal regulation are not obvious. Historical experience suggests that caution is called for in responding to cost-externalization problems.<sup>46</sup> Thus, the federal response should address the cost-externalization problems in the least restrictive manner. Federal regulations that preempt stringent local environmental regulations of local externalities may be justified on the ground that the local regulations impose tremendous costs on businesses' national marketing strategies. However, there are several possible solutions to this economic problem that fall short of federal preemption and thus allow for the achievement of some of the benefits of federalism. First, the federal government could impose maximum limits on state regulations that affect products manufactured in one state but sold in another. States would be free to set environmental standards up to, but not above, this level. The perennial problem with this approach is that the larger states tend to adopt the maximum standard, and the maximum tends to become a minimum requirement.

A second possible solution to the alleged political cost-externalization problem is that the federal government could prohibit individual states from mandating design changes in products manufactured in other states. State responses should be limited to the least restrictive policy in terms of adverse consequences on national marketing strategies. Take, for example, the Maine statute that prohibits the use of a particular type of fruit juice container because the container is not biodegradable or recyclable. An alternative policy that would result in less disruption of the fruit juice manufacturers' distribution systems would be a corrective tax on the containers. Such taxes would have to be structured so that the level charged corresponded to the level of local pollution caused by the product. Because a large portion of the tax would be borne by the local consumers, local politicians would face a greater constraint in setting the taxes than they do in setting pollution standards when they can

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somebody else's expense.  
*Id.* at 329.

46. Recall that Elliott, et al., argued that the cost externalization problem was one of the initial catalysts for federal regulation. See Elliott, et al., *supra* note 43.



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externalize the political costs.<sup>47</sup> Of course, the obvious problem with allowing federal regulations to restrain state activities is that it could result in a cure that is worse than the disease.

Furthermore, the presence of political cost externalization does not mean that there has been a political market failure. California's decision to require the installation of expensive antipollution equipment in all new cars sold in California adds to the marginal cost of producing the cars sold in California. As such, the increased marginal cost is analogous to a per car excise tax in terms of its impact on the selling price of automobiles in California. The incidence of the regulatory requirement is the same as the tax incidence of a per car excise tax. The marginal cost of the pollution equipment is shared by California consumers, who must pay more for cars, and out-of-state manufacturers, who receive a lower after-regulation price because of the increased marginal costs. To the extent that California consumers observe that they must pay more for new cars than consumers in bordering states, the costs to California consumers are taken into account by California legislators.

Moreover, the costs imposed on out-of-state manufacturers cannot be ignored by state legislators because the out-of-state manufacturers will make political contributions, hire lobbyists and public relations firms, and otherwise attempt to prevent the passage of the legislation. It would be naive to expect out-of-state firms to passively accept the huge costs of the regulations. Finally, because the higher prices due to the regulations will result in fewer new car sales, new car dealers will have incentives to lobby California legislators to not adopt the regulations.

The fact that a particular cost-externalizing regulation is adopted does not mean that the adopting legislators ignored the out-of-state costs; it simply means that the legislators decided that the benefits to them were greater than the costs. This analysis suggests that the political cost-externalization justification for federal environment regulation is not a valid justification for federal intervention. There is no political market failure. But even if there are some problems in the political market, they are likely to be small compared to the problems with the alternative of centralized federal regulation.

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47. Of course, some of the costs under political cost externalization are borne locally in the form of higher prices, but they are less obvious to the consumer than would be pollution-based excise taxes. A potential problem with this approach is that legislators may be tempted to use Pigovian taxes as revenue sources, unrelated to the correction of real environmental problems. In order to prevent this type of barrier to interstate commerce, states should be required to use Pigovian tax revenues solely for environmental projects that serve to diminish demonstrable externalities. Legislators' decisions would focus on the correction of externalities and not on revenue generation. That is, the benefit from the tax is reduced pollution, not simply increased general revenue to the state.

D. *Capturing National Economies of Scale in Administration, Technical Expertise, and Funding*

It often is asserted that state and local regulation tends to be inadequate because states and localities usually lack adequate administrative and enforcement resources. Once again, our analysis returns to the effects of a political decision. If the external costs that are allowed by the inadequate administration and enforcement resources are purely local, then the failure of the local politicians to allocate resources to deal effectively with the pollution is a local problem. Moreover, the federal government does not have the resources to resolve the problem on its own:

The political obstacles to congressional creation and funding of a massive federal inspectorate and police force adequate to the task appear insurmountable. Even if such a force were created, federal environmental goals could not be achieved without the cooperation of state and local authorities with responsibility for water supply, highway location, traffic control, mass transit, land use planning, and other governmental programs related to environmental management.

The inadequacy of federal resources in comparison to the magnitude of environmental problems inevitably results in federal dependence on state and local authorities. Often federal air and water pollution control statutes give the states initial responsibility (subject to federal review and "back-up" enforcement) for achieving federal objectives. In other instances, the EPA is authorized to delegate certain of its own implementation and enforcement responsibilities, an option which overburdened federal officials have readily utilized. Even where no formal delegation has occurred, the EPA in practice relies heavily upon the cooperation of state officials.<sup>48</sup>

Thus, in light of Congress's unwillingness to provide funds to solve environmental problems, it is illogical to assert that federal intervention is necessary because the states' funding of their environmental agencies is deficient.

Everyone wants a cleaner environment if it is free, but neither politicians in Washington nor those in state capitals are willing to come up with the necessary funding. Politicians in Washington should not be given credit for their deep concern for the environment unless they actually provide the funding for the programs they mandate.<sup>49</sup> Washington has not provided the necessary

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48. Stewart, *supra* note 25, at 1200-01 (citations omitted).

49. This especially is true in light of the observation that centralization obscures the true costs of environmental and other policies:

## Externalities and the Matching Principle

funding; thus it appears that the economies-of-scale justification for centralization of environmental regulation relates to economies of scale in political grandstanding, not actual funding and administration of programs.

One real source of economies of scale associated with centralization of environmental regulation could be in centralized research on technical, scientific issues that recur throughout a number of different states. Much of the information generated in this process is a public good that is best provided by government funding. Similarly, centralization of data collection and dissemination is likely to be a cost-effective technique of identifying trends across states and setting policy priorities. These economies can be realized by the federal government even when most policymaking and implementation functions are handled by the states.

Finally, whatever the economies of scale associated with centralization of environmental policy, they are surely overwhelmed by the diseconomies of scale in centralized administration. There are several hundred thousand industrial sources of air and water pollution and over a million hazardous waste generators in the United States.<sup>50</sup> The enormous job of regulating these pollution sources is compounded because there are many different types of sources, and there are tremendous differences in local environmental variables. The environmental harm caused by the emission of the same amount of

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Centralization also makes less apparent the sacrifices involved in public expenditures to promote environmental quality. The relation between one's tax payment into the large and complex federal treasury and any particular federal expenditure is obscure; the correlation between a state or local bond issue for sewage treatment facilities and personal financial sacrifice is more direct and immediate. The ambitious municipal waste treatment programs adopted in federal legislation would probably have been rejected in many states and localities.

As noted above, the federal health and environmental protection bureaucracies are generally larger and more professional than their state and local counterparts. Once a substantial program of environmental protection is launched, these federal bureaucracies' size, professional orientation, and remoteness also make them comparatively less sensitive to public discontent when the economic and social costs of such programs become apparent, particularly if these costs fall disproportionately on a few regions. For analogous reasons, public protests, especially if localized, will have less impact on federal judges and legislators than on their state and local counterparts.

Thus, a variety of "ratchet" factors make it less likely that federal (as opposed to state or local) environmental programs initially undertaken in part out of moral concern will be abandoned or compromised because of the sacrifices they entail. Under centralized decision-making these sacrifices may be less visible (because of fiscal mechanisms) or more palatable (because widely shared). Or the sacrifices may be discounted because federal officials are simply less sensitive to short-term swings in public attitudes. These features of national decisionmaking would be welcomed by those who embrace a genuine moral commitment to environmental protection but fear their inability to maintain that commitment in the face of subsequent privations. Delegation of environmental programs to the federal government can accordingly be viewed as a self-binding mechanism—an insurance policy against *akrasia*. The emphasis in federal programs on wilderness and species preservation, on uniform health-based pollution control standards, and even the extravagant zero-discharge goal of the 1972 FWPCA all reflect the nonutilitarian moral and sacrificial aspects of environmental policy.

*Id.* at 1218-19 (citations omitted). Some may view this as an indictment rather than a virtue of centralization.

50. Stewart, *supra* note 3, at 343 n.17.

pollution can vary widely depending on local environmental conditions. For example, the discharge of polluted water into a large body of water may have no discernible effect, while the same discharge into a small pristine stream may have disastrous consequences. Federal regulators have not been, and never will be, able to acquire and assimilate the enormous amount of information necessary to make optimal regulatory judgments that reflect the technical requirements of particular locations and pollution sources.<sup>51</sup> Federal regulators have responded to the information problem by imposing uniform, technical standards.<sup>52</sup>

The diseconomies of scale in environmental regulation make pollution control much more expensive than necessary:

If controls were tailored to individual plant costs, our current expenditures for air and water pollution control could be reduced from over \$50 billion annually to \$25 billion or less with no sacrifice of overall environmental quality. Such tailoring, however, is an administrative impossibility in a centralized system of regulation. Federal administrators in Washington could not possibly devise individually-tailored standards for each of hundreds of thousands of plants and facilities, particularly when each standard would require a formal hearing and a possible lawsuit.<sup>53</sup>

The national diseconomies of scale swamp the alleged and illusive national economies of scale as soon as national regulation is instituted.

State regulations, of course, would be subject to similar problems. The question then becomes whether the state governments can do a better job than the federal government. State regulators are faced with similar information problems in setting individually-tailored standards, albeit on a smaller scale. The high administrative costs of setting such standards may lead state regulators to set uniform statewide standards, where the higher costs of pollution control are not reflected in their administrative costs. Nevertheless, there would appear to be considerable gains available from tailoring regulations at the state rather than the federal level, even if the result is uniform, technical regulations within each jurisdiction.

The primary justification for federal environmental regulation is the control

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51. The analogy to information processing in a market economy versus centralized planning is obvious. Markets generate prices that convey incredible amounts of information about individual preferences at any time or place. See F.A. Hayek, *The Use of Knowledge in Society*, 35 AM. ECON. REV. 519 (1945).

52. These problems with centralized command-and-control environmental regulations are also present in other areas of federal regulation. See Stewart, *supra* note 3, at 343.

53. Stewart, *supra* note 1, at 156.

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of extrajurisdictional externalities, but this does not require that the federal regulators attempt to micromanage state environmental responses. Indeed, federal regulators appear to be incapable of doing the job. The economies of scale in federal regulation are illusory. The federal government's realization of economies of scale in administration and technical expertise does not come close to justifying federal preemption of local regulation of local externalities. And, it is not clear that federal funding is more adequate for the tremendous task it faces than is state funding for the much smaller task it faces.

### E. *Maintaining National Moral Ideals*

Another argument in favor of federal regulation of even purely local externalities is that the federal government is the level of government best suited to reflect the moral obligation of United States citizens to one another as well as to future generations:

[I]n situations where pervasive and significant spillovers do not exist, it is necessary to consider the reserved question of Congress's power to compel state cooperation in the name of national moral ideals, since the analysis has demonstrated other rationales for infringing state autonomy to be weak.

The case for federal intervention to help realize moral ideals, such as protection of susceptible minorities or the opportunities of future generations, is only somewhat less strong than the spillover rationale. These ideals are valuable not merely for their own sake but also for the moral education fostered by their consideration. Environmental problems force us to face consequences of our immediate actions that we would prefer to disregard because of their disturbing impact on fellow citizens, on future generations, and on the nature of our society. Such a confrontation is indispensable to the collective moral growth of our society. Given the logic of the "politics of sacrifice," this form of collective education is likely to be attenuated if the crucial decisions are excessively noncentralized.<sup>54</sup>

We strongly disagree with this argument, which favors centralized control of environmental policy-making based upon a morality rationale. The biggest problem with the moral-ideals justification for centralization is that it is based on the flawed presumption that it is moral for the federal government to force people to pay for goods that they do not want.<sup>55</sup>

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54. Stewart, *supra* note 25, at 1264-65 (citations omitted).

55. *See id.* at 1221-22 (citations omitted);

Moral crusades enjoy little credit with the nonbelievers who are taxed to underwrite such

There also are several practical problems with this argument for centralization. First, there is no reason to think that a centralized authority can deliver regulations that meet whatever moral ideals many of us share. For example, there are very powerful arguments and evidence that private property owners do a much better job of preserving and protecting large tracts of land than the government.<sup>56</sup> Also, government-controlled land is more likely to be spoiled than privately held property, since the bureaucrats who control public land do not bear the costs of over-use, while they do obtain political support from interest groups in exchange for allowing such over-use.<sup>57</sup> Thus, even assuming that there is a strong public ideal that favors a cleaner environment, there is no reason to believe that centralized decision-making is the best strategy for attaining that ideal.

An additional argument against the moral-ideals justification for centralization is that it is highly open-ended and indeterminate. Anybody can argue that his version of a particular law is more legitimate than his rival's on the grounds that his is more consistent with the moral ideals of the nation. This is an argument impossible to refute or to prove. The most reliable guide for the moral ideals of a polity as diverse as the United States lies in the revealed preferences of its citizens—that is, in the willingness of its citizens to pay for environmental quality. Appeals to the moral ideals of the nation are often thinly disguised appeals to authority when more substantive policy justifications are lacking.

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ventures. Motorists facing drastic curtailment of mobility, the poor with increased utility bills, and the unemployed in rural areas closed to development may understandably view the sacrifices they are called upon to make as excessive. Resistance and resentment may be heightened by the fact that many environmental programs distribute the costs of controls in a regressive pattern while providing disproportionate benefits for the educated and wealthy, who can better afford to indulge an acquired taste for environmental quality than the poor, who have more pressing needs and fewer resources with which to satisfy them. These circumstances may foster, and in part justify, a cynical attitude towards the moral justifications advanced by upper-middle class advocates for environmental programs which benefit that class disproportionately. The impairment of local political mechanisms of self-determination and official accountability involved in federally dictated environmental programs affords further grounds for resentment.

It is not too fine a conceit to mark a parallel between the local impact of national environmental policies and Peter Berger's assessment of the social and moral costs of development in third-world nations. In his book *Pyramids of Sacrifice?*, Berger decries the insensitive willingness of governmental elites to impose severe sacrifices on the populace, repressing opposition to such sacrifices on the grounds that they are necessary to "development" but will not be undertaken voluntarily, and that once development has occurred the society will look back upon the sacrifices as justified. Aspects of national environmental policy might similarly be viewed as the insensitive imposition of sacrifices on local communities, viewed as unjustified by those that bear them (in particular the poor communities), for the sake of a national elite's vision of a better society. Why should Washington force San Francisco to have cleaner air than it apparently wants?

*Id.* at 1221-22 (citations omitted). This view is also reflected in Jack Kemp, *Free Housing from Environmental Snobs*, WALL ST. J., July 8, 1991, at A6.

56. See generally ANDERSON & LEAL, *supra* note 10.

57. *Id.*

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Whatever the benefits of centralization are said to be, centralizing authority over environmental policy has costs. Local preferences for varying levels of environmental quality are ignored, and the laboratory of the states is destroyed. Moreover, centralization makes it very difficult to identify and correct the inevitable mistakes that are made by environmental policy makers. No one is prepared to argue that Congress is perfect, or that the Environmental Protection Agency is above the influence of interest groups and partisan politics. Environmental policy may be too lenient or too strict, and implementation may be wasteful, but there is no corrective mechanism once policy making is centralized. In fact, the “iron triangle” of congressional committees, government bureaucracies, and industry and environmental lobbying groups is seen as conspiring to maintain the centralized status quo in the face of tremendous evidence that it is increasingly wasteful,<sup>58</sup> and in light of political theory describing why centralization was excessively ambitious in the first place.<sup>59</sup>

### III. RESTRUCTURING ENVIRONMENTAL REGULATION

The Matching Principle suggests that determining the efficient division of regulatory authority within a federal system is not very complicated. In general, regulatory authority should go to the political jurisdiction that comes closest to matching the geographic area affected by a particular externality. Traditional federalism theory tells us that local government regulation should be preferred whenever appropriate so that regulations reflect the environmental-quality preferences of the affected parties, as well as to allow for jurisdictional competition and diversity. Thus, primarily local externalities should be regulated by local governments.

Interstate externalities are the only area where federal regulation may be superior to local regulation. Interstate externalities often arise when the optimal level of pollution in an upwind or upstream state is greater than the level of pollution tolerated by a neighboring state. Thus, when externalities include the physical imposition of significant costs in states other than the state where the pollution originated, then it would seem that properly formulated and implemented federal government intervention is appropriate. The federal response should be limited to the minimum involvement necessary to address the problem. For example, when a very small number of states is involved, the federal government’s role might be limited to the establishment and enforcement of property rights so that states can bargain and litigate among themselves over the optimal amount of pollution. When numerous states are harmed by or

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58. See Ackerman & Stewart, *supra* note 2, at 172.

59. See Elliott, et al., *supra* note 43.

produce multi-state externalities, regional or multi-state regulatory responses might be more efficient than complete federal domination of the regulatory arena, although the threat of federal regulation may be necessary to force the states to cooperate. In the more limited areas where federal regulation is justified as a last resort, federal regulators should draw on the state-specific expertise of state regulators whenever possible. Finally, federal regulation when adopted as a last resort should attempt to decentralize as much as possible, perhaps through the use of pollution-based statutes and market-incentives.

In this Part, the three major types of pollution—air, water, and land—are evaluated in terms of the size of the likely impact of externalities. The Matching Principle is then used to evaluate the current allocation of environmental regulatory authority. The goal is to determine the level of government that most closely matches the size of the externality. This model is not an attempt to explain the current environmental regulatory structure.<sup>60</sup> Moreover, it is not an attempt to identify the best environmental policy. Rather, the purpose is to suggest ways to reallocate environmental regulatory authority so that better environmental policy, whatever that might be, will emerge from the political process.

#### A. *Air Pollution*

Air pollution has numerous causes and numerous effects. It is often difficult to identify the polluter. Even when the polluter's identity can be determined it is not always easy to identify the extent of the harm. However, it is nonetheless apparent that some types of air pollution are local and some are interstate.

##### 1. *Smog and Local Air Pollution*

Local air pollution and smog can exacerbate respiratory health problems and other public health concerns and can diminish the aesthetic value of the air.<sup>61</sup> The public health and aesthetic costs of smog vary from area to area depending on geographic conditions, demographics, and local preferences. That is, smog and local air pollution are local problems, and substantial benefits can be achieved through the reduction of local air pollution. But as noted earlier, identical reductions in local air pollution are likely to be valued differently in different areas. Thus, state and local governments should be permitted to determine the amount of smog and local air pollution they will tolerate.

Importantly, most of the solutions to local air pollution and smog can be implemented with local or state regulations. Professors Chilton and Sholtz have

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60. For such an attempt, see Elliott et. al, *supra* note 43.

61. See Kenneth Chilton & Anne Sholtz, *A Primer on Smog Control*, REGULATION, Winter 1990, at 31, 33-34.



## Externalities and the Matching Principle

identified the six most productive ways to reduce smog: “(1) applying reasonably available control technology to point and area sources; (2) requiring an enhanced inspection and maintenance program for vehicles; (3) instituting transportation control measures; (4) reducing fuel volatility; (5) requiring service stations to install Stage II fuel recovery systems; and (6) mandating onboard fuel recovery systems for autos.”<sup>62</sup> It is feasible to tailor all of these measures, except for mandating onboard fuel recovery systems, to the demands of local citizens, yet the entire history of federal clean air legislation has been to override state and local interests. Implementation of any of these methods at nationwide, uniform levels of intensity means that local areas with little or no smog bear the same costs for cleaning up the environment as polluted areas, but they do not receive the same benefits because their air is already clean. Alternatively, it could be argued that citizens in some relatively polluted areas do not receive the same benefits because, in fact, they do not value clean air as much as citizens in other areas.

The Clean Air Act Amendments of 1990 recognize that different areas have different levels of smog and other forms of local air pollution, as evidenced by the classification system for ozone nonattainment areas.<sup>63</sup> But the classification system still does not recognize that different communities may place different values on clean air. In fact, the Clean Air Act Amendments severely constrain the permitted policy responses once an area is placed in a given classification. For example, if an area is classified in a State Implementation Plan (SIP) as a Moderate Ozone Nonattainment Area, then the SIP must provide for installation of a Stage II vehicle refueling system to recover vapor emissions from the fueling of motor vehicles. Thus, reliance on centralized decrees and standards limits the individual state’s ability to fashion its own innovative techniques to combat smog and local air pollution while completely ignoring the context of the state’s fiscal and political situation. The imposition of uniform national standards must reduce the social welfare of many communities.

Recently, states have passed regulations that are more stringent than the federal regulations. This indicates that there are substantial differences in preferences for clean air across states even with a minimal federal standard, and thus provides support for the federalism policy advocated in this article.<sup>64</sup> However, the more stringent state regulations are an example of the cost-externalization problem mentioned earlier. Our analysis suggests that more stringent state regulations should be evaluated in terms of whether the same pollution reduction goal could be achieved in a manner that imposes fewer

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62. *Id.* at 36.

63. *See* Clean Air Act, 42 U.S.C.A. § 7511 (West 1995).

64. For an argument that these more stringent regulations should not be used as evidence to counter the race-for-the-bottom story, see Revesz, *supra* note 19, at 1227-33.

costs on out-of-state manufacturers. For example, the goals of the stricter California vehicle equipment requirements could be achieved by several alternative policies. Equipment requirements could be replaced by a higher state tax on gasoline, or a requirement that older cars, which produce much more pollution, pay a much higher annual state registration fee. This would have the benefit of making Californians much more aware of the costs of controlling pollution in California. Moreover, these taxes and fees could be adjusted to reflect differences in pollution in different parts of the state.

## 2. *Interstate Air Pollution*

The prevention or reduction of interstate externalities is one of the primary rationales for federal regulation, yet very few provisions of the Clean Air Act are aimed primarily at interstate externalities.<sup>65</sup> A federalism model of environmental policy suggests that physical externalities across state lines could be dealt with through regional compacts between the affected states. The Clean Air Act Amendments of 1990 established a northeast transport region consisting of 11 states and the District of Columbia, running from northern New England into parts of Virginia. This provision makes the northeast part of the United States a single Moderate Nonattainment Area and requires the implementation of RACT—reasonable available control technology.<sup>66</sup> This appears to be a regional solution to a regional problem. But similar to the classification system that is used to help diminish local air pollution and smog, the 1990 Amendments concerning interstate air pollution do not give the participant states enough flexibility in designing policy responses.

Interestingly, this provision hints at the possibility of a property rights approach to interstate pollution. The EPA must promulgate criteria for measuring the contribution of sources in one area to ozone concentration in other areas. A first step in the use of property rights to control interstate pollution is the assignment of rights. A second necessary step is the ability to identify the wrongdoer. The EPA is charged with developing this technology. If states can be shown to be exporters of pollution, why not allow neighboring states to sue them? The exporters would then be forced to either pay damages or reduce the amount of pollution exported. Our federalism model suggests that states should be free to choose whatever policy goals they want and the regulatory methods through which the goals are pursued. Given the states' experiences with federal command-and-control regulations, it is unlikely that many states would model their programs after the federal programs.

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65. *Id.* at 1224-27.

66. Clean Air Act, 42 U.S.C.A. § 7513 (West 1995).

## Externalities and the Matching Principle

### 3. *Acid Rain*

Acid rain is caused primarily by factories and power plants that release sulfur dioxide into the atmosphere, which then returns to the earth with precipitation. Because sulfur dioxide is carried through the atmosphere, acid rain knows no political boundaries. Acid rain is an interstate and international phenomenon, but there are serious questions about whether it warrants a regulatory response.

The *potential* for acid rain to cause tremendous environmental harm is not disputed. For example, it is widely recognized that acid rain has caused serious damage in Eastern Europe to lakes, rivers, forests, and even buildings. The extent of the harm in the United States and Canada, while significantly lower than the extent of the harm in Eastern Europe, has been exaggerated by the political rhetoric of environmentalists and by the hyperbole of politicians.

In 1980, the EPA claimed that acid rain had increased the average acidity of Northeastern lakes a hundredfold over the preceding forty years. The EPA alleged that factories and coal-fired power plants located in the Midwest were responsible. The EPA's claim was a catalyst for Congressional funding of a ten-year scientific study entitled *The National Acid Precipitation Assessment Project*.<sup>67</sup> The study found that ninety percent of lakes with high levels of acidity are naturally acidic. The average lake acidity has not increased since the Industrial Revolution—some lakes have become more acidic, while others have become less acidic. Interestingly, most of the critically acid lakes in the United States are found in Florida, whose rain is among the least acidic in the eastern United States. The scientific evidence showed virtually no damage from acid rain to crops and forests. The NAPAP report did credit the 1977 Clean Air Act with reducing sulfur dioxide emissions, but questioned the value of further emission reductions.

In 1990, Congress chose to ignore the NAPAP conclusions. The Clean Air Act Amendments of 1990 mandated that power plants reduce their sulfur emissions by 50% by the end of the century. Estimates of the annual costs of complying with these regulations range from \$5 billion to \$8 billion per year. That is a lot of money to solve a trivial, if not nonexistent problem, especially in light of the fact that the NAPAP study suggested that all of the acidic lakes in the Northeast can be limed for about \$500,000 per year. Although the 1990 Amendments provide for trading of emission allowances, this is merely a step in the direction of minimizing the costs of achieving the level of emissions mandated by the 1990 Amendments and in no way indicates that the mandated level of emissions is the optimal level.

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67. For a description of the project and a summary of its major findings, see J. Laurence Kulp, *Acid Rain: Causes, Effects, and Control*, REGULATION, Winter 1990, at 41.

Such a wasteful policy response would be less likely to occur in a system where states are given more control over their local environmental policies. The problems addressed by the 1990 Act are local in terms of where the alleged harm is taking place, yet the Act imposes costs throughout the national economy. The political dynamics of centralized environmental regulation, dispersed costs, localized benefits, and environmentalists' exaggerations all combined to generate a wasteful policy.

Of course, the fact that acid rain creates a physical interstate externality suggests that this may be an ideal situation for a federal response. On the other hand, the fact that the harm is very localized and easily quantified (in terms of the costs of correction at the local level) indicates that the federal response should be limited. For example, federal law simply could provide for lawsuits by states against the polluters for the costs of correcting the problem. Liability could be prorated on the basis of contribution to the pollution. This would protect the Northeastern states from acid rain caused by pollution and provide the proper incentives for polluters to engage in the optimal amount of pollution avoidance. It should be noted that a liability rule should be preferred to a property rule because of the enormous difference between the cost of correcting the harm (liming lakes, etc.) versus the cost of avoiding it (installing scrubbers). Granting the Northeastern States a property rule, enforced by injunction, would allow them to hold up the Midwest sources of sulfur dioxide.

In conclusion, the federal domination of air pollution regulation was strengthened by the passage of the Clean Air Act Amendments of 1990. Most of the regulations continue to reflect the failed command-and-control form of centralized regulation. The estimated costs of compliance with the new regulations are staggering, and there is little reason to believe that there will be a significant return on the resources invested in the process.

## B. *Water Pollution*

Water pollution is difficult to regulate for many of the same reasons as air pollution. Both because waterways flow between states and because all water eventually makes its way to the ocean, water pollution in any type of lake or stream is potentially an international problem. Yet, as is the case with air pollution, there are numerous ways to control water pollution at the state and local level without federal domination of the field.

### 1. *Localized Water Pollution*

Consistent with our model, pollution with purely local effects should be dealt with locally. The environmental problems involving wetlands and sewage disposal generally are local. There is no reason to believe that local authorities do not have the appropriate incentives or the capability to deal with these problems. Moreover, for a variety of reasons, the discharge of pollutants in

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waterways may be controlled more effectively at the state and local levels.

For at least two reasons, it is easier to establish locally-based, market-driven incentive systems for dealing with water pollution than for dealing with air pollution. First, as noted above, a perennial problem with regulating air quality lies in allocating the costs imposed on various localities to particular sources. This allocation problem presents problems for regulators both because it is difficult to identify all of the various sources of environmental harm, and because it is difficult to allocate damages among these various sources. In the case of water pollution, however, it is often easier than with air pollution to identify and trace polluters, and to quantify the damage being done to a particular water source.

For example, many economists have suggested that marketable permits be used as devices for improving the efficiency of regulation.<sup>68</sup> Conceptualizing a regulatory framework in which marketable permits are used to implement environmental policy is easy to do. First, regulators must identify a target level of environmental quality and translate that goal into policy by establishing a goal for total allowable emissions.<sup>69</sup> Permits giving owners the right to specified levels of pollution are then allocated to individual firms. Firms are allowed to trade these permits. Where the market for these permits is allowed to work, the overall cost of achieving a particular environmental goal will be minimized by a permit policy.<sup>70</sup>

Because it is relatively easy to identify firms that are discharging pollutants into a particular water source after the target level of environmental quality is determined, it would be relatively easy to establish how many permits could be issued. By contrast, in the case of air pollution, because of the difficulties in identifying all of the sources, it might be difficult in some cases to determine how many permits should be issued and who should receive them.

A localized alternative to the command-and-control regulation contained in the Clean Water Act would encourage local regulators to issue tradeable permits. Tradeable permits would allow firms to benefit from being able to decrease pollution at reduced cost. Those firms that could reduce their emissions at low cost could sell their permits to firms that cannot reduce their emissions as efficiently. Similarly, tradeable permits allow organizations and individuals with very low tolerances for pollution to transform their own preferences into reality by buying up permits from polluters and refusing to

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68. See, e.g., Robert Hahn, *Designing Markets in Transferable Property Rights: A Practitioner's Guide*, in *BUYING A BETTER ENVIRONMENT: COST EFFECTIVENESS REGULATION THROUGH PERMIT TRADING* 83-97 (Erhard F. Joeres & Martin H. David eds., 1983).

69. Robert Hahn, *Economic Prescriptions for Environmental Problems: How the Patient Followed the Doctor's Orders*, 3 J. ECON. PERSP. 95, 96 (1989).

70. W. David Montgomery, *Markets in Licenses and Efficient Pollution Control Programs*, 5 J. ECON. THEORY 395, 395-96 (1972).

resell them.<sup>71</sup> Finally, tradeable permits give firms incentives to develop new technologies for controlling pollution both in order to avoid having to buy permits and in order to profit from the sale of permits already owned. The tradeable sulfur dioxide emission allowances under the acid rain title of the Clean Air Act are designed to achieve these benefits.

There is some evidence that tradeable-permit programs should work for water pollution as well. The State of Wisconsin organized a permit system on the Lower Fox River in 1981. The Lower Fox River, which runs from Lake Winnebago to Green Bay, is lined with ten pulp-and-paper mills and four municipalities that discharge significant pollutants into the water. Early studies showed that savings on the order of \$7 million per year would result from the permit program. Unfortunately, regulatory restrictions on the permit program, particularly on the marketability of the permits, have limited the effectiveness of Wisconsin's experiment. For example, trading is limited by location, and regulations restrict the number of firms allowed to trade for rights to pollute at points along the river where demand for permits would be highest. This creates an extremely thin market, which diminishes the value of the permits.<sup>72</sup> Similarly, permits are only good for five years, while transfers must be for at least one year, and it is not clear how renewals will be made, or how trading will effect renewal rights.<sup>73</sup> This uncertainty understandably impedes the market. Moreover, firms wishing to acquire permits must justify to regulators the need for new permits, and trades are not permitted to firms that only want to reduce their operating costs. These policies run counter to the basic theory of marketable permits. In light of all of the regulatory impediments to free-trading in these permits, trading has been virtually non-existent. In the first six years of the program, there was only one trade in permits.

Nonetheless, it seems clear that permit-trading programs such as the one tried in Wisconsin could work if the permits were freely tradeable and implemented in a rational manner. Such permits allow individual firms the flexibility they need to adjust their emission levels to satisfy environmental concerns in the most efficient way possible. This is just one of the many innovative responses that states would be free to experiment with in designing their optimal environmental policy.

## 2. *Interstate Water Pollution*

Obviously, no individual state can regulate a major river like the Mississippi. Instead, a consortium of states must act together to set environmental standards. In fact, "[m]ost major lake and river systems are the subject

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71. *Id.* at 396.

72. Hahn, *supra* note 69, at 97-98.

73. *Id.*

## Externalities and the Matching Principle

of intensive water quantity and quality managements under watershed systems established under state law or interstate compacts.”<sup>74</sup> The role of the federal government is to act as an arbiter among the states to ensure that a level playing field is created. For example, if a region chooses to adopt a tradeable-permit program for the reduction of water pollution, the role of the federal government would be limited to supporting the market for permits. Thus, consistent with the regulatory model of environmental federalism presented in this paper, we suggest that the federal government abandon its role as the developer of centralized command-and-control environmental regulations, and instead assume a role as a facilitator of bargaining among states.

In particular, attention needs to be given to the fact that some states have locational advantages over others when it comes to polluting. States lucky enough to be located upstream of other states have incentives to increase their discharge levels, since the costs associated with such discharges are borne by downstream states. It should be the role of the federal government or the federal courts to establish property rights in clean water so that downstream states could assert claims against their upstream neighbors.

The most effective way for the federal government to discharge its responsibility to facilitate the operation of the federal system would be to assign ownership rights in water to individual states. In this way, states through which polluted water passed could assert a cause of action against the states responsible for the pollution. Downstream states would be able to sue upstream states for the costs associated with the pollution being sent downstream. In turn, the states that serve as forums for polluters would have several options—including state command-and-control regulation, permit systems, or use of tax revenues to obtain funding from polluters in the form of payments for the permits described above. Imaginative and innovative applications of this property rights system could work for most types of water pollution.<sup>75</sup> Our federalism model assumes that states will have the incentives to pursue such solutions once they are given the authority and responsibility for environmental quality in their jurisdictions.

### C. *Land Pollution*

The control of land pollution through the regulation of the disposal of solid wastes traditionally has been a state or local issue. But, as in air and water

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74. Ackerman & Stewart, *supra* note 2, at 187 n.37.

75. An innovative, and perhaps more efficient, solution may be a system of regional federations. Such federations would be immune to state and national boundaries. Their responsibility would be the facilitation of a property-transfer market over one resource (e.g., Regional Water Market Federations). Placing property rights into the hands of individuals leads to a market-based solution and eliminates the role of both state and federal governments, which is federalism at its maximum potential. See James L. Huffman, *A North American Water Marketing Federation*, in *CONTINENTAL WATER MARKETING* 145 (Terry L. Anderson ed., 1994).

pollution, the federal government's regulation of land pollution has increased as well. Much of this regulation has been adopted at slightly later time periods than the federal regulation of air and water pollution. The later response, however, has been coupled with unprecedented federal involvement in local land-use decisions and draconian liability provisions. This Section critiques the current allocation of regulatory authority from the perspective of our federalism model.

Solid-waste landfills and toxic-waste dumps are the most common land-pollution sources. One important consequence of land pollution is the possibility of groundwater contamination, which is a serious problem since groundwater not only serves as the community's source of drinking water, but also provides what is in effect an underground river for transporting harmful substances away from their sources to other areas. Because land pollution and the potential for groundwater contamination are very localized phenomena, our federalism model leads to the argument that these externalities should be regulated exclusively by state and local jurisdictions.

### 1. *Garbage and Landfills*

Under most circumstances, landfills are the most local of pollution externalities and thus should be regulated by local and state governments. The decision about whether to accept garbage from outside of the locality or state should be determined by the smallest possible political jurisdiction. If an area wishes to specialize in landfills, or if an area wishes to have mandatory recycling, regardless of whether it is cost efficient, our federalism model argues that the area should be allowed the freedom to implement its own policy. The more flexibility afforded local governments in dealing with garbage, the cheaper and safer the local environment. In fact, there is considerable variety across states in the standards imposed on landfill operators, as indicated by the response to the recently-promulgated EPA rules governing landfills: "Impact will be biggest in those states, most in the South and West, without tough laws. Those with strict laws 'will hardly' notice, says Ed Repa, National Solid Wastes Management Association."<sup>76</sup> Clearly, the relative lack of an interstate externality suggests that there should be no role for the federal government in regulating landfills.

The biggest environmental threat posed by landfills is the contamination of groundwater. Although aquifers can be enormous, the dispersion of pollutants within them usually is relatively slow and confined to small areas. Thus, groundwater contamination from landfills should in most cases be handled by state and local regulation of landfills. Where an aquifer is in more than one

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76. Rae Tyson, *EPA Signals End of the Town Dump*, USA TODAY, Sept. 11, 1991, at 1A.



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state, each state should be given the right to have the aquifer be free from landfill contaminants. A litigant could enforce these regulations either by asking the court to order an injunction against the wrongdoers, or by suing the polluters for damages.

Given the proper incentives, landfill operators will employ modern solid-waste-management techniques to reduce the likelihood of groundwater contamination to appropriate levels. These incentives can be found in privatization and regulation under the common law of torts. Holding private-landfill owners liable for groundwater contamination is a powerful incentive, and would serve as a more efficient means than federal regulation of ensuring a safe supply of groundwater.<sup>77</sup>

A more difficult issue concerns how to deal with state statutes like the Maine provision outlawing juice boxes that are alleged to be non-biodegradable. On the one hand, states should have some latitude to control the influx of pollutants by out-of-state manufacturers. On the other hand, there is always the danger that states will use their police power to engage in cost externalization in favor of local industries over out-of-state producers. It is not possible to formulate a universal rule to govern situations like this. Instead, federal courts must balance the local interests against the general principle favoring unfettered interstate commerce, always keeping in mind that states are susceptible to political pressures that may cause them to regulate out-of-state producers in order to transfer wealth to local rivals. Thus, courts should require that any regulation that has extra-territorial effects use the least restrictive means available to accomplish its objectives. Similarly, courts should inquire whether a state's regulatory regime has a disproportionate impact on out-of-state producers. And finally, courts should inquire into whether the legislation is part of a larger, internally consistent regulatory framework aimed at environmental policy, or whether it appears to be an ad hoc measure aimed at accomplishing some other end.

### 2. *Toxic Waste Sites*

Because toxic-waste sites are essentially specialized landfills, the same type of local control should prevail here as over general-purpose landfills. Imposing

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77. This incentive is absent for public landfills, which are exempt from liability. It is also interesting to note that private landfill operators were disappointed that the recently-announced EPA rules for landfills were not as strict as they had hoped:

Major trash companies, which have been upgrading their dumps in anticipation of stiffer rules, contend that lower-quality dumps owned by municipalities could stay open for some time.

That will delay the lucrative shift of some trash to the private companies' dumps. Still, the industry hopes the rules will accelerate closings, boosting profits of big dumps owned by [private companies].

Rose Gutfeld & Jeff Bailey, *EPA Sets Rules for Pollution Curbs on State Landfills*, WALL ST. J., Sept. 12, 1991, at A8.

a complex, centralized federal regulatory system on thousands of highly localized, specific-point sources of toxic waste, underground storage tanks, and pesticides and herbicides makes no sense. While we support the idea of federal tracking of the interstate movement of pollutants, the principles of federalism developed in this paper suggest that this should be the limit of federal involvement in dealing with hazardous waste sites. There are several specific aspects of the governmental response to hazardous waste that could be improved by shifting regulatory authority to state governments.

First, federalism would allow for a more flexible response to the toxic-waste problem. At present, the EPA has the authority to determine what constitutes a fully cleaned-up Superfund site. This is a mistake. Individual states should be given authority to determine what constitutes a fully cleaned-up site. Some areas may have a higher tolerance for cleanup than others. Local residents may be willing to accept tax abatements in exchange for living near partially cleaned up or contained sites. A federalism approach would not only reduce costs for industry, it would also direct cleanup dollars where they are most wanted.

Second, analysis of the structure of risks addressed by the Superfund reveals numerous opportunities for local governments to make the necessary policy tradeoff of expensive cleanup versus simply fencing off a site and prohibiting access. In a detailed study of risks addressed by the Superfund, James T. Hamilton and W. Kip Viscusi found that the EPA's risk assessment is based on unnecessary assumptions about future use of the site:

Most of the political pressures that generated the impetus for the Superfund program arose because of the concern of existing populations for the risks that these sites currently pose. Consideration of the risk assessment for Superfund sites indicates, however, that it is not the existing risks that are most salient. Rather, the dominant risks arise from future risk scenarios that generally involve alternative uses of land. Indeed, these future risks account for 90 percent of all the risk-weighted pathways for the Superfund sites in our sample. Chief among these future risks is that there may be future residents on-site. The underlying assumption driving the EPA risk analyses is that there will be new residential areas on existing future Superfund sites, where there are not currently such residential areas.<sup>78</sup>

Obviously, an alternative solution to the potential risks to residents should

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78. JAMES W. HAMILTON & W. KIP VISCUSI, HUMAN HEALTH RISK ASSESSMENTS FOR SUPERFUND (American Enterprise Institute, Conference Paper, AEI Conference on Reforming Superfund, June 3, 1994).

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homes be built on the site could be avoided by local-government condemnation of the property.

Third, individual states are far more likely to be concerned about the effects of cleanups on local businesses. As discussed earlier, zero pollution is an invalid goal, and striking the appropriate balance between business and resources is best done at the local level. For example, Superfund imposes retroactive liability on firms that have caused hazardous waste. Firms are now being held responsible for damage done thirty or forty years ago for engaging in activities that were not only perfectly legal at the time, but were often sponsored or encouraged by government. The federal government is, in effect, abrogating long-standing explicit and implicit agreements between states and companies, in which the states agreed to accept certain levels of toxic wastes in exchange for economic growth.

Finally, unlike the EPA, state officials actually live where toxic-waste sites are located. As such, these officials have a greater incentive to see that funds allocated to cleanups are used for cleanups and not wasted in costly and unproductive litigation. The results of Superfund are truly deplorable. A program that was to cost five billion dollars and last for five years is now expected to cost one trillion dollars and take at least fifty years to complete. Perhaps most shocking is the fact that from a list of over twelve hundred sites on the National Priorities List, only thirty-three have been fully cleaned up. Now EPA estimates that as many as ten thousand additional sites may have to be added to the list. Given the EPA's dismal record, it is not clear that these sites are serious health threats. What is clear is that there is no way that all of the sites will be cleaned up. Once again, allowing states to take responsibility for cleaning up toxic-waste sites would assure that the most pressing problems are addressed first. EPA, on the other hand, seems incapable of prioritizing sites in any rational way.

Toxic waste is a local problem that should be treated locally. Individual states should not only be allowed to determine how scarce cleanup resources are allocated within their states, they also should be able to determine whether they will be net importers or exporters of such waste. Some states might be willing to accept higher levels of toxic waste, in the form of looser environmental standards, in exchange for new industry, or for dollars. Such flexibility is impossible under the current centralized regulatory framework imposed by CERCLA.

This analysis suggests that the entire RCRA and CERCLA system should be dismantled. It imposes tremendous costs with little return. The one provision that should be retained is the manifest system which could help states maintain the integrity of their political boundaries with regard to the hauling of trash and toxic waste.

## CONCLUSION

The environmental policies that we actually observe are at odds with the Matching Principle theory of federalism articulated in this Article. One of the most important attributes of a properly functioning federal system is that local governments are given autonomy to tailor regulatory solutions to local problems and concerns, leaving the federal government free to address multi-state problems.

There are several reasons why local governments should be permitted to address environmental issues that have a primarily localized impact. First, different localities are likely to have different preferences and concerns. Decentralized government through a federalist system is far more responsive to local needs and concerns. For example, some communities might prefer to trade-off environmental quality for more employment or greater revenue. Local control over environmental issues would permit this. Second, local control is beneficial because state and local governments will engage in healthy competition along a number of vectors. They will compete to attract new business, they will compete for jobs and revenues, and they will compete to offer residents better environmental quality. By contrast, the centralized, monopolistic command-and-control apparatus of the federal government does not offer citizens the benefits of competition. Finally, where local decision-making authority is replaced by federal regulators, rational local officials will compete at the national level to obtain wealth transfers from other localities. Every locality will consume resources lobbying for environmental policies that produce local benefits, regardless of the consequences for the nation as a whole.

The Matching Principle makes it quite clear, however, that—like policy issues generally—not all environmental problems should be addressed by local authorities. Where one state is producing environmental hazards that are not internalized within that state, a national response may be called for. But, in most instances, that response should be limited to the assignment of property rights and the facilitation of bargaining. Our point, then, is not that a federal response is never appropriate, but rather that the federal response should be *matched* with particularized environmental and federalism concerns.