REFORMING OUR WASTEFUL HAZARDOUS WASTE POLICY

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INTRODUCTION

Federal hazardous waste regulation and cleanup programs suffer from poor prioritization, insufficient flexibility, high costs, and questionable benefits. Many of these problems are a result of excessive regulatory centralization. The federal government has assumed primary responsibility for hazardous waste policy, placing states in a secondary role, even though the environmental threats posed by hazardous waste are generally quite localized. Hazardous waste itself is not a form of pollution, but rather a "precursor to pollution."[1] It only becomes an environmental problem when mismanaged, and allowed to contaminate land or water. Properly managed, however, hazardous waste is not a particularly pressing environmental concern. And when improperly handled, hazardous waste tends to create fairly localized environmental concerns. Contamination of soil and groundwater are site-specific, rarely crossing state lines. Unlike much air and water pollution, mismanagement of hazardous waste does not involve substantial interstate externalities of the sort that would typically justify the imposition of federal regulation.

State governments should be given the opportunity to assume leadership of hazardous waste regulation and cleanup. While the federal government has an important role to play in the regulation

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[1] Hilary Sigman, *Taxing Hazardous Waste: The U.S. Experience*, 3 PUB. FIN. & MGMT. 12, 13 (2003).

and management of hazardous wastes, this role should be far more circumscribed and targeted than under existing law. A more decentralized regulatory regime could produce more transparent and forthright accounting of the trade-offs inherent in hazardous waste management and cleanup, encourage the development of more targeted and location specific remedial measures, and foster a more effective hazardous waste policy for the future.

I. FEDERAL HAZARDOUS WASTE LAWS

National attention only turned to the environmental problems associated with hazardous waste well after the process of environmental policy centralization had begun.[2] Prior to that point, federal efforts focused on the more visible problems of air and water pollution.[3] The gradual nationalization of waste policy occurred with relatively little consideration of the proper roles of the federal and state governments in safeguarding the nation's water and soil. Fed by public hysteria, Congress adopted legislative programs with minimal discussion and debate. The initial provisions governing hazardous waste contained in the Resource Conservation and Recovery Act (RCRA)[4] were largely an afterthought to the newly enacted federal solid waste law.[5] Congress adopted the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund)[6] during a lame-duck legislative session with minimal debate in response to

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[2] For a brief overview of the federalization of environmental regulation, *see generally* Jonathan H. Adler, *The Fable of Federal Environmental Regulation*, 55 CASE W. RES. L. REV. 93 (2004).

[3] *See* Paul Weiland & Rosemary O'Leary, *Federalism and Environmental Policy: The Case of Solid Waste Management*, 27 AM. REV. PUB. ADMIN. 211, 213 (1997) ("[W]aste disposal was not recognized as an environmental problem until after air and water quality problems were recognized."). Somewhat ironically, air and water pollution control measures increased the waste disposal problem insofar as pollution controls increased the generation of wastes containing pollutants removed from air emissions and liquid effluent. *See* MICHAEL B. GERRARD, WHOSE BACKYARD, WHOSE RISK: FEAR AND FAIRNESS IN TOXIC AND NUCLEAR WASTE SITING 19–20 (1994).

[4] 42 U.S.C. §§ 6901–6992k (2000).

[5] *See* MARK K. LANDY, MARC J. ROBERTS & STEPHEN R. THOMAS, THE ENVIRONMENTAL PROTECTION AGENCY: ASKING THE WRONG QUESTIONS – FROM NIXON TO CLINTON 93 (1994). Only one of the sixteen legislative findings contained in the 1976 Act concerned hazardous waste, and it merely noted that such waste presents "special dangers to health and requires a greater degree of regulation than does non-hazardous solid waste." *Id.*

[6] 42 U.S.C. §§ 9601–9675 (2000).

the perceived "crisis" of abandoned waste sites.[7]

With both RCRA and CERCLA, and subsequent legislative amendments, Congress centralized environmental policy questions that are, in many respects, inherently local in nature. This produced a "mismatch" between those jurisdictions with regulatory primacy and the nature of the environmental problems at issue.[8] While federal legislators and agency officials were "contemptuous of the capacity of state and local governments" to address hazardous waste concerns, the legislation they adopted decreased state and local political responsibility and accountability, further compromising the development of sound hazardous waste policy.[9] With Superfund in particular, "the design of the program did not seek to promote decentralization or to enhance the role of the states"[10]—a choice that undermined political accountability for hazardous waste policy.[11]

Both programs have been plagued with excessive rigidity, poor prioritization, and minimal consideration of ecological (let alone economic) trade-offs.[12] Under existing federal hazardous waste regulations, "society spends a disproportionate amount of

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[7] LANDY, ET AL., *supra* note 5, at 164 (Congress "failed to deliberate about the basic strategic choices regarding program design and resource allocation" when passing Superfund).

[8] For an overview of the problem of "jurisdictional mismatch" in environmental policy, see Jonathan H. Adler, *Jurisdictional Mismatch in Environmental Federalism*, 14 N.Y.U. ENVTL. L.J. 130 (2005); *see also* Henry N. Butler & Jonathan R. Macey, *Externalities and the Matching Principle: The Case for Reallocating Environmental Regulatory Authority*, 14 YALE L. & POL'Y REV. 23, 25 (1996) (advocating a "match" between the scope of environmental problems and regulatory jurisdictions).

[9] *See* LANDY, ET AL., *supra* note 5, at 165. Interestingly enough, at least one state, New Jersey, adopted a hazardous waste cleanup statute several years before Congress would enact CERCLA. *See* Richard L. Revesz, *Federalism and Environmental Regulation: A Public Choice Analysis*, 115 HARV. L. REV. 553, 596 (2001) (discussing the New Jersey Spill Compensation and Control Act adopted in 1976).

[10] LANDY, ET AL., *supra* note 5, at 239.

[11] *Id.* ("This allowed citizens to continue to treat hazardous waste as a problem someone else was going to solve for them.").

[12] *See* DANIEL A. FARBER, ECO-PRAGMATISM: MAKING SENSIBLE ENVIRONMENTAL DECISIONS IN AN UNCERTAIN WORLD 179–83 (1999) (summarizing problems of overly centralized environmental regulation); Richard B. Stewart, *Controlling Environmental Risks through Economic Incentives*, 13 COLUM. J. ENVTL. L. 153, 154 (1988) ("[T]he system has grown to the point where it amounts to nothing less than a massive effort at Soviet-style planning of the economy to achieve environmental goals").

resources addressing a relatively limited selection of the risks posed by toxic materials."[13] Existing federal hazardous waste regulations and cleanup requirements seem to be more a reaction to "popular fears" than a rational approach to "reducing actual risks."[14] While hazardous waste may have ranked high in public perceptions of environmental risks, subsequent EPA [Environmental Protection Agency] analyses concluded that the actual health risks posed by hazardous wastes have been "overrated."[15]

Under RCRA, the EPA regulates the generation, management, and disposal of hazardous wastes. CERCLA, in contrast, governs the cleanup of sites subject to hazardous waste contamination. Together, the two statutes impose extensive federal requirements on firms with nearly any connection to the creation, ownership, or disposal of wastes the federal government deems hazardous. These requirements are imposed with little regard for local risk preferences, environmental priorities, or ecological conditions.

A. *RCRA*

Enacted in 1976, RCRA was the first federal statute governing solid waste.[16] RCRA's Subtitle C creates a comprehensive "cradle-to-grave" regulatory regime for hazardous waste.[17] Subtitle C and the relevant implementing regulations

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[13] Adam Babich, *Our Federalism, Our Hazardous Waste, and Our Good Fortune*, 54 MD. L. REV. 1516, 1521 (1995).

[14] *Id.* at 15, 18–19 ("Important aspects of Superfund and RCRA seem geared more to responding to these popular fears than reducing actual risks.").

[15] LANDY, ET AL., *supra* note 5, at 297 (citing EPA assessments of relative risks posed by various environmental problems subject to EPA regulation); *see also* J. CLARENCE DAVIES & JAN MAZUREK, REGULATING POLLUTION: DOES THE U.S. SYSTEM WORK? (1997).

[16] Hilary Sigman, *Hazardous Waste and Toxic Substance Policies*, *in* PUBLIC POLICIES FOR ENVIRONMENTAL PROTECTION 218 (2nd ed., Paul R. Portney & Robert N. Stavins eds., 2000). RCRA Subtitle C governs hazardous waste. Other portions of RCRA govern other waste-related concerns. Subtitle D, for example, concerns solid waste, but is less prescriptive than subtitle C. U.S. ENVTL. PROT. AGENCY, WHAT IS RCRA?, http://www.epa.gov/region02/waste/what.htm (last visited Sep. 25, 2008).

[17] *See* U.S. EPA, RCRA ORIENTATION MANUAL 2006 at I-4 (2006), *available at* http://www.epa.gov/epaoswer/general/orientat/rom1.pdf ("RCRA Subtitle C establishes a federal program to manage hazardous wastes from cradle to grave."). Some would even say that RCRA regulates wastes "well beyond the grave." *See* Amer. Iron & Steel Inst. v. EPA, 886 F.2d 390, 393 (D.C. Cir. 1989).

govern the generation, transportation, storage, treatment, and disposal of wastes classified as hazardous. In 1984, Congress amended RCRA with the explicit purpose of constraining EPA discretion, forcing more stringent federal regulation, and discouraging land disposal of hazardous wastes. The 1984 amendments also added a Corrective Action program governing the cleanup of RCRA sites, which operates much like the Superfund program discussed below, as well as regulatory provisions specifically targeted at underground storage tanks, such as those used by service stations to store gasoline. As a whole, RCRA imposes "a detailed, stringent, and frequently confusing" regulatory scheme.[18] Noted environmental attorney Michael Gerrard observes, RCRA is "one of the most relentlessly command-and-control statutes ever written."[19]

Structurally, RCRA adopts a fairly standard "cooperative federalism" model, under which the federal government encourages states to implement their own regulatory programs in accordance with federal standards.[20] States that adopt their own hazardous regulations may seek EPA authorization to implement and enforce the federal program in the EPA's stead.[21] In order to obtain such authorization, the relevant state program must meet or exceed the stringency of the respective federal rules and ensure adequate levels of enforcement. These requirements are imposed quite rigidly, so states must meet or exceed EPA standards in every detail.[22] States are not permitted to relax one regulatory provision in return for tightening another.

Authorization of a state program makes the state eligible for

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[18] Randolph L. Hill, *An Overview of RCRA: The "Mind-Numbing" Provisions of the Most Complicated Environmental Statute*, *in* RCRA DESKBOOK 3 (1991). Of note, Hill wrote this description of RCRA while an attorney at the U.S. EPA. *Id.*

[19] GERRARD, *supra* note 3, at 206.

[20] *See* Babich, *supra* note 13, at 1534 ("[T]he essence of cooperative federalism is that states take primary responsibility for implementing federal standards, while retaining the freedom to apply their own, more stringent standards."). *See also* New York v. United States, 505 U.S. 144, 167 (1992) ("[W]here Congress has the authority to regulate private activity under the Commerce Clause, we have recognized Congress' power to offer States the choice of regulating that activity according to federal standards or having state law pre-empted by federal regulation. . . . This arrangement . . . has been termed cooperative federalism.") (internal citations and quotations omitted).

[21] *See* 42 U.S.C. § 6926.

[22] *See generally* 40 C.F.R. § 271.14 (2008).

federal funding, but such funding does not cover the costs of implementing even the core regulatory provisions of Subtitle C.[23] Nor does the authorization process allow for much state flexibility. At present, the vast majority of states have obtained authorization to implement some portion of RCRA's rules.[24] As of September 2007, however, only one state (Idaho) had authorization to implement 100 percent of the EPA's RCRA rules.[25]

While the federal-state relationship in hazardous waste regulation is supposed to be "cooperative," many states have found it difficult to satisfy the EPA's requirements for regulatory primacy. Implementation of RCRA's requirements can be "incredibly confusing."[26] An early EPA assessment found a widespread perception among regulators and regulated alike that "standards for what constitutes adequate state capability [were] unclear and a moving target."[27] The EPA and state regulatory agencies have also fought over enforcement priorities.[28] As a consequence of these factors and RCRA's general complexity, state innovation in hazardous waste management has been somewhat limited.[29]

In 2005, approximately fifteen thousand firms qualified as large quantity generators of hazardous waste under RCRA.[30] Yet a small percentage of hazardous waste generators are responsible for

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[23] *See* ASSOCIATION OF STATE AND TERRITORIAL SOLID WASTE MANAGEMENT OFFICIALS, STATE RCRA SUBTITLE C CORE HAZARDOUS WASTE MANAGEMENT PROGRAM IMPLEMENTATION COSTS—FINAL REPORT (2007). Although states are required to provide a 25 percent match for federal grants for RCRA implementation, "EPA currently provides only about 40% of the total funds necessary for States to run complete and adequate RCRA C programs." *Id.* at 3. The funding shortfall is estimated at approximately $90 million. *Id.* at 4.

[24] U.S. ENVTL. PROT. AGENCY, RCRA STATE AUTHORIZATION (2008), *available at* http://www.epa.gov/epaoswer/hazwaste/state/index.htm.

[25] *See* U.S. ENVTL. PROT. AGENCY, RULE AUTHORIZATION PERCENTAGE (2008), *available at* http://www.epa.gov/epaoswer/hazwaste/state/stats/charts/statecom.pdf.

[26] Babich, *supra* note 13, at 1539.

[27] U.S. ENVTL. PROT. AGENCY, THE RCRA IMPLEMENTATION STUDY: THE NATION'S HAZARDOUS WASTE MANAGEMENT PROGRAM AT A CROSSROADS (1990).

[28] *See, e.g.*, Harmon Indus. v. Browner, 191 F.3d 894, 897 (8th Cir. 1999).

[29] Babich, *supra* note 13, at 1540 (noting RCRA's complexity "has generally prevented [states] from attempting significant innovations.").

[30] U.S. ENVTL. PROT. AGENCY, THE NATIONAL BIENNIAL HAZARDOUS WASTE REPORT (BASED ON 2005 DATA) – NATIONAL ANALYSIS 4-1 (2006).

the majority of hazardous waste,[31] and most hazardous waste is disposed at the point of generation.[32] In that year, these firms generated over 38 million tons of designated hazardous waste.[33] While these figures may sound somewhat ominous, the volume of waste produced is not a particularly useful indicator of actual environmental risk.

Not all substances designated as "hazardous wastes" when disposed of are particularly hazardous. Rather, "'hazardous waste' and 'hazardous substances' are terms of art that say more about the legal status of chemicals than about the dangers those chemicals present."[34] RCRA defines a "hazardous waste" as:

> a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.[35]

While some wastes may be classified as hazardous because they demonstrate particular characteristics, most "hazardous" wastes receive this designation because the EPA lists them as such, a practice which has led to the listing of some "benign" wastes.[36] Mixtures of nonhazardous and listed hazardous wastes are also classified as hazardous under RCRA, as are wastes, such as incinerator ash, that are "derived from" listed hazardous wastes,

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[31] GERRARD, *supra* note 3, at 8 (one percent of hazardous waste generators create 97 percent of hazardous wastes).

[32] *Id.* at 8.

[33] NATIONAL BIENNIAL HAZARDOUS WASTE REPORT, *supra* note 30, at 1-1.

[34] Babich, *supra* note 13, at 1519.

[35] 42 U.S.C. § 6903(5). Section 6903(27) of RCRA defines "solid waste" as:

> any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include solid or dissolved material in domestic sewage, or solid or dissolved materials in irrigation return flows or industrial discharges which are point sources subject to permits under section 1342 of title 33, or source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954, as amended (68 Stat. 923).

[36] Sigman, *supra* note 16, at 219.

irrespective of whether the wastes in question exhibit hazardous properties. Perhaps paradoxically, RCRA exempts small waste generators, and some wastes which would seem to present sufficient ecological risks to justify a "hazardous" designation are exempt.[37] The rationale for such exemptions is "probably more political than environmental," raising more questions about RCRA's environmental benefits.[38]

Once a waste is classified as "hazardous," a basic menu of regulatory strictures falls in place. The health and ecological risks posed by different types of wastes can "vary greatly."[39] In straightforward terms, "hazardousness is not a dichotomous characteristic."[40] Nonetheless, RCRA's regulatory requirements for different types of waste do not vary based upon the relevant risks and costs.[41]

One of RCRA's goals is to encourage greater waste reduction and recycling, and it may have done so. In some cases, however, RCRA regulations increase the costs associated with hazardous waste recovery and recycling. For example, the implementation of RCRA regulations designed to prevent "sham" recycling and prevent soil or groundwater contamination resulting from insufficient safeguards also inflated the cost of legitimate hazardous waste recycling, in some cases increasing the volume of waste generated that is subject to RCRA's regulatory requirements.[42] Similarly, cost-effective waste reduction or disposal options can be inhibited by regulatory requirements.[43] RCRA's land disposal restrictions have also "dramatically

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[37] *Id.*; *see also* Babich, *supra* note 13, at 1520 ("Congress and EPA have defined the term 'hazardous waste' to exclude many potentially dangerous materials.").

[38] Sigman, *supra* note 16, at 219.

[39] *Id.* at 218 ("Wastes vary greatly in the threats they pose."); *id.* at 232 ("Any waste categorized as hazardous faces the same regulatory requirements, although wastes may vary greatly in the nature and extent of the dangers they pose.").

[40] LANDY, ET AL., *supra* note 5, at 94.

[41] Sigman, *supra* note 16, at 232.

[42] *See* Jonathan H. Adler, *The Hazards of Regulating Hazardous Waste*, 16 REG., Summer 1993, at 13, *available at* http://www.cato.org/pubs/regulation/reg16n2g.html.

[43] James Boyd, *The Barriers to Corporate Pollution Prevention: An analysis of Three Cases*, *in* IMPROVING REGULATION: CASES IN ENVIRONMENT, HEALTH, AND SAFETY 100 (Paul S. Fischbeck & R. Scott Farrow eds., 2001).

increased waste management costs for many facilities."[44] Such cost increases likely increased incentives for waste reduction and reuse, but may also have increased incentives for illegal dumping and disposal. Insofar as burdensome and delay-ridden permit requirements obstruct the opening of new disposal sites, they may "harm the environment by perpetuating old, substandard facilities."[45] Further, some companies unsure of how RCRA regulations will be applied to their specific operations engage in precautionary "overcompliance," which further increases the costs of such rules.[46]

RCRA also imposes significant manifest and record-keeping requirements to facilitate the tracking of hazardous waste shipments and ensure proper management and disposal. In practice, however, these requirements "do not seem to have helped enforce hazardous waste laws."[47] J. Clarence Davies and Jan Mazurek concur: "Despite RCRA's broad tracking and reporting provisions for hazardous waste, few data exist to show whether the law is achieving its goals."[48]

While these regulations are well-intentioned, and designed to address real environmental concerns, their uniform and largely unwavering application across industries and regions reduces their environmental value. All told, "we know little about [RCRA's] effect on the environment," concludes economist Hilary Sigman.[49] "RCRA may have reduced environmental contamination of air, groundwater, surface water, and soils. However, there are no measures of these changes, let alone evaluations of how human health and the environment benefited from reduced contamination."[50] Improvements in hazardous waste management over the past three decades may have been due to RCRA. At the same time, many of these improvements may have been driven by increased environmental awareness within corporations and among the general public, liability concerns, and local regulatory measures. In any event, RCRA is ripe for reform.

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[44] Sigman, *supra* note 16, at 226.
[45] GERRARD, *supra* note 3, at 82.
[46] *Id.* at 147.
[47] Sigman, *supra* note 16, at 223.
[48] DAVIES & MAZUREK, *supra* note 15, at 20.
[49] Sigman, *supra* note 16, at 229.
[50] *Id. But see* Babich, *supra* note 13, at 1522 (suggesting that RCRA and CERCLA "have dramatically improved environmental protection.").

B. *CERCLA ("Superfund")*

Congress enacted CERCLA in response to a perceived "crisis" of widespread, abandoned and uncontrolled hazardous waste sites during a lame-duck session following the 1980 Presidential election.[51] The contamination of Love Canal, New York was particularly influential in driving passage of the Superfund statute.[52] Yet the cause of waste contamination at Love Canal was not necessarily the result of irresponsible waste management practices by private industry,[53] nor is it clear the contamination created significant health risks for local residents.[54]

CERCLA was intended to facilitate the rapid cleanup of contaminated sites and create a liability scheme to ensure that those firms potentially responsible for site contamination would be held financially responsible. The principle was "shovels first, lawyers later."[55] The statute also created a trust fund, the "Superfund" of the statute's name, to be used to finance site cleanup where potentially responsible parties had yet to be identified or had yet to contribute to cleanup costs. Although the cleanup and management of polluted properties would seem to be

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[51] CERCLA was enacted on December 11, 1980. Of note, no committee report addressed the specific bill Congress enacted. *See* John Quarles & Michael W. Steinberg, *The Superfund Program at Its 25th Anniversary*, 36 ENVTL. L. REP. 10,364, 10,364 (2006). *See also* Richard L. Stroup, *Superfund: The Shortcut that Failed*, *in* BREAKING THE ENVIRONMENTAL POLICY GRIDLOCK 117 (Terry L. Anderson ed., 1997) ("Superfund was enacted in an atmosphere of crisis.").

[52] *See* LANDY, ET AL., *supra* note 5, at 133–42 (describing how Love Canal contamination drove perception of hazardous waste crisis and the eventual passage of Superfund).

[53] *See* Stroup, *supra* note 51, at 117–18; Jerry Taylor, *Salting the Earth: The Case for Repealing Superfund*, REG., vol. 18, no. 2 at 54 (1995) (explaining that the private industry's "careful attempts to contain the waste and warn of the site's dangers" were undone by "shortsighted public officials who put immediate political return above the general welfare."); Eric Zuesse, *Love Canal: The Truth Seeps Out*, REASON, Feb. 1981. As Landy, et al., summarize, Love Canal's public prominence was "the result of an admixture of faulty science, bureaucratic maneuvering, and electoral exigency." LANDY, ET AL., *supra* note 5, at 140.

[54] Subsequent analyses of the health consequences of Love Canal's contamination also cast doubt on initial claims. *See* Mark Reisch, *Brownfield Issues in the 107th Congress*, ISSUE BRIEF FOR CONGRESS, Jan. 16, 2003, at CRS-1, n.1, *available at* http://ncseonline.org/NLE/CRSreports/03Feb/IB10078.pdf ("Subsequent studies cast doubts that the wastes were causally related to these purported effects, however"); LANDY, ET AL., *supra* note 5, at 133 (noting lack of epidemiological studies documenting increased health risks from Love Canal contamination).

[55] LANDY, ET AL., *supra* note 5, at 142.

a local concern, CERCLA displaces state authority to a significantly greater extent than the major federal statutes governing air and water pollution.[56] Largely due to its expansive liability provisions, which impose strict, joint and several liability on potentially responsible parties for waste site cleanup, Superfund is possibly the EPA's "most controversial and most visible" program.[57]

Over 45,000 waste sites are listed in the EPA's Superfund inventory.[58] From among these sites, the EPA created a National Priorities List (NPL) of sites eligible for federally funded cleanup. As of 2007, the EPA has listed over 1,500 sites on the NPL.[59] While the NPL theoretically represents those sites in most dire need of federal attention, there are reasons to suspect that the NPL may not consistently represent those sites of greatest environmental concern.[60] At this point, it is reasonable to conclude that "the major risks from hazardous waste sites have probably been addressed through emergency removal actions."[61]

As originally implemented, the EPA defined "success" as completing cleanup of a site and deleting it from the NPL. Yet many sites required monitoring and potential cleanup activities decades after their listing on the NPL, prompting the EPA in 1990 to redefine success as the completion of all physical construction necessary for site cleanup, "even if final cleanup levels or other

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[56] *See* James P. Young, *Expanding State Initiation and Enforcement under Superfund*, 57 U. CHI. L. REV. 985, 999 (1990). *See also* Jonathan Z. Cannon, *Adaptive Management in Superfund: Thinking Like a Contaminated Site*, 13 N.Y.U. ENVTL L.J. 561, 603 (2005) (noting "the interstate externalities argument for Superfund does not seem particularly strong compared to similar arguments for other federal environmental statutes").

[57] *See, e.g.*, KATHERINE N. PROBST & DIANE SHERMAN, SUCCESS FOR SUPERFUND: A NEW APPROACH FOR KEEPING SCORE 1 (Resources for the Future 2004) ("The Superfund program is one of the U.S. Environmental Protection Agency's (EPA) most controversial and most visible programs").

[58] *Superfund Oversight: Hearing Before the Subcomm. on Superfund, Toxics, Risk and Waste Management of the S. Environment and Public Works Comm.*, 109th Cong. (2006) [hereinafter *Superfund Oversight Hearing*] (testimony of Susan Parker Bodine, Assistant Administrator, U.S. EPA) (noting EPA and "partners" have conducted assessments at 46,515 sites).

[59] U.S. ENVTL. PROT. AGENCY, SUPERFUND NATIONAL ACCOMPLISHMENTS SUMMARY FISCAL YEAR 2007 (2007), http://www.epa.gov/superfund/accomp/numbers07.htm (last visited Nov. 18, 2007) [hereinafter SUPERFUND FISCAL YEAR 2007].

[60] Sigman, *supra* note 16, at 235.

[61] DAVIES & MAZUREK, *supra* note 15, at 21.

requirements for the site have not been met."[62] By this measure, it is easier for the EPA to report "success" under CERCLA.

In 2007, EPA reported that it had completed construction at 1,030, or approximately two-thirds, of all sites on the NPL.[63] This number may not increase particularly rapidly in the years ahead, however, as many EPA offices appear to have focused their resources on sites requiring shorter or less complicated cleanup operations, leaving sites requiring "more complex, lengthy, and expensive cleanups" to be addressed in the future.[64] Further, the construction complete measure is, at best, an "indicator of interim progress" and provides little "information on what the program has accomplished in terms of protecting human health and the environment, reducing risk to those living and working near sites, or reducing contamination and risks to the environment."[65] Empirical research finds little evidence that EPA prioritizes waste site cleanups based upon the actual environmental risks sites present to local communities and surrounding ecosystems.[66]

Superfund is "notorious for fostering too much litigation and too little actual cleanup."[67] Under the statute, any firm that generated, transported, or managed hazardous materials discovered at a waste site may be held liable for cleanup costs. The average cost for cleaning up a single waste site is approximately $20 million, according to the Congressional Research Service, which leads potentially liable firms to pursue litigation or other means of spreading the cleanup costs among other potentially responsible parties.[68] At some sites, the number of potentially responsible

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[62] PROBST & SHERMAN, *supra* note 57, at 1–2. *See also* Cannon, *supra* note 56, at 564–65 ("as it turned out, Superfund clean ups took much longer than initially anticipated, and, even more significantly for our purposes, most Superfund sites have contaminants remaining after the remedy is completed and will require long-term monitoring and review.").

[63] *See* SUPERFUND FISCAL YEAR 2007 *supra* note 59.

[64] PROBST & SHERMAN, *supra* note 57, at 3; Cannon, *supra* note 56, at 594.

[65] PROBST & SHERMAN, *supra* note 57, at 3.

[66] *See generally*, Hilary Sigman, *The Pace of Progress at Superfund Sites: Policy Goals and Interest Group Influence* (Nat'l Bureau of Econ. Research, Working Paper No. 7704, 2000).

[67] Babich, *supra* note 13, at 1520.

[68] Reisch, *supra* note 54, at CRS-7. As Rhoads and Shogren observe, "Superfund pits one firm against another. This creates an environmental conflict in which several players invest effort to win a fixed reward—the avoided cleanup costs." Thomas A. Rhoads & Jason F. Shogren, *Current Issues in Superfund Amendment and Reauthorization: How Is the Clinton Administration Handling*

parties may reach into the hundreds of firms.[69]

Under Superfund regulations, the EPA may require cleanup measures even where opposed by local residents or otherwise unjustified by demonstrable risks to public health.[70] Federal oversight and control of waste site cleanup has meant that federal law drives land-use decisions concerning once contaminated lands, leading to conflict with local communities and state and local governments.[71] Although the EPA is required to consult with state officials when making cleanup decisions, it need not obtain state approval for site remedies. The EPA's efforts to develop standardized protocols has also led to largely haphazard remedy selection.[72] The cost per cancer case averted varies greatly from site to site, but can be quite high when compared to the cost-effectiveness of other environmental programs. While some sites may present significant health risks that can be ameliorated at a reasonable cost, an analysis by James Hamilton and Kip Viscusi found that the cost per cancer case averted was $100 million or more at 70 percent of current Superfund sites.[73]

Superfund was initially funded by the imposition of a corporate income tax and excise taxes on petroleum and chemical feedstocks. The Superfund taxes generated approximately $1.5 billion per year until the taxes expired at the end of 1995.[74] Since that time, Superfund has been funded by the U.S. Treasury out of general tax revenues. The justification for the Superfund taxes was that corporations generally, and oil and chemical companies in

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[69] Reisch, *supra* note 54, at CRS-7.

[70] *See, e.g*, Stroup, *supra* note 51, at 128 (discussing controversial cleanup lead tailings at mine sites in Idaho and Colorado).

[71] *See, e.g.*, Young, *supra* note 56, at 990 ("CERCLA's displacement of the states in the cleanup process creates potential sources of friction between the federal and state governments.").

[72] *See* Sigman, *supra* note 16, at 238–39.

[73] *See* James T. Hamilton & W. Kip Viscusi, *How Costly Is Clean? An Analysis of the Benefits and Costs of Superfund Site Remediations*, 18 J. POL'Y ANALYSIS & MGMT. 2, 22 (1999) (finding costs per cancer case averted were $100 million or more at 101 of 145 sites). *See also* John Quarles & Michael W. Steinberg, *The Superfund Program at Its 25th Anniversary*, 36 ENVTL. L. REP. 10,364, 10,367 (2006) ("To the extent that Superfund is viewed as a national program for the protection of public health, there are many other federal environmental programs that provide far greater health benefits for the costs associated with them.").

[74] Reisch, *supra* note 54, at CRS-2.

particular, were most responsible for waste site contamination, so such "polluters" should be those that pay for the cleanup.[75] Yet there is little, if any, relationship between chemical use by firms and their relative responsibility for environmental contamination. If anything, larger firms are more likely to have complied with existing regulations and industry best practices, and yet they may have paid a comparatively larger share of Superfund taxes.

A recent concern about Superfund was its potential to *discourage* the cleanup and redevelopment of industrial sites. If the cleanup costs for abandoned urban industrial sites to prepare them for redevelopment were not enough in themselves, the potential for Superfund liability discouraged investors further.[76] The effect of Superfund on such "Brownfields" prompted the passage of modest Superfund reforms in 2002. At the time these reforms were adopted, the EPA estimated there were over 500,000 brownfield sites in the United States that were "underutilized and ignored, posing health risks and impeding the revitalization of inner city neighborhoods, which were once important centers of industrial activity."[77] The 2002 reforms relaxed liability for some innocent landowners so as to reduce the disincentive to cleanup and reuse potentially contaminated sites. One purpose of the Brownfields reform was to remove a substantial barrier to private company participation in state voluntary cleanup programs. Another problem with Superfund has been its potential to inhibit technological innovation in waste remediation.[78]

Superfund has not been a total waste. The one aspect of CERCLA universally recognized as a success is the emergency cleanup and removal provisions. Some even term these provisions "one of the great environmental achievements" of federal environmental policy.[79] Over the past twenty-seven years, the EPA has conducted approximately nine thousand removal actions

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[75] *But see* LANDY ET AL., *supra* note 5, at 148 (summarizing argument that Superfund taxes did not embody "polluter pays" principle as intended).

[76] *See* Hope Whitney, *Cities and Superfund: Encouraging Brownfield Redevelopment*, 30 ECOLOGY L.Q. 59, 67 (2003).

[77] *Id.* at 64.

[78] *See* Michael B. Gerrard, *Demons and Angels in Hazardous Waste Regulation: Are Justice, Efficiency, and Democracy Reconcilable?*, 92 NW. U. L. REV. 706, 718 (1998).

[79] *See* J. William Futrell, *Superfund and Reactionary Rhetoric*, ENVTL. F., Jan./Feb. 1994, at 56.

at over six thousand waste sites.[80] Removal actions address potential environmental contamination and health threats not necessarily addressed by the remedial program.[81] Contrary to some assumptions, removal actions continue to require significant outlays. The requirements of quick and efficient waste removal appear to justify continued federal involvement in this regard. Even those removal actions that are not "emergency" actions are typically "time-critical" actions.[82]

II. DEVOLVING HAZARDOUS WASTE POLICY

A consequence of both RCRA and CERCLA is the excessive centralization of hazardous waste policy to the detriment of sound environmental policy. As an environmental concern, hazardous waste rarely presents the sort of risks that typically justify federal regulation. As noted above, the waste itself is not pollution but a "precursor to pollution." It only causes pollution if improperly handled or disposed of, where its primary environmental effect is its potential to contaminate water resources, groundwater in particular.[83] The cleanup of individual hazardous waste sites is also a localized environmental concern. Individual sites "are not interconnected: they are discrete and usually within the confines of a single state."[84] Their ecological and economic effects are centered around the sites themselves. Even where such concerns extend across jurisdictional boundaries, they most often remain quite local problems.

Centralization of hazardous waste policy is particularly difficult to justify if regulatory structures are to match the scale of targeted environmental concerns. As a general matter, environmental regulatory measures will tend to be more efficient and effective where there is a match between the scope of the problem and that of the responsible jurisdiction.[85] Air pollution

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[80] *See Superfund Oversight Hearing*, *supra* note 58.

[81] KATHERINE N. PROBST & DAVID M. KONISKY, SUPERFUND'S FUTURE: WHAT WILL IT COST? 16 (2001).

[82] *Id.* at 22, Figure 2-1 (illustrating that most removal actions Fiscal Year 1992–1999 were either emergency responses or time-critical removal actions).

[83] Sigman, *supra* note 16, at 217. Sigman notes that "Although groundwater protection is the primary motivation for hazardous waste regulation, hazardous waste management may have other environmental costs." *Id.* at 218.

[84] Young, *supra* note 56, at 998.

[85] *See* Adler, *Mismatch*, *supra* note 8, at 130; Butler & Macey, *supra* note 8,

may permeate a local airshed, spread across broad regions, or even disperse throughout the global atmosphere. Pollution of rivers and streams can likewise travel great distances, harming communities throughout a watershed. By comparison, most of the environmental problems most associated with hazardous waste—such as soil and groundwater contamination—are typically quite confined. As a consequence, both the costs and benefits of existing environmental contamination and remedial measures are felt locally. For this reason, it is "logical" to address waste issues at the state or local level "because of the disparity in the types of waste produced in different areas of the nation, differing population concentrations, and varying ability of land for landfilling and other disposal or treatment practices."[86]

The primary environmental concern in hazardous waste management is the potential for improper waste management and disposal to contaminate local drinking water supplies.[87] Yet it is difficult to identify an environmental concern (other than land-use) where the argument for federal intervention is weaker—and the argument for local or state control stronger—than drinking water. As a general matter, drinking water quality in one community has no effect upon drinking water in neighboring jurisdictions, let alone states half a nation away.[88] Even where underground water pollution crosses state lines, this does not justify the adoption of *federal* standards for hazardous waste storage, management and disposal. Targeted interstate remedies would be preferable.[89] If state and local governments lack the capacity to monitor hazardous

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at 25; Daniel C. Esty, *Revitalizing Environmental Federalism*, 95 MICH. L. REV. 570, 587 (1996) (where the scope of a problem does not match the responsible institution's jurisdiction, "the cost-benefit calculus will be skewed and either too little or too much environmental protection will be provided.").

[86] Weiland & O'Leary, *supra* note 3, at 211.

[87] This is not to minimize the potential occupational health risks that can result from the improper management and handling of hazardous materials. Rather, such risks are more properly thought of as occupational health risks—the sort regulated by the Occupational Safety and Health Administration—rather than by the EPA.

[88] Terry M. Dinan, Maureen L. Cropper, & Paul R. Portney, *Environmental Federalism: Welfare Losses from Uniform National Drinking Water Standards*, *in* ENVIRONMENTAL AND PUBLIC ECONOMICS: ESSAYS IN HONOR OF WALLACE E. OATES 14 (Arvind Panagariya, Paul R. Portney & Robert M. Schwab eds., 1999); Paul R. Portney, *Environmental Policy in the Next Century*, *in* SETTING NATIONAL PRIORITIES: THE 2000 ELECTION AND BEYOND 379 (1999).

[89] *See infra* Part III.C.

waste management practices and site cleanup, this could justify financial and technical support from the federal government, but not the sort of extensive regulatory programs that now exist.

The improper handling, treatment or disposal of hazardous waste will pose different levels of environmental risk in different places. Just as some wastes will be more prone to seeping into groundwater supplies, or more difficult to remediate, some areas will be more vulnerable to such contamination. A region in which liquid wastes migrate rapidly through underground water supplies may need more restrictive measures than a region in which the soil is largely impermeable, or where hazardous waste can be effectively isolated.[90] Other variations in the environmental costs of hazardous waste management and disposal could include population density or other factors.[91] When evaluating various sites for waste management and disposal, it is important to keep in mind that there is no such thing as a "perfect" waste disposal site, as all siting decisions involve trade-offs.[92] At the same time, local environmental preferences for environmental risk reduction may vary across states, justifying different types of regulatory measures. The nature of the actual environmental threat, and the relative priority placed upon regulation or remediation, will vary form place to place.

States already adopt slightly different hazardous waste policies from one another, reflecting differing ecological conditions and political priorities. For example, many states have imposed hazardous waste taxes, either feedstock or "waste-end" taxes. Such taxes vary significantly, which could be due to differences in local environmental preferences or different environmental costs from hazardous waste generation.[93] Such taxes reduce the volume of hazardous waste generated within the relevant states, even if only by a marginal amount.[94] It is no surprise that state hazardous waste taxes are higher in states with

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[90] Sigman, *Taxing*, *supra* note 1, at 16 ("Land disposal may cause less damage to the environment in more arid areas because there is less risk that contaminants seep into groundwater. It could be more costly in places with greater reliance on groundwater for drinking water, agriculture, and other uses.").

[91] *See Id.* at 18.

[92] GERRARD, *supra* note 3, at 53 (idea of "perfect" disposal site is a "mirage").

[93] Sigman, *Taxing*, *supra* note 1, at 15–16.

[94] *Id.* at 22.

greater membership in conservation organizations.[95] More interesting, "disposal tax rates are higher in states with high groundwater use, suggesting groundwater protection as a motivation for the taxes."[96]

If, as some economists believe, the use of such taxes is a more efficient way to address the potential risks of hazardous wastes than proscriptive regulations,[97] it is noteworthy that states have been more aggressive in this regard than the federal government,[98] and that those states that rely the most on groundwater have been the most aggressive.

The argument for local control of waste site cleanup is even greater than for hazardous waste management. Theoretically, poor waste management practices in one location could lead to contamination elsewhere (though the contamination is likely to remain regional). Once a specific site is contaminated, however, it becomes a local land-use and risk management concern. The cleanup, and potential redevelopment of an individual site, is the quintessential local environmental concern traditionally left in the hands of state or local governments. Equally important, decisions about the present and future use of individual sites necessarily requires the consideration of inherently local knowledge about ecological conditions, economic needs, and subjective local desires.

As a practical matter, "the Superfund program itself cannot address the full universe of contaminated sites. The massive number of such sites—hundreds of thousands—exceeds any plausible reach of direct federal involvement."[99] Each site is different, requiring site-by-site management and remedy selection.[100] "Physical attributes of the sites, such as annual rainfall and proximity to surface water and groundwater" will "vary greatly" from site to site.[101] As a consequence, "selecting a

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[95] *Id.* at 21.

[96] *Id*.

[97] *See id.* at 24.

[98] For one account of why there has not been a greater reliance upon such taxes at the federal level, see Marc Landy & Mary Hague, *The Coalition for Waste: Private Interests and Superfund, in* ENVIRONMENTAL POLITICS: PUBLIC COSTS, PRIVATE REWARDS (Michael S. Greve & Fred L. Smith, Jr. eds., 1992).

[99] John Quarles & Michael W. Steinberg, *The Superfund Program at Its 25th Anniversary*, 36 ENVTL. L. REP. 10,364, 10,367 (2006).

[100] Sigman, *supra* note 16, at 237.

[101] *Id*.

sound remedial action at a site requires a good dose of common sense and 'engineering judgment' since no two sites are the same."[102]

Waste site cleanup and containment decisions require substantial information, much of which is only available locally. As former EPA general counsel Jonathan Cannon notes, such decisions require information about: "(1) the nature, quantity and location of contaminants on site; (2) site characteristics, including ecosystem processes such as ground water flow and microbial activity; (3) costs and effectiveness of remedies; (4) political and economic conditions affecting cleanup and reuse; (5) values affecting the merits of alternative site uses.[103]"

With the possible exception of (3), this is all local information, more readily accessible to state and local officials than federal regulators in Washington, D.C., or even environmental officials in regional EPA offices. Even the cost and effectiveness of specific remedies will depend, in part, upon local conditions, the knowledge and understanding of which state and local officials are more likely to have than their federal counterparts. Lack of knowledge of present conditions and potential and likely future land uses, for example, can lead to unrealistic risk assessment calculations and the adoption of cleanup measures substantially more (or less) stringent than necessary.[104]

The fifth item in Cannon's list is particularly important. There is no objective, scientific way to determine how "clean" a contaminated waste site must be before it is considered "safe," nor is there a single correct answer to how such sites should be managed. Risk preferences, like aesthetic preferences, are *subjective*, and will vary from place to place. "The state and local community typically have strong concerns about the environmental risks at a given site, but they also may have concerns about other issues," ranging from site maintenance costs,

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[102] *Hearing Before the Subcomm. on Superfund and Waste Management of the S. Comm. on the Environment and Public Works*, 109th Cong. (2006) (testimony of J. Winston Porter), *available at* http://www.winporter.com/testimony4.html.

[103] Cannon, *supra* note 56, at 571–72.

[104] *See, e.g.*, Rhoads & Shogren, *supra* note 68, at 260–61 (describing how failure to account for local land uses at Idaho Pole Superfund site in Bozeman, Montana led to excessive remediation measures).

the impact of various cleanup plans on future site uses and local economic development, and local quality of life issues.[105] "The local community also stands to reap a substantial portion of the non-environmental benefits of clean up, including the benefits that flow from reuse of the site, and may also be in the best position to assess those benefits."[106]

An empirical study of the effect of waste site cleanups on real estate values suggests "individuals place a small value" on a waste site's inclusion in the federal Superfund program.[107] As reported by the study's authors, "these findings suggest that the mean local benefits of a Superfund clean-up as measured through the housing market" are lower than the cost of the average Superfund site cleanup.[108] This is not likely to be the result of insufficient concern for hazardous waste contamination in local communities. To the contrary, as economist William Fischel has documented, local homeowners are a particularly powerful political force, and are more likely to be overly protective of local home values.[109] Homeowners tend to be very risk averse about local changes or developments that have the potential to depress land values, and this risk aversion "pervades all local political decisions."[110] Even those homeowners who are not particularly concerned about the environmental effects of proposed developments or industrial activities are likely to recognize that prospective buyers might be.[111] As a consequence, if Superfund cleanups do not increase local property values, it is unlikely that they are providing meaningful environmental protection. One can go even farther, concluding that "across a wide range of housing market outcomes, there is little evidence that Superfund clean-ups increase social welfare substantially. In light of the significant resources devoted to these clean-ups and the claims of large health benefits, this

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[105] Cannon, *supra* note 56, at 582.

[106] *Id*.

[107] Michael Greenstone & Justin Gallagher, *Does Hazardous Waste Matter? Evidence from the Housing Market and the Superfund Program* 123 Q. J. ECON. 951, 952 (2008).

[108] *Id*. at 3.

[109] *See generally*, WILLIAM A. FISCHEL, THE HOMEVOTER HYPOTHESIS: HOW HOME VALUES INFLUENCE LOCAL GOVERNMENT TAXATION, SCHOOL FINANCE, AND LAND-USE POLICIES (2001).

[110] *Id.* at 163.

[111] *Id.* at 163–64.

finding is surprising."[112]

Some are concerned that allowing more local control over waste management and disposal policies will result in more such activities in poorer communities. Such concerns may be warranted, but it is hardly clear that centralizing and politicizing such decisions is an improvement. Communities without significant economic resources are unlikely to be particularly influential within government agencies.[113] Byzantine regulatory processes rarely facilitate public participation by politically marginalized communities. Moreover, some communities see waste management and disposal facilities as potential "vehicles for economic development."[114]

While it may be tempting to argue that states lack the "scientific, technical or legal sophistication" necessary to ensure the cleanup and remediation of complex contaminated sites, this concern is at least "partially offset by the geographic heterogeneity of contaminated sites, where on-the-ground knowledge is of central importance, and the diversity of circumstances is salient."[115] Further, the federal government could provide much of the necessary technical know-how without imposing regulatory standards governing site cleanup. It is one thing to inform a community about contemporary best management practices and the likely consequences of various cleanup and containment measures. It is quite another to dictate which measures must be adopted and at what cost.

Many assume that there was little ability or effort to control hazardous wastes prior to the adoption of federal regulations. History suggests otherwise.[116] As early as 1924, every state had statutes governing industrial wastes of some kind, albeit statutes far less protective than those in place today.[117] Intrastate pollution caused by the improper handling or disposal of hazardous wastes

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[112] Greenstone & Gallagher, *supra* note 107, at 33.

[113] GERRARD, *supra* note 3, at 88.

[114] *Id.* at 135.

[115] Cannon, *supra* note 56, at 604 (quotation omitted).

[116] *See* CRAIG E. COLTEN & PETER N. SKINNER, THE ROAD TO LOVE CANAL: MANAGING INDUSTRIAL WASTE BEFORE EPA 69 (1996) ("[T]he historical literature indicates that numerous legal mechanisms existed to address actions seen as hazardous before 1970.").

[117] *Id.* at 75.

was commonly recognized as a nuisance prior to World War II,[118] even if pollution was rarely prosecuted as a public nuisance,[119] and in many states laws specifically designated pollution from particular industrial wastes as nuisances.[120] In some states, local laws prohibited certain types of industrial activities in densely populated areas.[121] While few corporations were concerned with projecting a "green" image during this period, many firms recognized the potential liability that could result from poor waste management practices.[122] By 1970, local efforts were more comprehensive, and waste management practices were informed (albeit not consistently controlled) by various national trade associations with substantial expertise.[123] Much of the hazardous waste pollution that attracted public attention in the 1960s and 1970s was the result of "casual waste management practices" that often contradicted the best practices recommended by industry and standard-setting associations,[124] rather than a lack of knowledge about potential environmental risks.[125] Given the potential liability exposure from such acts, industrial bad actors may have been no more responsible under a modern regulatory regime.

There is room to debate when and whether states would have adopted more comprehensive hazardous waste regulations absent RCRA's impetus. With RCRA in place, however, most states use federal regulations as a "floor" for their own regulatory programs.[126] There is some evidence that states seek RCRA authorization in order to adopt more stringent regulatory requirements than those imposed by the federal government.[127] Sigman found that "Several states have expanded their definitions

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[118] *See id.* at 125.

[119] *Id.* ("At the time, however, there was virtually no state or public prosecution of nuisance-causing activities.").

[120] *Id.* at 72.

[121] *Id.* at 125.

[122] *Id.* at 102.

[123] *Id.* at 2.

[124] *Id.*

[125] *Id.* at 163 (noting "there was sufficient knowledge that chemical waste could cause environmental damage to foster cautious practices" well before the enactment of federal environmental laws).

[126] Ann O'M. Bowman, *Hazardous Waste Management: An Emerging Policy Area within an Emerging Federalism*, 15 PUBLIUS 131, 138 (1985).

[127] Hilary Sigman, *Letting States Do the Dirty Work: State Responsibility for Federal Environmental Regulation* 16 (Nov. 21, 2002) (unpublished working paper).

[of hazardous waste] beyond the federal requirements."[128] According to another study, "Over the past 25 years, most states have improved their institutional capacity substantially, and many have adopted innovative programs that go well beyond the efforts of the federal government."[129]

While some environmental analysts express concern that allowing greater state flexibility could lead to a destructive "race-to-the-bottom," under which states adopt progressively lax, and suboptimal, environmental protections, the empirical evidence to date does not support such concerns.[130] In fact, the available empirical evidence suggests that, if anything, any "race" among jurisdictions is "to the top," as states seem more likely to *increase* their environmental efforts in response to neighboring jurisdictions' actions than to relax regulation.[131] A study of state groundwater protection found an upward pattern in state efforts to protect groundwater.[132] Such data suggests a "race to the top" in the protection of such local resources, rather than a "race to the bottom."

States have become particularly aggressive in developing their own waste site cleanup programs, some of which appear to outperform the federal Superfund program. New Jersey's waste cleanup law, the Spill Compensation and Control Act, was adopted in 1976, contemporaneously with RCRA and several years before CERCLA.[133] At the time, New Jersey was one of the few states to take the problem of waste site cleanup seriously. Today, however, states are in the lead. "States are responsible for the vast majority of hazardous waste cleanups across the United States," observed New Hampshire Environmental Services Commissioner Robert W.

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[128] Sigman, *supra* note 16, at 220.

[129] Michael E. Kraft & Denise Scheberle, *Environmental Federalism at Decade's End: New Approaches and Strategies*, 28 PUBLIUS 131, 133 (1998).

[130] *See* Adler, *Mismatch*, *supra* note 8, at 153–54 (summarizing empirical research failing to find evidence of a "race-to-the-bottom" among competing jurisdictions in environmental policy).

[131] *See* Wallace E. Oates, *A Reconsideration of Environmental Federalism*, *in* RECENT ADVANCES IN ENVIRONMENTAL ECONOMICS 15 (John A. List & Aart de Zeeuw eds., 2002) ("States appear to be 'pulled' to higher levels of abatement spending by more stringent measures in neighboring states, but relatively lax regulations nearby appear to have no effect on such expenditures.").

[132] PAUL TESKE, REGULATION IN THE STATES 191–92 (2004).

[133] Revesz, *supra* note 9, at 596.

Varney in 2000.[134] Many states are "fully capable of managing all hazardous waste cleanup programs within their borders," and some already come quite close.[135] The number of state government employees working for state cleanup programs exceeds the number of federal employees who work on Superfund-related matters.[136] By 2001, every state had rules governing liability for waste site cleanup, and most states had established funds to help pay for cleanup at abandoned sites.[137]

Most states have sought to clean up contaminated properties within their borders, even without the EPA delegating authority.[138] Almost every state has its own hazardous waste cleanup statute.[139] In Fiscal Year (FY) 2000, for instance, states completed cleanups at 4,500 non-NPL sites, almost half of them under state-level voluntary cleanup programs.[140] According to the Environmental Law Institute, by the end of FY 2000, states had cumulatively cleaned up approximately 29,000 hazardous waste sites since 1976.[141] By 2001, forty-one states had long-term stewardship programs to ensure that restored sites did not pose renewed threats to public health.[142] All but three states—Vermont, North Dakota, and South Dakota—had formal voluntary cleanup programs in place by the end of 2001, but two of those states still allowed privately initiated voluntary cleanups.[143] Most states have adopted standards and procedures for the use of institutional controls to limit the future uses of cleanup sites.[144] Some have adopted the

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[134] *Hearing Before the Subcomm. on Superfund, Waste Control and Risk Assessment of the S. Comm. on Environment & Public Works*, 106th Cong. 2 (2000) (statement of Robert W. Varney, Commissioner, N.H. Dept. of Envtl. Services).

[135] *Id.* at 3.

[136] Revesz, *supra* note 9, at 597.

[137] *See id.* at 596–97.

[138] *See* Babich, *supra* note 13, at 1549 ("Even in the face of EPA's refusal to delegate under Superfund, most states have accepted the challenge of attempting to clean up contaminated property.").

[139] *See* Young, *supra* note 56, at 994.

[140] ENVIRONMENTAL LAW INSTITUTE, AN ANALYSIS OF STATE SUPERFUND PROGRAMS: 50-STATE STUDY, 2001 UPDATE (2002) [hereinafter ELI 50-STATE STUDY].

[141] *Id.*

[142] *Id.*

[143] *Id.*

[144] *See* ASSOCIATION OF STATE AND TERRITORIAL SOLID WASTE MANAGEMENT OFFICIALS, STATE STATUS IN THE IMPLEMENTATION OF INSTITUTIONAL CONTROLS: SUMMARY OF INVENTORY FINDINGS 1 (2007).

Uniform Environmental Covenants Act (UECA), while others have adopted standards of their own.[145]

Different states have adopted different approaches,[146] including different standards for cleanup liability; many programs have been quite successful.[147] Overall, "the diversity of approaches taken by the states to the problem of hazardous waste cleanup in their own statutes reflects different policy trade-offs with respect to those cleanups."[148] As former EPA official J. Winston Porter noted in 1994:

> the 40 states that have hazardous-waste cleanup programs do their work fairly quickly. In Minnesota, for example, cleanups routinely take two to three years and cost less than $5 million. New York has restored more than 140 sites, and Wisconsin has completed work on more than 200—more than all of Superfund.[149]

The state of New Hampshire is responsible for investigating and/or overseeing cleanup of 97 percent of the hazardous waste sites in the state.[150]

As state authorities have gained greater experience with waste site management and cleanup, they have increased their effectiveness. The number of sites cleaned up in 2000 was equivalent to the number cleaned up in 1997, but in 2000 states were able to achieve this cleanup at 10 percent lower cost.[151] There is some dispute whether state sites are, on average, less contaminated and inherently less costly to remediate than federal sites.[152] Without question, some so-called "mega sites" in the federal program are the largest, most complex, and most difficult sites to remediate in the nation. Such sites may demand continued federal involvement. Yet there is no reason states cannot assume greater authority for the majority of sites now handled under the

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[145] *Id.* at 9.

[146] *See* Young, *supra* note 56, at 994.

[147] *See id.* at 997; J. Winston Porter, *Cleaning Up Superfund: The Case for State Environmental Leadership* 5 (Reason Pub. Pol'y Inst., Policy Study No. 195, 1995) (noting many state cleanup programs outperform the federal Superfund program).

[148] Young, *supra* note 56, at 999.

[149] J. Winston Porter, *Let States Clean Up Superfund's Mess*, N.Y. TIMES, Feb. 6, 1994.

[150] Varney, *supra* note 134, at 2.

[151] ELI 50-STATE STUDY, *supra* note 140.

[152] PROBST & KONISKY, *supra* note 81, at 93.

federal Superfund program.

Transferring primary regulatory authority over hazardous waste to state and local governments could lead to substantial environmental improvements. A lessening of federal regulatory requirements could induce states to further enhance their own programs.[153] Furthermore, insofar as hazardous waste policy involves trade-offs among competing subjective values, decentralized control would lead to greater accountability and consideration of competing environmental policy goals. As Landy, et al., explain:

> Decentralization offers several advantages for preserving responsibility and fostering civic education. The national government is remote, both spatially and psychologically. Political processes in Washington are complex, cumbersome, and difficult to influence compared with smaller units of government. . . . Limiting federal involvement also discourages the naïve notion that those who are not at fault have no responsibility for solving a problem. It helps citizens to recognize that, to an important degree, hazardous waste belongs to that category of nuisances—like crime, and natural disasters—that make demands on the entire community.[154]

III. THE PROPER FEDERAL ROLE

State primacy in hazardous waste policy does not mean that the federal government has no role to play. To the contrary, while the federal role should recede in some respects, there are strong arguments for *greater* federal action in others. The present need is not so much for *less* federal involvement as it is *better* federal involvement achieved by concentrating on those areas in which the federal government has a comparative advantage.[155] Specifically, the federal government should focus its efforts on those areas in which, either due to economies of scale or a particular federal interest, federal involvement can avoid needless duplication, inefficiency, or interstate conflict. This means that the federal government should provide greater levels of technical and

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[153] For a discussion of how federal environmental regulations can discourage or "crowd out" state programs, see Jonathan H. Adler, *When Is Two a Crowd? The Impact of Federal Action on State Environmental Regulation*, 31 HARV. ENVTL. L. REV. 67 (2007).

[154] LANDY ET AL., *supra* note 5, at 166.

[155] *See generally* Adler, *Mismatch*, *supra* note 8.

scientific support, maintain its emergency removal capacity, develop more effective means of addressing interstate spillovers, and maintain regulatory primacy over interstate transportation of and commerce in hazardous wastes.

A. *Scientific Research and Technical Guidance*

There is little question that there are economies of scale in some types of scientific research that can inform the development of hazardous waste management programs and waste site cleanups. While much of the information required for effective environmental protection is local in nature, as discussed above, much of the relevant scientific knowledge will apply nationwide.[156] The health or environmental risks posed by given substances in given quantities or concentrations, and the rate at which contamination disperses in given media, are the sorts of complex technical matters that can best be investigated at the federal level. Asking each state to conduct its own risk assessments would be exceedingly wasteful, particularly when one considers the thousands of materials that can be regulated as hazardous wastes.[157] The General Accounting Office (GAO), in recommending greater state involvement in waste site cleanups, noted the need for increased technical support from the federal government for states to perform such functions effectively.[158] With more technical and scientific information at the ready, state officials will be more able to manage the environmental risks hazardous wastes may pose.

Similarly, the federal government can play a valuable role in identifying and describing "best practices" in hazardous waste management and documenting various waste site cleanup methods.

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[156] NATIONAL RESEARCH COUNCIL, CONFRONTING THE NATION'S WATER PROBLEMS: THE ROLE OF RESEARCH 68 (2004) (a federal role "is appropriate in those research areas where the benefits of such research are widely dispersed and do not accrue only to those who fund the research").

[157] *See* Daniel C. Esty, *Revitalizing Environmental Federalism*, 95 MICH. L. REV. 570, 614–15 (1996) ("Absent centralized functions, independent state regulators will either duplicate each other's analytic work or engage in time-consuming and complex negotiations to establish an efficient division of technical labor."). Of course it is possible that "competition" could improve scientific research insofar as different entities pursue different research methodologies to address emerging environmental problems.

[158] U.S. GAO, SUPERFUND: STRONGER EPA-STATE RELATIONSHIP CAN IMPROVE CLEANUPS AND REDUCE COSTS (1997), *available at* http://www.gao.gov/archive/1997/rc97077.pdf.

As the GAO reported, states would benefit from the EPA's assistance "in developing innovative cleanup technologies and in evaluating their effectiveness."[159] There is even value in having the federal government act as a central repository for information about various regulatory and non-regulatory strategies for dealing with hazardous waste policy questions.[160] In this fashion, the federal government can help inform state-level policy decisions, by clarifying the relevant costs and benefits of given actions, without displacing local expertise or values. This could produce more informed waste policy decisions that remain consistent with local needs, values, and concerns.

B. *Regulation of Interstate Commerce*

There is substantial interstate commerce in hazardous waste management services. In 2005, over four million tons of hazardous waste was shipped across state lines.[161] Insofar as transportation and shipment of hazardous waste presents risks to the environment and public health, this interstate waste trade should continue to be regulated at the federal level so as to ensure a uniform set of rules for all waste-related interstate commerce. A single set of transportation regulations, perhaps quite similar to those already in place under RCRA requiring recordkeeping and proper storage and containment during transport, will be more efficient than variable state and local rules. Further, the environmental and public health risks posed by the transportation of hazardous wastes are distributed across those jurisdictions through which such wastes travel, and are not localized the way the individual facilities or waste sites are. Even if existing transportation and reporting regulations need to be reformed, they should remain the province of the federal government.

Not only should the federal government retain responsibility for regulating this interstate commerce, it should preempt state regulation of hazardous waste transportation, insofar as such regulations threaten to disrupt interstate markets in waste management services. The dormant commerce clause already bars states from adopting measures that limit the importation of waste

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[159] *Id.*

[160] *Id.* at 5 (noting value of EPA assistance in "generating standards and technical guidance, and sharing information across states and regions").

[161] U.S. ENVTL. PROT. AGENCY, THE NATIONAL BIENNIAL HAZARDOUS WASTE REPORT (BASED ON 2005 DATA) – NATIONAL ANALYSIS 1-1 (2006).

from other states,[162] as does the Hazardous Materials Transportation Uniform Safety Act.[163] Yet it is also important that states are prevented from adopting purportedly nondiscriminatory measures that would unnecessarily impede interstate commerce. Were each state allowed to adopt its own regulations governing the transportation of hazardous wastes, haulers could face a disruptive patchwork of variable, and potentially conflicting, requirements. If allowed to adopt protectionist measures that impose a substantial share of their costs on outsiders, states are likely to do so. The proliferation of variable standards could balkanize interstate markets, eliminating the efficiencies that result from a vibrant interstate market in waste management services. Waste management facilities that serve larger markets may take advantage of economies of scale to handle waste more efficiently and with less environmental risk. A lack of federal preemption could also allow an individual state with particularly stringent transport regulations to set the *de facto* national standard, effectively imposing the environmental preferences of its residents on the nation as a whole. If a given state is particularly vulnerable to the risks of improper waste management, or its citizens simply desire greater levels of protection, a state would remain free to adopt more stringent controls on the management, treatment, and disposal of waste within its borders. Such measures can be adopted without imposing discriminatory burdens on interstate commerce.

C. *Interstate Spillovers*

The presence of interstate spillovers, such as occur when pollution crosses state lines, present an unimpeachable argument for federal involvement.[164] However, hazardous waste

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[162] *See, e.g.*, Chem. Waste Mgmt., Inc. v. Hunt, 504 U.S. 334 (1992); Philadelphia v. New Jersey, 437 U.S. 617 (1978). States are, however, able to adopt policies that inhibit interstate commerce in waste generated within the state. *See* United Haulers Ass'n., Inc. v. Oneida-Herkimer Solid Waste Management Authority, 127 S. Ct. 1786 (2007).

[163] *See* 49 U.S.C. § 5125 (2000) (preempting state regulation of hazardous waste transportation).

[164] *See, e.g.*, Thomas W. Merrill, *Golden Rules for Transboundary Pollution*, 46 DUKE L.J. 931, 932 (1997) ("Given the inherent difficulties in regulation by any single state, transboundary pollution would seem to present a clear case for shifting regulatory authority from local to more centralized levels of governance.").

management, disposal, and cleanup are rarely the source of such spillovers.[165] Where there is evidence that groundwater contamination or other environmental contamination caused by hazardous waste is crossing, or threatens to cross, state lines, states should have recourse to the federal government. This does not require the creation or maintenance of a comprehensive national regulatory scheme, however. All that is necessary is a mechanism whereby a polluted state may seek recourse against the polluting jurisdiction.

A potential model for a federal regulatory mechanism to control interstate spillovers of this sort can be found in Section 126 of the Clean Air Act.[166] Under this provision, where a downwind state believes that it is the victim of air pollution from an upwind facility in another state, it may petition the EPA to regulate the upwind source directly. Under this model, where there is evidence that existing waste disposal facilities or contaminated waste sites are causing, or threaten to cause, contamination of water or property in another state, states would have a recourse under federal law. Ideally, such a mechanism would provide affected states with a right to injunctive relief, in addition to compensation for harms incurred.

It is important to note that the federal role in such a context is *not* to create broad regulatory standards with nationwide application. Rather, the role of the EPA in such a context is solely to prevent activities in one state from harming those in another state. Even where improper hazardous waste management and disposal causes harm in multiple states, as could occur where a given site pollutes a regional aquifer, this would still counsel a regional, as opposed to national, solution that takes into account the environmental particulars of the affected region. Water pollution could permeate a regional watershed without impacting the nation as a whole.

D. *Emergency Cleanup*

Even those who call for reforms to allow for greater state

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[165] Young, *supra* note 56, at 985 ("Although hazardous waste is a 'nationwide' problem in the sense that every state contains hazardous waste sites, it is not nationwide in the sense usually associated with environmental harms; that is, hazardous waste is not a problem that routinely transcends the boundaries of a single state.").

[166] 42 U.S.C. § 7426.

leadership, if not complete control, of hazardous waste site programs acknowledge that EPA removal actions have played a "critical role" in protecting human health and the environment from the consequences of improper waste management and disposal.[167] Although states and local governments traditionally play the role of "first responders" in case of natural disasters and other emergencies, it appears that the federal government retains a comparative advantage in the provision of specialized crisis management functions, such as the rapid, emergency removal or containment of newly discovered hazardous wastes that may pose an immediate risk to human health or the environment. Such actions have been the most cost-effective aspect of the Superfund program from the start.[168] Given the success of such efforts, there is a strong case for retaining federal responsibility for emergency cleanup and removal of hazardous materials, particularly if federal assistance can be deployed rapidly and efficiently to locations where quick removal actions are necessary.

IV. TRANSITION RULES

Reorienting the respective federal and state roles in hazardous waste management presents a challenging transition problem. One possible means of facilitating the transfer of authority from the federal to state government is to gradually phase out federal requirements over a defined schedule. States that wish to assume control of hazardous waste policy within a shorter time frame, and seek to be free of existing federal requirements within their jurisdiction, could also be provided with an opportunity to petition the federal government for early relief from federal rules.

Elsewhere this author has developed and described how an "ecological forbearance" mechanism could be used to provide states with greater flexibility and autonomy in environmental policy.[169] This mechanism would allow states to seek greater

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[167] Varney, *supra* note 134, at 9.

[168] DAVIES & MAZUREK, *supra* note 15, at 21 ("The major risks from hazardous waste sites have probably been addressed through emergency removal actions.").

[169] *See* Jonathan H. Adler, *Letting Fifty Flowers Bloom: Using Federalism to Spur Environmental Innovation*, *in* THE JURISDYNAMICS OF ENVIRONMENTAL PROTECTION: CHANGE AND THE PRAGMATIC VOICE IN ENVIRONMENTAL LAW 272–81 (Jim Chen ed., 2004). A similar proposal was suggested in FARBER, *supra* note 12, at 194–98.

flexibility than existing environmental laws allow. Specifically, a state would have the right to file a petition asking the EPA to forbear enforcement of a given regulatory provision, so the state could adopt more cost-effective or environmentally useful measures. A forbearance petition would identify those rules from which a state was seeking relief and the rationale for the request. The petition would be reviewed by the EPA in a public notice-and-comment rulemaking so as to facilitate public dialogue on the request and encourage political accountability.

The ecological forbearance mechanism could be used to enhance flexibility generally, and could also be used to facilitate the rapid transfer of regulatory authority from the federal government to those states that are already in a position to take over hazardous waste policy concerns within their state. States could use the process to seek greater leeway for setting enforcement priorities, management and disposal requirements, or cleanup standards. In each case, states would be able to customize their rules to local conditions and innovate with experimental approaches to waste management.

Adopting a forbearance petition process for federal hazardous waste regulations would not radically alter the existing regulatory environment overnight, however. There is substantial inertia built into the policy-making process. This means that such changes would likely begin modestly, and grow over time, with states learning from each other's experiments and innovations. In this way, actual experience could inform the ultimate contours of federal and state action in the area of hazardous waste.

In the case of waste site cleanup, the federal government should refrain from adding any additional sites to the NPL. Furthermore, states should be given management authority over all sites within their borders. In the case of truly "orphan" sites, it may be necessary to retain a level of federal involvement. There are means of transferring such sites out of federal hands as well, however. For instance, the federal government could hold a "reverse auction" for such sites, asking management firms to bid on how much they would need to be paid by the federal government to assume ownership and responsibility for orphan sites.[170]

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[170] *See* James V. DeLong, *Privatizing Superfund: How to Clean Up Hazardous Waste*, CATO POLICY ANALYSIS 247 (1995).

CONCLUSION

Federal hazardous waste policy has become particularly wasteful and inefficient. Although hazardous waste problems are among the most localized of environmental concerns, federal hazardous waste laws are among the most centralized of federal environmental laws. In order to foster greater jurisdictional matching, primary responsibility for the regulation and cleanup of hazardous wastes should be returned to state governments. The federal government has an important role to play in hazardous waste policy, but this role requires more targeted and specialized efforts than the adoption and maintenance of a comprehensive cradle-to-grave regulatory system and a large scale waste site cleanup program that impose federal standards on local communities. Through technical guidance, federal agencies can inform local waste management and cleanup decisions without imposing uniform federal standards that fit few jurisdictions well.

With federal efforts confined to those areas in which the federal government possesses a comparative advantage, state governments will be freed to reassume leadership in hazardous waste policy and tailor state policies to local needs and concerns. This, in turn, could foster greater recognition of and accountability for the trade-offs inherent in hazardous waste policy, and a more justifiable regulatory regime for hazardous waste. Insofar as questions of hazardous waste policy turn on subjective preferences about risk and ecological value, they are particularly well suited to local control. It is time for a hazardous waste policy devolution.