

## **SUBSTANCE AND PROCEDURE IN HAZARDOUS WASTE FACILITY SITING**

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### **ABSTRACT**

The effective implementation of federal hazardous waste policies is increasingly threatened by the lack of storage capacity in facility sites to handle the growing accumulation of these substances. Unfortunately, the political obstacles associated with the acquisition of suitable sites has increased the difficulty of developing a siting policy which is both fair and efficient. A survey of state administrators and industry officials with hazardous waste program responsibilities revealed a preference for policies which either pre-empt local authority or utilize a representative council approach. Both groups were skeptical about the usefulness of active citizen participation in the process of site selection.

The emergence of hazardous waste as a significant environmental policy issue is comparatively recent. The 1978 Love Canal incident in New York prompted considerable concern about improper siting procedures as well as the inadequacy of existing disposal standards [1, 2]. Subsequent analyses have indicated that the conditions which led to this tragedy are not atypical of many communities [3]. For example, the federal Environmental Protection Agency (EPA) has recently estimated that 32,000 to 51,000 disposal sites in the United States may contain hazardous substances while as many as 9,300 have been abandoned [4]. Of the fifty-seven million tons of hazardous industrial chemical wastes produced annually, more than 90 percent are disposed of improperly—including illegal dumping on public or private land, deficient landfill operations, and their accumulation in drums stored above ground. Estimated cleanup costs nationwide are staggering, ranging between \$26.2 and \$44.1 billion [4].

Several important policy responses to the management of hazardous waste have been adopted by Congress within the past seven years. Each is designed to

address one or more of the costs associated with the reduction of toxic discharge into the environment. The Resource Conservation and Recovery Act of 1976 (RCRA) authorized the EPA to oversee the control of hazardous waste from point of generation through treatment, storage, and ultimate disposal by requiring occasional reports and the preparation of transportation “manifests” from industrial producers [5]. It was assumed that much of the regulatory burden would eventually be shouldered by state government after receiving interim authorization from federal authorities. To become fully independent of federal control, a state must satisfy three main criteria for “full authorization.” They include: 1) equivalence to the federal program, 2) consistency with other state and federal programs, and 3) adequacy of enforcement. Such a policy, when coupled with the application of legal sanctions, is designed to encourage the view that the costs of improper disposal plus liability for future costs are significantly greater for generators of hazardous substances than meeting minimal health and safety standards for the transport and disposition of waste [6].

The recently passed “Superfund” legislation (The Comprehensive Environmental Response, Compensation, and Liability Act of 1980) established a \$1.6 billion fund to clean up deposits and spills of hazardous substances (excluding oil). The fund is derived, in large part, from a tax on producers of toxic chemicals (87.5%) and to a lesser degree by general federal revenues (12.5%). Other aspects of hazardous waste management are considered in environmental policies affecting the regulation of air and water pollution as well as a number of interdepartmental agreements designed to pinpoint program jurisdiction.<sup>1</sup> In short, existing hazardous waste statutes address the problem from the identification and classification of chemical substances as “hazardous,” to their generation, transportation, and ultimate disposal or reprocessing as well as the cleanup of abandoned dumpsites.

Despite the attainment of significant policy objectives in the passage of these and similar laws, their effective implementation is jeopardized by an important political and jurisdictional issue—the siting of hazardous waste disposal facilities. The gap between the production of hazardous substances and the availability of suitable dumpsites is both considerable and on the rise [8]. Public officials entrusted with the responsibility for choosing an acceptable site must inevitably confront a variety of geological, economic, political, and sociological constraints. Perhaps the most serious obstacle is posed by the growing reluctance of many community leaders to house a waste disposal facility—a likely consequence of the widely publicized Love Canal tragedy and its aftermath [9]. The fears of citizen groups have to date been unallayed by the promises of industrial leaders to act cautiously and responsibly or by recent technological advances in storage,

<sup>1</sup> Several EPA publications list a variety of policies dealing with hazardous waste, see also reference [7].

incineration, and recycling [10]. Towns in Massachusetts [11], Connecticut [12], and New Hampshire [13] have rejected applications for the construction of chemical plants when accompanied by requests to build a disposal facility. Siting problems are further complicated by less than satisfactory intergovernmental relationships. While a degree of tension is occasionally found between state political authorities and their local or federal counterparts, it is especially pronounced when cooperation is sought on an interstate basis and between states and local government.

Ultimately, the question of success or failure in the acquisition of waste disposal sites lies with the attitudinal receptivity of the affected governmental personnel, industry officials, and concerned citizens in the development and implementation of policy [14]. Cooperative relationships among nonfederal political actors is particularly important; e.g., statutory approaches toward the amelioration of hazardous waste problems differ considerably from air and water pollution policies in placing less emphasis on "technology-forcing" requirements and a goals and timetables approach—provisions which require more extensive federal oversight. The chief objective of this study is to examine predispositions toward hazardous waste siting policies among individuals representing two key groups—chemical industries and state regulatory agencies. Of particular concern are attitudes toward two issues that have proven to be particularly troublesome for public officials. Respondents are initially asked to consider the substantive problem of siting policy options. Which is most likely to strike an appropriate balance between political and administrative feasibility? Equally controversial is the issue of citizen participation; i.e., should limits be placed on the degree or form of public involvement in the decision-making process?

## DATA

A survey instrument designed to tap attitudes toward a variety of hazardous waste policy and management issues was assembled during the summer of 1982. Questionnaires were sent to state executives heading programs with total or partial control over hazardous waste ( $n = 54$ ). A total of forty-two were returned for a response rate of 78 percent. Generally speaking, state administrators were responsible for the management of a bureau within a department of environmental protection, natural resources, or health. On occasion, program jurisdiction was divided between two bureaus or departments. In Michigan, for example, hazardous waste policy responsibilities are distributed among the Departments of Public Health and Natural Resources.

Identical survey forms were mailed to the executive in charge of hazardous waste programs for the fifty-two largest producers of toxic chemical substances in the United States. Most were chemical firms, mining companies, or manufacturers of pesticides for agricultural purposes. Twenty-one completed questionnaires were received for a response rate of 40 percent. While a higher

rate of return would have certainly been preferred for industry officials, a spot check revealed that respondent firms were not markedly different from nonrespondents in terms of size (i.e., gross sales figures) or product specialization.

## RESEARCH EXPECTATIONS

### Siting Policy Options

The political obstacles associated with the acquisition of sites for the construction of suitable landfill facilities can seriously complicate efforts to develop a policy consensus. The basic problem is aptly described by Getz and Walter as one of “concentrated costs and dispersed benefits.” [15] Finding an acceptable location provides an areawide collective good for the citizenry while the risks are intensely felt by a smaller number of individuals residing in the immediate vicinity of a site. The community bears a considerable aversion to the prospective importation of wastes, preferring to shift the costs elsewhere [15, p. 410]. In short, the “not in my backyard” approach to siting questions adopted at the community level effectively places the power of decision in the hands of state officials.

For the generators of hazardous waste, siting policy decisions embrace economic concerns as well as political constraints. Compliance with RCRA regulations may entail considerable expense when the cumulative costs of preparing a manifest, transporting wastes to a licensed facility, and disposal fees are added. However, the availability of a suitable landfill remains a less expensive means of waste disposal than such legally prescribed options as the redesign of industrial facilities, incineration, or mixing toxic substances with other chemicals to form a chemically stable byproduct that will not leach [7, pp. 34-35]. Lacking a sufficient number of dumpsites may thus produce the ironic—and unfortunate—consequence of creating disincentives for industry compliance with RCRA rules. Chemical firms operating in states possessing ample capacity for waste storage typically receive an economic advantage over those without nearby facilities. For some, the prospect of competition with the additional burden of higher transportation costs heightens the attractiveness of illegal dumping, particularly if the risks of detection and punishment are perceived as small [16]. In short, state policymakers cannot necessarily assume that the paucity of disposal facilities will lead waste generators to export their unwanted byproducts elsewhere.

State environmental administrators and industry officials thus agree that a facility siting law is needed but are likely to differ on the direction such a policy should take. To date, at least sixteen states have adopted legislation for the acquisition of landfill sites for the disposal of hazardous waste [17, 18], while others awaited the promulgation of RCRA regulations (finally issued in July, 1982) before initiating similar actions. Approaches differ primarily in terms

of 1) whether an existing department or a siting council is employed, and 2) whether local ordinances, zoning restrictions, or political objectives can be overridden by state authorities. Others have suggested that the state acting alone is not necessarily the most appropriate decision-maker in the site selection process. The federal government, interstate agreements, local governments, or even the states operating within a framework of greater federal oversight have been recommended by policy actors or organizations promoting specific objectives.

Aside from the afore-mentioned realization that industry officials are more apt than state administrators to be sensitive to economic considerations, there is little empirical research to guide the formulation of research hypotheses. Yet prior research has indicated that multiple-member decision-making bodies are typically more susceptible to the appeals of interest groups seeking favorable policy objectives than agencies headed by a single executive [19]. Unless the state regulatory agency has demonstrated a pattern of activities conducive to industry concerns over the years, it is unlikely that corporate hazardous waste executives would prefer the "risk" of a strong decision-making authority to a representative council offering a list of prospective sites. I would thus expect to find that private sector respondents are somewhat more supportive of state decision-making councils without preemptive authority than their public sector counterparts.

In the process of choosing a preferred facility siting policy, a smaller number of officials may also react on the basis of jurisdictional considerations. Studies by Huntington [20] and Ziegler [21] have indicated a tendency among larger interest groups to prefer dealing with a single federal department than a variety of state agencies with conflicting policies and regulations. On this basis, it is expected that a few executives representing chemical firms will express a preference for site selection by federal rather than state decision-makers.

### **Citizen Participation**

Similar policy considerations underlie questions of citizen involvement in siting choices. Does the active expression of public concern about the "concentrated costs" of a landfill approved for the disposal of hazardous waste effectively preclude any possibility of attaining sufficient aggregate storage capacity? Is it appropriate to restrict the form such participation may take? The case against public involvement in the decision-making process centers upon the ability of the average citizen to comprehend technical issues. Administrators, scientists, and corporate officials, it is argued, have the requisite expertise borne of training and experience while public spokespersons are typically concerned about a single problem and possess little information about the range of policy issues and their interrelationships. In addition, members of the bureaucracy are more demographically representative of the American public than legislators and would presumably oppose efforts to discount citizen viewpoints [22, 23].

A second objection directs attention to the negative tenor of environmental policymaking processes where citizen input has been solicited, encouraged, or required to statute. Instead of providing a forum for the distillation and synthesis of diverse opinions, public comments in the preparation of environmental impact statements (mandated by the National Environmental Protection Act of 1969) have often been put to strategic use in delaying or obstructing unwanted projects. This has occasionally led to a process which Culhane terms “the polarized public participation style”; i.e., groups taking part in open meetings were often too ideologically divided to work toward a consensus [24].

A key justification for continuing public comment and participation lies in the assumption that decisions can achieve a workable balance between the incorporation of technical criteria and democratic principles. While effective involvement is necessarily restricted by matters of expertise, articulateness, financial resources, time and patience, it can aid in forcing the disclosure of intended decisions before it is too late to act [25]. A related benefit is that the excesses of professional overconfidence and administrative authority can be at least partially checked through citizen participation while implanting the completed decision with an aura of greater legitimacy [26]. In short, public involvement in environmental policy-making processes may serve to bring about a closer “fit” between bureaucratic behavior and the issue priorities of concerned citizens’ groups.

In comparing the likely distribution of responses among industry officials and state hazardous waste administrators, it is necessary to reiterate that both parties have a considerable stake in acquiring sufficient landfill capacity for the disposal of hazardous wastes. I will nevertheless hypothesize that state administrators are more receptive to citizen participation in site selection processes than corporate executives. This is in part based on the assumption that the costs of delay and/or obstruction are more apparent to generators of waste. More importantly, the views of state environmental officials may reflect the ongoing credo of the federal EPA which has traditionally placed emphasis on the desirability of public comments and involvement.

## FINDINGS

The data presented in Tables 1 and 2 provide partial support for the research expectations. Overall, both public and private sector administrators tended to prefer either the state pre-emption of local authority or a non-binding state siting council as approaches to site selection (see Table 1). As expected, industry hazardous waste executives were more favorably predisposed toward the siting council than state officials, possibly reflecting a belief that organizational objectives could be advanced more easily in a representative committee setting. On the other hand, no respondent was inclined to pick the federal government as

Table 1. Hazardous Waste Siting Policy Preferences  
of State Administrators and Industry Officials

	<i>State Administrators</i>		<i>Industry Officials</i>	
	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>
<b>Siting Policy Options</b>				
State Pre-emption of Local Authority	30	(13)	29	( 6)
Local Governmental Decisions	12	( 5)	—	—
State Siting Council (non-binding)	35	(15)	67	(14)
Interstate Agreements	7	( 3)	—	—
State Site Selection with Federal Oversight	16	( 7)	—	—
	(N = 64)			

Table 2. Support for Citizen Participation in the  
Hazardous Waste Site Selection Process

	<i>State Administrators</i>		<i>Industry Officials</i>	
	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>
<b>Types of Participation</b>				
Testimony at an Administrative Hearing	88	(38)	86	(18)
Representation on a Siting Council	56	(24)	62	(13)
Ratification of Site Selection in a Referendum Election	7	( 3)	—	—
Support of Candidates Promoting Environmental Issues*	33	(14)	5	( 1)
Initiation of Environmental Lawsuits*	42	(18)	14	( 3)
	(N = 64)			

\* Chi square is statistically significant at the .02 level.

the most appropriate decision-maker. This suggests that the advantages of seeking policy change through a single federal agency rather than a myriad of state regulatory structures were perhaps outweighed by a perception of the EPA as an organization with insufficient appreciation of the problems confronting the chemical industry.

Favorable responses toward the remaining siting options are relatively sparse but convey a greater sense of skepticism among industry executives. One possible

explanation lies in the escalation of administrative costs entailed by the prospect of negotiating with a larger circle of policy actors. A related and equally undesirable consequence for private sector respondents may be increasing uncertainty about site selection, particularly if recommendations proposed by an interstate organization or local governmental officials are not accompanied with sufficient decision-making authority to avoid modification or even a veto by state officials.

Attitudes toward the perceived appropriateness of citizen participation in hazardous waste siting decisions are summarized in Table 2. One is struck by the tremendous variation in response patterns. Few executives are favorably inclined toward a referendum procedure which would effectively grant citizens a de facto veto power over facility siting decisions but an overwhelming majority agree that the public should be allowed to testify at an administrative hearing. The data also reveal the reluctance of a substantial percentage of those surveyed to support citizen involvement in other forms of participation designed to promote political goals. Even the prospect of public representation on a siting council—hardly a threatening sort of activity—is favored by slightly better than half of our respondents. To the extent that public input is considered in the decision-making process, it appears that the manner in which such comments are offered is of some importance to administrators.

An examination of between-group variations in attitudes toward public involvement yields results that are only partially consistent with research expectations. Governmental and private sector officials do not markedly differ in their support for seemingly innocuous activities like administrative testimony and the representation of citizens on siting councils or in their opposition to the referendum device as a means of accepting or rejecting a facility siting recommendation. However, state administrators are significantly more likely than industry executives to view campaign activity on behalf of like-minded candidates or the initiation of environmental lawsuits as a legitimate extension of citizen efforts to influence policy. While both groups are uneasy about the degree of public involvement in siting decisions, the data suggest that chemical industry representatives would be somewhat more receptive to the idea of confining such activities to the administrative arena.

## DISCUSSION

A glance at the survey results indicated considerable administrative support for state pre-emption of local authority in siting decisions or the use of a non-binding representative council. Each has been adopted by a number of states convinced that effective implementation of RCRA depends on an adequate number of hazardous waste disposal sites. Industry officials tended to be more favorably predisposed toward the latter approach while reject siting options

perceived as costly, less predictable, or more cumbersome (due to an expanding number of policy actors with potential influence over site selection).

A degree of tension was found between the desire to incorporate technological and administrative expertise in the site selection process and the potentially unsettling effects of public comments and participation. State hazardous waste administrators and industry officials were inclined to discourage more active forms of involvement, although this tendency was less pronounced among public sector executives. This introduces a touch of irony to our understanding of environmental administration and the roles played by the public, industry, and state officials. Public concern about the problems associated with the illegal dumping of hazardous substances led to the passage of strong federal laws designed to put an effective regulatory apparatus into place. But the continuing unwillingness of citizens' groups to accept the risks of a facility site, fueled by media reports of the Love Canal tragedy and more recent incidents, may seriously complicate efforts to administer toxic substances control programs. State and industry executives thus tend to perceive much public input as unidirectional and counterproductive. In other words, siting problems may be less attributable to an antagonistic relationship between regulators and regulatees than attempts by both parties to overcome the political obstacles posed by citizens' organizations worried about the potential "spillover effects" of an unsecured facility.

Whether progress is achieved in attaining the necessary political consensus required to alleviate the shortage in storage capacity for toxic wastes is dependent upon both attitudinal and policy changes—some of which are presently receiving a closer look from scholars and practitioners. Perhaps the most difficult problem involves gaining the cooperation of citizens. At issue is individual perceptions of risk [27, 28] and what steps might be taken to deal with such concerns. As Dickson has noted, the risks associated with natural or manmade hazards are more easily accepted by the public if they are voluntary, controllable, known, familiar, and immediate [29]. Much of the opposition to siting decisions stems from a suspicion that citizen input is sought only after the real decisions have been made or because of the delayed and uncertain nature of waste disposal via the landfill method (in comparison with incineration-based risks which are perceived to be short-term and manageable) [29].

While an extended elaboration of approaches designed to allay public fears and concerns is beyond the scope of this study, two general policy prescriptions warrant further discussion. One way of handling the charge that citizen participation is taken much too lightly is to consider changes in decision-making procedures that would increase public confidence in the integrity of the process. Morrell and Majorian, for example, suggest that administrative hearings could be divided into two stages—an initial series of information sessions which provide an overview of the siting proposal and an airing of issues of particular concern to citizens' groups and a second set of meetings within a more adversarial framework

for the debate of specific topics among community officials, the facility developer, and the attentive public [30]. The general spirit of this philosophy is at least partially reflected in a hazardous waste statute recently adopted by the state of Minnesota. It differs from traditional approaches in providing a list of prospective sites based on "multiple criteria lists" at the beginning phase of the site selection process. Local project review committees comprised of those with a perceived stake in the siting process are then activated to 1) serve as a conduit between the state siting board, and 2) recommend specific courses of action on planning issues to the board [31].

Greater attention to due process concerns for citizens' groups is only part of the equation. Additional decision-making responsibilities shouldered by the leaders of these organizations could be reinforced with economic incentives to aid in dealing with local land-use considerations, quality of life issues, and the increased need for community services as well as health and safety risks. Addressing problem areas in an "up-front" manner such as redesigning a facility to provide extra protection against groundwater pollution represents one means of contending with widespread uncertainty about the permeability of a proposed landfill and might also enhance the credibility of the facility developer as a "concerned citizen" in subsequent negotiations [30, pp. 130-175]. Other possible approaches include monetary payments in the form of state grants-in-aid or tax incentives, greater use of insurance firms in helping to assess acceptable levels of risk for prospective sites, designating a specific facility site as suitable on a "degree of hazard" basis, and the imposition of stiffer criminal and civil penalties for the improper disposal of toxic wastes. In short, increased awareness of possible procedural reforms in the site selection process and measures designed to mitigate the negative consequences of a hazardous waste facility on a community holds considerable promise for reducing present levels of suspicion or even hostility among local residents.

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