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CONTINGENCIES AFFECTING EMERGENCY PREPAREDNESS FOR HAZARDOUS WASTES

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Through a case study of emergency preparedness activities at the largest hazardous waste landfill within the United States, which is located in Sumter County, Alabama, this article highlights three features which constrain such preparedness efforts: (1) the specialized nature of hazardous waste; (2) the politicization of the hazardous waste industry; and (3) jurisdictional dilemmas created by the merger of public and private roles in hazardous waste emergency preparedness. The article concludes with a discussion of policy implications for federal, state and local policymakers and implementers.

Emergency preparedness in American communities generally has developed in response to natural disasters. Until recently, natural hazards have been perceived to pose the most pervasive threat of serious disaster to local communities. It was not until the mid-1970s that any systematic investigation of the social dynamics of technological hazards began to take place (Quarantelli 1984). While there had been occasional studies of technological disasters (e.g., Drabek 1968; Killian 1956; Prince 1920; Veltfort and Lee 1943), these were largely portrayed as isolated incidents.

Recent events at such sites as Three Mile Island and the Love Canal in the United States, and Bhopal, India, among others, clearly have revealed that technological emergencies are no longer isolated incidents, but are integral to a technological world (Perrow 1984). One feature of contemporary society which poses a systemic environmental threat is technological waste, much of which is of a hazardous nature. In the United States alone, approximately 250 million tons of hazardous waste materials are generated each year (Office of Technology Assessment 1986), roughly one ton for every man, woman and child in this country.

Until about a decade ago, disposal of such waste was handled in an ad hoc and piecemeal fashion as industrial plants and other producers of hazardous waste simply dumped it in the most economically efficient way possible, often on their own premises. It was not until 1965, with the Solid Waste Disposal Act, that the United States Congress officially recognized that waste materials posed a threat to the environment. While this Act was an important piece of legislation symbolically, it was limited to providing research funds and technical assistance to state, county and city planners. Subsequently, the Resource Recovery act of 1970 expanded the substantive focus of the 1965 legislation, promoting the use of sanitary landfills, conservation measures and recycling technologies. The threat of hazardous waste as a specific focal concern was overlooked until 1976 with passage of the Resource Conservation and Recovery Act (RCRA). This piece of legislation, placing enforcement responsibility with the Environmental Protection Agency (EPA), set minimal standards for the processing, transfer and ultimate disposal of hazardous waste materials. These RCRA standards were made even more stringent in 1984, and now effectively necessitate the transfer of hazardous waste materials by some 175,000 businesses to designated disposal facilities (Popkin 1986).

Concentration of large amounts of hazardous materials poses both **chronic** and **acute** threats to human health and the environment. It is the latter, potentially catastrophic type of threat that is our concern here. The increased volume of traffic transporting hazardous materials raises the specter of major accidents and subsequent accidental release of hazardous and toxic substances. Similarly, major on-site accidents which could endanger the health and lives of hundreds of workers and resi-

dents in the surrounding area, however unlikely, are not inconceivable. Explosions could occur, for example, if two otherwise nonvolatile substances accidentally come into contact with one another. Such an incident could not only endanger the life and safety of those in the immediate vicinity, but may also result in the release of large amounts of toxic fumes into the atmosphere.

Scenarios such as this must be anticipated and require careful contingency planning. Decades of research on natural disasters have revealed a number of principles characteristic of successful emergency planning (Dynes et al. 1981), which have been applied to chemical emergencies (Quarantelli 1984). Recently we have also applied these principles to an assessment of preparedness for hazardous waste emergencies (Faupel et al. 1987), with the conclusion that significant problems exist in community level preparedness for emergencies of this nature.

There appear to be a number of features which complicate community preparedness for hazardous waste-related emergencies. This paper seeks to highlight these features with a case study of emergency preparedness in Sumter County, Alabama, site of the nation's largest hazardous waste landfill. Following a discussion of the methodology employed in this study, we shall briefly describe the social, geographical, and legal milieu in which the facility is located, providing a backdrop for the issues and problems related to emergency preparedness in the area. Three features are then identified which complicate preparedness for hazardous waste emergencies: (1) the specialized nature of hazardous waste; (2) the politicization of the hazardous waste industry; and (3) jurisdictional dilemmas created by the merger of public and private roles in hazardous waste emergency preparedness. The article concludes with a discussion of policy implications for federal, state and local policymakers and implementers.

DATA AND METHODS

Data comprising this analysis are drawn from semi-structured interviews conducted with three sets of Sumter County respondents: emergency officials; a panel of individuals who for various reasons are particularly knowledgeable regarding community life in the county and

a group of community leaders who were identified by the panel of knowledgeables as being especially influential in the county.

The "emergency official" sample, which serves as the primary source of data for this study, consists of representatives from each of the most relevant emergency organizations in the county. A total of nine respondents representing ten organizations was interviewed.[1] These interviews, which lasted one to two hours, specifically addressed relevant emergency planning and preparedness issues in the county. Such issues included the nature and extent of interorganizational coordination; interorganizational conflicts and other problems encountered in coordination of emergency organizations; perceived strengths and weaknesses in the planning process; perceived organizational domains; and perceived impediments to carrying out the responsibilities entailed with these domains. In addition, respondents were asked to rank the probability of various types of emergency situations occurring in Sumter County. Finally, a "worst case scenario" of a chemical emergency was presented, and respondents were asked to describe how they would respond to such a situation.

A two-stage sampling procedure was employed to assess the political and social climate within which hazardous waste emergency planning takes place. The "knowledgeable public" sample consists of 13 individuals in the county who were purposely selected on the basis of their knowledge of political, economic and community life in the county.[2] Several of these individual were selected on the basis of strategic positions they held in the community; many were long-term residents of Sumter County who were recommended to us by other respondents after rapport had been established. The sample was carefully chosen so as to represent the various population groups in Sumter County. Specifically, an attempt was made to represent black and white residents, residents living in both the southern and northern portions of the county, and various factions in the county favorable and opposed to the hazardous waste facility.

On the basis of these interviews with the "knowledgeables," the names of 17 individuals were suggested as being particularly influential [illegible] political and community life of the county. These

interview schedule as that used for the knowledgeable public who nominated them.[3]

Interviews with both the knowledgeables and leaders were broadly focused and organized temporally with respect to the siting of the hazardous waste facility. Specifically, three periods were addressed: (1) the period before the facility was opened (pre-1977); (2) the year during which the facility was established (1977); and (3) the ten years since the facility became operational. For both the "pre-siting" and "post-siting" periods, respondents were queried in a variety of ways regarding the leadership structure of the community and critical problems and issues facing the community; whereas the "period of facility siting" focused primarily on the processes and problems associated with the siting of the facility as perceived by the respondent. These interviews provided an understanding of the social milieu within which emergency preparedness in Sumter County takes place.

CONTEXT OF EMERGENCY PREPAREDNESS IN SUMTER COUNTY

The Social and Geographical Context

Sumter County is located in western Alabama's "black belt" soils region on the Mississippi border. The county's population of 16,908 is largely rural and over 69 percent black. The largest concentration of population is located in the small cities of York (pop. 3,392) and Livingston (the county seat, pop. 3,187), both located in the southern portion of the county (U.S. Bureau of the Census 1983). The waste disposal facility is located in the sparsely populated northern portion of the county, between the tiny communities of Emelle and Geiger.

The waste facility was established in 1977 by Resource Industries, Inc., a small company owned and controlled by a group of regional investors. Chemical Waste Management, Inc. (locally known as "Chem Waste"), a subsidiary of the multinational Waste Management, Inc., headquartered in Oak Brook, Illinois, bought out Resource Industries' interests in 1978 and has operated the site since that time.

Chemical Waste Management is the county's largest single [illegible] 400 persons, although not all of these are

Sumter County residents. While the waste facility is the largest single employer in the county, the dominant industries in the county are timber and agriculture. In addition, state-supported Livingston University and several small industries contribute significantly to the economic life of the county. These sources of employment notwithstanding, the county still suffers an unemployment rate of over 17 percent and a per capita income of only $5,905, significantly below the average income for the nation as a whole (U.S. Bureau of the Census 1983). This reality is also reflected in the fact that fully one-third of the population of Sumter County (and 93 percent of the black population) find themselves below the poverty level as established by the United States Government (General Accounting Office 1983).

Sumter County is geographically vulnerable to both natural and technological emergencies. Tornadoes are a frequent threat, as are forest fires, flooding and serious after-effects of hurricanes. Moreover, the specter of a major chemical emergency is by no means remote due to the large quantity of chemicals converging on the county. In 1987, some 500,000 tons of hazardous wastes were accepted for treatment and/or disposal at the Chem Waste facility. These tonnage figures also signify a heavy volume of traffic, thereby increasing the likelihood of an off-site chemical emergency. A random traffic survey conducted by Chemical Waste Management at the plant site in 1986 revealed that 214 trucks entered the site over a 24-hour period.[4]

Finally, despite its rural location, Sumter County is strategically located with respect to major state and regional transportation arteries. Interstate 20/59 connects major metropolitan areas in the Southeast, such as Atlanta, Georgia, and Birmingham and Tuscaloosa, Alabama, with centers west such as Jackson and Meridian, Mississippi, New Orleans, Louisiana, and Dallas and Houston, Texas. In addition, a major railway line from northern Alabama south to Mobile runs directly through the county. Recently the county has witnessed the opening of the Tennessee-Tombigbee Waterway linking the port of Mobile with upper Mississippi, Ohio and Tennessee River traffic. Consequently, the county not only receives large volumes of hazardous wastes, but it is also subject to unknown quantities of other hazardous materials passing through the county on these transportation routes. Indeed, the toxicity

the hazardous wastes that it receives. Thus, the county must be prepared for emergencies involving a wide variety of hazardous materials. Many of the problematic issues discussed here apply to these "pass through" materials as well.

Virtually all of the emergency response capabilities in Sumter County are located in the two population centers of Livingston and York. The major exception is the Chem Waste facility in the northern part of the county. Chem Waste has available emergency response equipment, supplies, and trained personnel capable of responding to most chemically-related emergencies.

The Legal Context

Federal RCRA regulations require that companies handling hazardous wastes maintain a contingency plan which specifies, primarily, plant procedures for responding to an on-site incident.[5] The plan must also describe mutually agreed relations with local emergency response offices such as police, fire, hospitals, and the local emergency management agency. RCRA regulations also require that the plan be amended whenever (1) the facility permit is revised; (2) the plan fails in an emergency; (3) there are changes in the facility and/or its operation which increases the potential for emergencies; (4) the list of emergency coordinators changes; and/or (5) the list of emergency equipment is altered. Finally, directly bearing on issues addressed later in this article, the regulations require that an emergency coordinator be employed by the facility to coordinate all on-site emergency response activities. In addition, this individual is responsible for assessing whether or not a hazardous release poses a threat to the surrounding community, and if so, to notify local authorities of such an incident.

Until 1986 there was no corresponding federal legislation requiring communities to maintain comprehensive emergency plans for hazardous materials incidents. In October of that year, Congress enacted the Superfund Amendments and Reauthorization Act (SARA), which extended and amended the Comprehensive Environmental Response, Compensation and Liability act of 1980 (known as CERCLA, or the "Superfund" Act).

That portion of the Superfund Amendments and Reauthorization Act which pertains to the issue of hazardous materials and emergency preparedness is Title III. In addition to a number of general provisions, Title III stipulates that all industries which produce or store hazardous materials maintain material safety data sheets (MSDS) on these materials, and make this information available to emergency planning officials. Moreover, these firms are required to maintain inventories of all hazardous materials which must be made available to the general public.

In addition to this "community right to know" provision, Title III requires that communities establish local emergency planning committees (LEPCs) which are to have been in place by August 1987. The LEPCs are charged with the preparation of emergency plans which comply with the provisions established by the Act. These plans are to be completed by October 1988. The organization responsible for coordinating this process locally is the Sumter County Emergency Management Agency.

In sum, RCRA and SARA Title III make it mandatory that Chem Waste and the Sumter County Emergency Management Agency have written plans. As we have reported elsewhere (Faupel et al. 1987), while these plans are generally quite good, the overall level of response planning in Sumter County has been less than adequate. Emergency response agencies in the county are only minimally involved in the county-wide planning process, and the only other organizations possessing written plans in the county are the two hospitals in Livingston and York.

CONTINGENCIES AFFECTING EMERGENCY PREPAREDNESS

It has been argued that general emergency planning principles can be applied to chemical emergencies (Quarantelli 1984). Indeed, the need to plan for interorganizational coordination, to anticipate likely public response, and to periodically update and test formalized plans is just as much a characteristic of chemical emergencies as it is of other disaster agents, such as hurricanes, tornadoes, and floods. Elsewhere, we have examined the status of emergency preparedness in Sumter County along these general dimensions (Faupel et al. 1987). The greatest weakness observed was the lack of formalized planning on the part of

planning has resulted in a high degree of dependence on the expertise of Chem Waste in the event of a major chemical emergency. An infrastructure of strong informal relationships between organizations was found which greatly facilitated response to small scale emergencies. These informal relationships did not, however, translate into a well-integrated, community-wide emergency planning process.

Our previous research has revealed, too, that as important as these general planning principles are, hazardous waste-related emergencies pose unique planning and preparedness issues and dilemmas which are not shared with natural disasters or with most other kinds of technological disasters. The remainder of this article addresses three such conditions which are particularly important for their impact on emergency preparedness in Sumter County.

Specialized Nature of the Hazardous Waste Industry

Chemical hazards possess unique features not shared by natural disasters. Appropriate response to chemical emergencies is not always immediately clear to emergency response officials trained to respond to natural disasters. Chemical properties such as flash points, toxicity, and vapor density are highly variable. Hence, containment measures which may be effective with one chemical may only exacerbate an emergency involving a different substance. Moreover, emergencies involving hazardous wastes pose the special problem of unpredictable synergism between a variety of contaminated compounds making response even more difficult.

Contrary to the belief of many emergency officials--indeed of some of the officials with whom we talked--that "We all know what to do," and that "Anybody who has a plan doesn't follow it anyway," the unique characteristics of chemical hazards require special considerations in response planning. Moreover, the specialized character of chemical emergencies poses two types of demands which extend beyond the current capacity of traditional emergency preparedness agencies. First, **specialized equipment and supplies** are required. Special foams are needed for extinguishing many chemical fires, as are gas masks and similar protective devices which may be unavailable or unfamiliar to personnel

ces, response to chemical emergencies requires adequate numbers of **trained personnel**, particularly in initial or primary response agencies.

Unfortunately, the sociodemographic character of rural counties, such as Sumter County, is not conducive to providing this requisite infrastructure. The small rural population, combined with a poor economic base, makes it very difficult to adequately fund emergency agencies for the level of preparedness necessary to respond to chemical emergencies. While the county does receive approximately $2 million in user fee revenues from incoming hazardous wastes, only one percent of this total ($20,000) is funnelled directly into emergency response agencies. This amount is in addition to that which comes via county and city governments' general fund (Chemical Waste Management 1987).

Table 1 reports the number of personnel employed in initial response agencies in Sumter County, highlighting this problematic feature of emergency preparedness for hazardous waste emergencies in rural counties.

Table 1
Personnel in Initial Response Agencies

Agency(1)	Full-Time Employees(2)	Active per shift
State Police (3-county area)	13	2-3
Livingston Police	7	1-2
York Police	5	1-2
Livingston Fire	5	(all on 24-hr call)
York Fire (volunteer)	0	(all on 24-hr call)
York Ambulance	6	2
Emergency Management Agency	1	1

(1) Data were not available from the county sheriff's department.
(2) In addition, local police and fire agencies utilize volunteer personnel whose availability varies depending on time of day, day of week, and time of the year.

The Sumter County emergency response system is not capable of assembling enough personnel to respond to a major chemical emergency. Moreover, it is not clear how well prepared existing personnel are for

commonly caused fires, esoteric chemical fires are not always included in this training. Personnel in Sumter County fire departments participate in the "fire college" located in Tuscaloosa on a rotating basis. This training includes at least limited exposure to handling chemical fires and mitigates this problem somewhat. Nevertheless, we found that local officials, recognizing their limited expertise and resources, almost universally indicated a preference to accede to the initiative of Chemical Waste Management in responding to off-site incidents, even though off-site response is traditionally and legally the domain of public emergency response agencies. This posture on the part of local emergency officials is certainly realistic in Sumter County, and the willingness of the company to lend its support to local officials is evidence of the possibility of meaningful coordination between public and private agencies.

This reliance on Chem Waste, however, is not without its disadvantages and difficulties. The waste disposal facility is located in the northern part of the county, nearly 30 minutes away from the southernmost portion of the county. Many initial response activities, particularly the neutralizing of hazardous materials, require immediate action. Over-reliance on company personnel and equipment at the expense of developing adequate local capacity to accomplish these tasks may unnecessarily endanger the health and safety of emergency personnel and citizens in these areas. At the same time, of course, when company resources are responding to an emergency in the community, emergency response capabilities at the plant site are proportionately reduced, which could be serious indeed in the event of a major on-site incident.

Sumter County is by no means unique with respect to its economic and demographic capabilities to respond to a major chemical emergency. A report issued by the General Accounting Office in 1983 reveals that all four off-site hazardous waste landfills in the southeastern eight states constituting EPA's Region IV were located in counties with populations smaller than 100,000 and three were less than 50,000 population. Moreover, in three of these counties more than 20 percent of the population was below the official poverty level. Data for the United States as a whole are less dramatic but are indicative of the fact that Sumter County is not unique. Of the 40 counties containing off-site hazardous waste facilities,[6] 15 have populations below 100,000 and 10 of these are below 50,000. These are also counties with higher than

average unemployment rates (a mean of 11.2 percent compared with a national mean of 9.7 percent) and a lower than average per capita income of $8,854 compared to the national average of $10,495.

Demographic and economic figures tell only part of the story, however. The dilemmas of limited resources confronted by hazardous waste site host communities, such as Sumter County, are further exacerbated by two distinct features of the sociopolitical context in which these emergencies take place: politicization of the industry, and the merger of public and private roles.

Politicization of the Hazardous Waste Industry

The point has been made previously that technologically-created disasters pose different dynamics than natural disasters. One reason is that the locus of natural disasters is outside the affected social system. Consequently, communities struck by natural disasters perceive a common threat resulting in heightened community solidarity (Barton 1970; Dynes 1970; Faupel 1985; Fritz 1961; Thompson and Hawkes 1962). Such is not the case with technologically-caused disasters. In these instances, the cause of the disaster is clearly within the social system itself and therefore, a process of assigning blame inevitably ensues (Bucher 1957; Drabek 1968; Drabek and Quarantelli 1967; Veltfort and Lee 1943). Hence, rather than producing heightened community solidarity, technological disasters frequently promote conflict and exacerbate social and political cleavages in the impacted community.

Moreover, some technological hazards pose such a chronic threat that they engender ongoing community conflict. Recent research focusing on the nuclear power industry in the wake of the Three Mile Island incident reveals the intensity of public reaction against such potentially dangerous technology (Walsh 1984). Similarly, the chemical industry (Nigg and Cuthbertson 1982), and particularly the hazardous waste industry (Bailey and Faupel 1988; Levine 1982; Neal 1984), engenders intense emotion and community conflict.

Sumter County is not immune to these factors which have significant relevance for emergency preparedness. It is important to point out by way of introduction that the conflict surrounding the hazardous waste industry is not as pervasive throughout the county as depicted in media

accounts.[7] More characteristically, there appears to be a relatively small portion of the county population which strongly opposes the presence of the facility, with an equally small portion actively supporting the facility. Most of the county residents, however, appear to be either indifferent to the presence of hazardous waste in their community, or are (more typically) ambivalent about it. "Probably we are not as concerned about Chem Waste as other people in the state," claims one respondent. "Most of us in Sumter County either support it or we don't worry about it." Another local official exclaims that he received more complaints about dirty water when fire hydrants were being flushed than he has about Chem Waste. Indeed, among the individuals interviewed, other issues--particularly education, the local economy and racial relations in the county--have far greater salience.

Such caveats notwithstanding, the hazardous waste industry is and has been a political issue in Sumter County. Almost from its inception, the facility at Emelle was met with grass roots resistance. A major reason for this early controversy was the low profile maintained by Resource Industries when they located in the county in 1977. "They came by cover of night," indicated one respondent who went on to claim that no one in the county knew what was going on "until the trucks started rolling." Other respondents reported that the facility was rumored to be a cement plant; others reported hearing it was to be a brick factory; still others remembered hearing something about a sanitary landfill. The lack of clarity and subsequent circulation of rumors only served to crystallize the perception that the company was being deceitful with the public regarding its intentions.

Chemical Waste Management, by contrast, since taking over operation of the facility in 1977, has attempted to maintain a very high profile in the community. Public lectures and tours of the site are readily available to groups and organizations in the county in addition to providing information through the media. While this strategy has proved quite effective in minimizing the fears and concerns of a good many if not most Sumter County citizens, several of our respondents remain suspicious. One of these individuals captured this sentiment when he noted that while Resource Industries tried to avoid the public, Chem Waste "courts" the public by "making it seem like it's just sugar and salt they're bringing out there."

Despite the early uncertainty surrounding the purpose of the site, the public was not long in responding. A group named Sumter Countians Organized to Protect the Environment (SCOPE), consisting largely of white professionals, business persons and landowners, organized early to protest what was perceived to be the indiscriminate handling of hazardous wastes and to call for greater accountability on the part of Chemical Waste Management and the regulatory agencies. Some years later, this organization gave way to Alabamians for a Clean Environment (ACE), a broader-based group calling for the closing of the facility altogether. In addition to these two environmental groups which formed specifically in response to the waste facility, the largely black Minority People's Council (MPC), which had been formed some years prior to the opening of the site, became involved quite early out of concern for the health and safety of workers at the plant.

Counterbalancing these environmental concerns, the facility represents a substantial economic boon to the county, both in the way of employment and revenues from incoming waste. Consequently, a sizeable number of Sumter Countians at least tacitly support the presence of the industry. As one official noted, "I don't want the damn thing here, but if it weren't for Chemical Waste [Management] ... this county would have to close up."

Paradoxically, these economic benefits are also part of the conflict. The fact that these benefits are not shared equally by all population groups in the county is one issue. Most of the user-fee revenues are appropriated to various organizations in the population centers of Livingston and York, both located in the southern portion of the county. Smaller communities in the northernmost part of the county where the landfill is located receive proportionately little of the revenues. In addition, while the facility is an important source of income in a county with an unemployment rate that in some years exceeds 20 percent, many of the to jobs are held by nonresidents. The highly technical and sophisticated nature of the industry requires that much of its labor force have a level of education and expertise not characteristic of most of the citizenry. Finally, landowners whose property is located near the facility claim to have found traces of chemicals in their drinking water, to have detected strange odors in the atmosphere on occasion and to have perceived a depreciation in the value of their property. Consequently, in

spite of the obvious economic benefits to the county as a whole, these advantages themselves serve to further divide the county on this issue.

Such a politicized environment makes emergency preparedness and planning extremely difficult for at least two reasons. First, preparedness of a magnitude equal to the threat posed by a major facility such as that found in Sumter County is extremely costly, particularly given the limited resources of rural communities. It was earlier reported that there is a critical need in the county for trained personnel in key emergency agencies, special supplies, and more equipment capable of responding to chemical emergencies (Faupel et al. 1987). Emergency officials are aware of this need, but as one official reports, "They're not willing to pay for it until after a disaster hits." Resistance on the part of local governments to underwrite emergency preparedness measures is understandable as it is difficult to justify expenditures for an event that might never occur or might occur years in the future. More pressing needs are often perceived by the public.

A second source of controversy lies in the nature of emergency preparedness itself. If emergency planning is to be fully effective, it must anticipate a wide range of possible events including "worst case" scenarios. Anything less could prove disastrous in an emergency situation. It has been observed, for example, that communities which have experienced natural disasters tend to plan for "the big one," the most severe disaster in their experience (Wenger et al. 1985). Unfortunately, when they are inundated by a disaster of greater magnitude, or by **different types** of disasters, these communities are often ill-prepared to meet response demands.

Unlike natural disasters, planning for a major chemical emergency only serves to highlight an already controversial public issue. Preparing for such an emergency is not only costly, which itself invites controversy, but it acknowledges that an emergency of significant proportions is in fact **possible**. Moreover, preparedness is (or at least should be) a public process, involving educational strategies, public hearings and disaster drills. All of these activities, which are necessary for effective preparedness, are also periodical reminders of the hazardous technology hosted by the community. Consequently, industry leaders and pro-industry community leaders are hesitant to vigorously plan for large scale chemical disasters. In communities such as Sumter County,

where hazardous wastes are a politically sensitive issue, many of these officials have actively promoted the industry by pointing to its safety record. To plan and prepare for a large-scale chemical catastrophe potentially creates the **appearance** of hypocrisy. "If you plan you're damned and if you don't have a plan they yell," reflected one of the emergency officials in our sample. This is a troublesome Catch-22 which must be recognized and addressed by emergency planners as they prepare for hazardous waste emergencies.

The Merger of Public and Private Roles: Jurisdictional Dilemmas

Emergency response in the United States traditionally falls on the shoulders of local governments. While private enterprise clearly plays a role in major emergencies by way of providing specialized equipment and even volunteer personnel, these roles are clearly understood to be subject to the authority of public agencies. Moreover, coordination of and preparedness for emergency response is recognized as a governmental responsibility, usually centered in the local Emergency Management Agency.

Public responsibility for emergency preparedness is certainly a functional arrangement. Major emergencies pose demands which are usually beyond the response capabilities of the private sector. Moreover, large scale emergencies affect entire communities. This by definition makes emergency response a public concern. Finally, in the case of emergencies caused by natural disasters, because the locus of the agent is external to the social system, private responsibility for emergency response is a moot issue.

Emergencies related to hazardous wastes are not entirely unique in that they too pose potentially catastrophic consequences which affect entire communities. There are some important differences, however. First, by virtue of RCRA, private industry has a legally defined role to play in emergency preparedness. Furthermore, the recent enactment of SARA Title III makes it mandatory that public agencies become involved in emergency preparedness for hazardous waste and other chemical incidents. These two pieces of legislation, taken together, effectively bring about the marriage of the public and private sectors in planning

Aside from the legal milieu, hazardous waste emergencies differ from natural disasters in that responsibility for technological emergencies can be more clearly assigned. Indeed, most emergencies occurring at a hazardous waste facility are appropriately neutralized at the facility itself with company personnel and equipment. Our previous analysis of emergency preparedness in Sumter County revealed that Chemical Waste Management Inc. was well prepared for emergencies which are contained within the site itself (Faupel et al. 1987). Less clear, however, is the jurisdictional authority for those emergencies which extend beyond the boundaries of the waste facility. Technically, such emergencies,which pose a potential threat to the surrounding community, fall within the jurisdictional domain of the public emergency response system. In practice, however, there is great potential for these jurisdictional boundaries to become blurred, as RCRA stipulates that it is the company which is responsible for making a determination of the necessity for notifying local officials of a potential community-wide emergency.

There is, however, a fundamental conflict of interest in such a situation. Hazardous waste has become such a political issue in Sumter County, that it is, quite simply, in the company's best interest to delay notification on the optimistic belief that the emergency can be contained, thereby avoiding unwanted bad publicity. Moreover, because the local community is highly dependent on the expertise and resources of Chem Waste, it may be a matter of practicality for the facility to respond to all but the most major of such incidents as though it were an on-site incident. The time and human resources required to coordinate a full-scale community-wide emergency response may actually be detrimental to effective emergency response for what might be considered "marginal" extra-site emergencies.

POLICY IMPLICATIONS

The foregoing observations are suggestive of policy implications for emergency preparedness at both the local community level and at the state and federal levels. Because the policies and actions of state and federal agencies establish much of the context for local preparedness efforts, it is appropriate that policy considerations begin here.

State and Federal Policy Considerations

We have suggested that the specialized nature of the hazardous waste industry requires not only substantial public expenditure on supplies and specialized equipment, but also demands substantial human resources in the way of technically trained personnel. Ironically, many off-site waste disposal facilities are located in rural and often poor counties. These counties and the communities in them are the **least** prepared for emergencies should they occur at these facilities. While it is certainly not realistic to suggest that such facilities be relocated to urban areas, it is suggested that two strategies be simultaneously pursued.

First, rural host counties desperately need additional state and federal funds for equipment, additional positions, and the specialized training of personnel for these positions. While SARA Title III requires local communities to accomplish the rather Herculean task of developing comprehensive emergency preparedness strategies for hazardous materials incidents, Congress allocated no additional funds to assist local governments in their preparedness efforts. The Act did authorize the appropriation of a rather meager $5 million to the Federal Emergency Management Agency (FEMA) for purposes of supporting local and state planning efforts over a four-year period (from 1987 to 1990). Sumter County alone could quite easily spend the entire appropriation on its emergency preparedness program. In short, considerably more fiscal commitment is needed if economically handicapped rural areas hosting hazardous waste facilities are to be adequately prepared for the potential hazards that threaten their communities.

Second, the problems endemic to off-site hazardous waste disposal discussed above underscore the advisability of pursuing alternatives to off-site disposal. Mitigation policies which encourage reduction in the production of hazardous wastes and subsequent disposal of these wastes at the site of generation is advantageous for at least three reasons. Most obviously, reducing the amount of waste produced reduces the likelihood of any potential emergency. Second, disposing of wastes at the site of generation avoids potential transportation mishaps enroute to off-site disposal facilities. Finally, such a policy serves to keep potentially hazardous emergencies within the reach of better staffed, better

It has also been observed that hazardous waste is much more than merely a technological problem in need of a better technology (Black 1987). That this is a profoundly **social** issue is evidenced by the politicization of the industry in Sumter County and elsewhere (Bailey and Faupel 1988; Finsterbusch 1988). While SARA Title III recognizes the public right to know the nature of potential chemical hazards in a community, there are no provisions for public concerns to be reflected in the regulatory process. It is precisely these concerns, however, which fuel the political conflict in the first place and which subsequently make emergency preparedness difficult. Consequently, if these adverse political conditions are to be ameliorated, state and federal regulatory agencies need to recognize the legitimacy of social concerns in making decisions affecting the lives of citizens in communities hosting hazardous waste facilities.

Finally, the privatization of a public issue such as hazardous wastes needs to be addressed. More specifically, it seems imperative that the determination of whether or not an incident represents a threat to the community be a **public** decision, not a private one as currently mandated under RCRA. Because of the conflicting interests inherent in the industry itself making such a determination, it is recommended that a public agency--most likely a regulatory agency or the local Emergency Management Agency--be responsible for informing community officials of an emergency situation.

Shifting this responsibility to a public agency does, of course, entail a commitment of public resources. A trained representative from the designated agency would have to be assigned to the site on a 24-hour basis. Currently, the Alabama Department of Environmental Management has one individual assigned to an office at the site. The office is staffed only eight hours per day, however, and exists solely for the purpose of monitoring incoming waste streams and the handling of those materials. This office does not have authority to determine whether or not an on-site incident represents a threat to the local community, and even if it did, would be unable to do so after 5:00 pm when the office closes. The on-site ADEM office does, however, represent a vehicle through which the shift of responsibility for reporting of major on-site incidents to public agencies could occur.

Community-Level Policy Implications

Perhaps the greatest need at the local level is more systematic emergency planning on the part of the emergency response system. Contrary to the common perception that "We all know what to do," hazardous wastes and other chemicals pose the possibility of rather unique kinds of emergency situations which are not likely to be routine for emergency response officials without diligent planning. This is not to suggest that emergency response for hazardous wastes should be fundamentally different than for other types of emergencies. We are suggesting, however, that the special character of hazardous-waste emergencies be anticipated and provided for in the planning process.

During the past two years, the level of local planning activity for chemical emergencies has picked up considerably in response to the SARA Title III requirement that local emergency preparedness committees (LEPCs) be formed (by August 1987) to prepare local emergency response plans (by October 1988). While not all communities were successful in meeting these deadline dates, the impact of the legislation would appear to be quite profound, as it will be difficult for local emergency organizations to overlook their role in the emergency preparedness process.

As local communities undertake the difficult task of planning for chemical emergencies, we suggest that the following principles are axiomatic, given what we know about the nature of chemical emergencies generally, and risks associated with hazardous wastes in particular. First, while federal regulations do not require it, planning for hazardous waste emergencies should take place in the context of a broader process of emergency preparedness which includes planning for natural and other technological hazards as well. While it is true that hazardous wastes pose unique risks which require special preparedness measures, there are certain planning **principles** which are appropriate to a broad range of hazards, including chemical and hazardous waste emergencies (Faupel et al. 1987; Quarantelli 1984; Tierney 1980; LaValla and Stoffel 1988). Hence, it is suggested that planning for hazardous waste emergencies be incorporated into an integrated emergency management system, and that LEPCs address the broad range of emergencies which

Second, it is essential that emergency planning officials avoid the temptation to keep a low public profile. While such a profile is tempting given the level of community conflict over the hazardous waste issue, it is precisely the **lack** of sufficient information which leads to emergent public behavior (Brouillette 1971; Parr 1969), often detrimental to overall community response. Moreover, we would suggest that not only should the public be informed regarding the planning process, the nature and location of hazardous chemicals in their area, what to do in case of an emergency, etc., but that the planning process itself be structured in such a way that it encourages active public participation.

NOTES

[1]Organizations interviewed include: Alabama Highway Patrol District Office, municipal police departments (2), fire departments (2), ambulance services (2), a local hospital, the local Emergency Management Agency, and Chemical Waste Management. In one community, the local fire chief also serves as the director of ambulance services. He was interviewed both with regard to his role as fire chief and as director of ambulance services. Attempts were made to interview representatives from the county sheriff's department and the all-volunteer county rescue squad. Due to schedule conflicts, however, these interviews were not obtained.

[2]Respondents were either long-term residents of the community or occupied positions in the community which rendered them particularly knowledgeable regarding community life.

[3]Most, though not all, of those individuals have held political office in county or municipal governments. Two of these nominees were unavailable for interview due in one case to an extended illness, and in the other to out-of-town employment.

[4]These data were obtained through personal correspondence with the Community Relations Manager for Chemical Waste Mangement.

[5]Federal Regulations 40. Part 264, Subpart D. U.S. Government Printing Office, Washington, D.C.

[6]The facilities included in these 40 counties include incinerators as well as landfills. Many of these counties, in fact, have only incinerators.

[7]Part of the overall project of which this study is a part involves

Local and state newspaper coverage of the Chem Waste facility since its inception in 1977 has been followed. Interestingly, and not surprisingly, while local media often place priority on other issues in the county, the major story from Sumter County in state newspapers is hazardous waste.

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