

**IN SEARCH OF EQUITY:
DEVELOPMENT OF A REGIONAL SYSTEM FOR MANAGING
LOW-LEVEL RADIOACTIVE WASTE IN THE UNITED STATES**

ARTICLE

BY

SHEROL S. BREMEN, M.R.P. AND KATHRYN VISOCKI, M.P.H.

JANUARY 30, 1992

FOR PUBLICATION IN THE

**"FORUM FOR APPLIED RESEARCH AND PUBLIC POLICY"
UNIVERSITY OF TENNESSEE**

INTRODUCTION

The Nation is in the midst of an innovative experiment to manage low-level radioactive waste (LLRW). The Low-Level Radioactive Waste Policy Act (The Policy Act or LLWPA) of 1980 gave each state responsibility for managing its own wastes, and allowed them to align themselves in regional compacts in order to do so. Now, many years and millions of dollars later, states and compacts are fighting legal and other battles to site LLRW disposal facilities, an essential component of the nation's strategy to continue the power generation, medical research, and industrial activities enjoyed by its citizens today. This paper describes the development of a regional disposal facility in the Southeast Compact, which is three years behind schedule and

millions of dollars over budget, to illustrate the site development problems occurring across the nation.

While critics contend that implementation of the LLWPA has been largely unsuccessful, few, if any, have been able to offer politically acceptable solutions to the LLRW management problem. The problem remains that there is no state that is willing to provide a LLRW disposal facility for the rest of the nation's waste. The regional waste disposal system envisioned by the LLWPA remains the most acceptable solution to the states for their LLRW waste disposal problem. Although it is taking longer than anyone ever envisioned, we believe that the additional costs and time are necessary and justifiable. Indeed, considering the difficulty of building anything related to waste in the 1990's, we find it remarkable that three states (CA, NE and IL) are nearing the construction phase.

Further complicating things are the issues associated with the future interim period. Beginning in 1993 existing disposal facilities will close, and the new generation of disposal facilities will not yet be open. We predict that although the interim period represents an unavoidable crisis in waste disposal capacity and liability, this crisis will force agreement on siting efforts.

Ultimately, we believe that the implementation of the regional compact system will be successful.

HISTORICAL BACKGROUND

In 1980, Congress drastically changed the way LLRW would be managed in the United States. During the 1960's and 1970's, industry disposed of most LLRW at six privately managed sites. Three sites were closed during 1975-78, leaving facilities operating in South Carolina, Washington, and Nevada. Then in 1979, after a series of packaging and transportation incidents involving LLRW, the governors of the "sited" states became concerned and two of the sites were temporarily shut down. This caused Congress to begin its search for a more equitable way to allocate responsibility for management of the nation's LLRW.

The driving force behind changing the system was not adequacy of disposal capacity, technology, or economics. The driving force was the consideration of equity in sharing a public health risk.

In 1980, with the unanimous support of the National Governor's Association, Congress passed the Low-Level Waste Policy Act. The Policy Act gave individual states responsibility for managing their own radioactive waste. Recognizing that far fewer than 50 disposal sites would be needed at one time, however, Congress encouraged states to enter into regional compacts to cooperatively develop disposal facilities. As an incentive for forming such compacts, Congress gave the compacts authority to restrict the use of their regional facilities to wastes generated within their compact regions.

By 1983, although seven compacts had been formed, it became clear that none were close to opening new regional disposal facilities. To address this, Congress amended the Low-Level Waste Policy Act in 1985. The Amended Policy Act addressed the desire of the sited states to have a date after which they would no longer be required to accept the rest of the nation's wastes.

It also recognized the need of the unsited states and compacts for adequate time to develop new regional disposal capacity. The Amended Policy Act required the sited states to keep their sites open to the rest of the nation until 1993, but set limits on the volume of wastes they would have to accept. In exchange for continued access to the three disposal facilities, the unsited states and compacts were made to pay escalating disposal surcharges to the sited states during the seven-year period, and to meet specified milestones in 1986, 1988, 1990, and 1992, or face penalty surcharges and possible access denial.

As of January 1992, there are nine compacts. Two of the compacts plan to continue to use the existing facility in Hanford, Washington. The seven other compacts are working to develop new disposal facilities. In the mid-1980's the authors of the Policy Act envisioned that implementation of the new system of regional disposal facilities would be close to completion today. The Policy Act established a milestone of January 1, 1992 for the filing of license applications to operate low-level radioactive disposal facilities for non-sited regions or states. However, on January 1, 1992 only the Southwest (CA), Central Midwest (IL), and Central (NB) Compacts had submitted license applications. Other compacts and states remain in the process of final site selection. It appears that the siting process will continue to be a protracted one and that most compacts will not have operating regional facilities by the end of 1992 when the three sited states close their borders to the nation's wastes.

THE SITUATION IN THE SOUTHEAST COMPACT

In 1983, eight states--Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia--became members of the Southeast Compact through enactment of the Southeast Compact Law. The Southeast was one of the three regions which began with an existing regional disposal facility. (The other two are the Northwest and Rocky Mountain Compacts.) That facility is located in Barnwell, South Carolina, where it has been operating under private management since 1971. The Southeast Compact agreement envisioned that the facility in South Carolina would serve as the first regional facility and would close no later than December 31, 1992. A second regional facility was to be sited and operational by 1991, allowing for a one-year overlap in operation.

In 1986, the Southeast Compact chose North Carolina as the second host state to develop the next disposal facility for the southeast region. In accordance with the original Compact negotiations, the details of the actual siting, construction and operation of the facility were left to the State of North Carolina. Efforts in North Carolina to site and develop the next regional disposal facility have been fraught with lengthy project delays and skyrocketing costs. As of January 1, 1992, the North Carolina project was several years behind schedule and almost \$50 million over budget. Experience in the Southeast Compact region, which is detailed below, is illustrative of facility development delays and cost overruns experienced by compacts across the nation (see Figures 1 & 2).

WHY THE PROCESS IS SLOW

Public Process

The first generation of LLRW disposal sites was developed through the private enterprise system with little government involvement. The Policy Act changed all this by mandating a public

process. The degree to which public involvement is used in the siting process varies from state to state and is largely determined by compact and state laws.

After North Carolina became the second host state for the Southeast Compact, it had to develop and fund a special unit of government for developing the LLRW disposal facility, the N.C. LLRW Management Authority (the Authority). The Governor and General Assembly jointly appointed the members of the Authority, after which it began its work. The Authority developed siting criteria through a formal rulemaking process which included numerous public meetings and hearings in various geographic locations of the state. This process took nearly a year. By 1991, two potential sites had been chosen to undergo more detailed environmental studies that would take an additional two years to complete. The original Compact Law had envisioned that the second regional disposal facility would be operational by that time!

In the hopes that maximizing public participation would increase public acceptance of the second regional LLRW disposal facility, the authors of the North Carolina site development process provided numerous opportunities for public participation. This added substantial time to each step of the siting process as the public had to be informed of the data relevant to the issue and allowed ample time to digest this data, formulate an opinion, and communicate their comments and questions before decisions were made.

Opposition

Oftentimes expressions of opposition to a facility are based on perceptions, not facts. For example, opponents may believe that the facility will pose a serious safety hazard, harm their health and well-being, drive down the value of their property, and/or drive away other businesses and jobs. Even if the perceptions are dead wrong, in a democracy, they must be heard. Consequently, the public participation process, which is mandated by law, is very time consuming.

Moreover, in the political climate of the 1990's, people are extremely distrustful of private industry and government. Contrast this with the pro-industry attitude of the 1960's when the Southeast Compact's existing regional facility at Barnwell was developed. The Barnwell County Council and the South Carolina State Development Board were instrumental in recruiting Chem-Nuclear Systems, Inc. to locate their LLRW disposal facility in Barnwell. Both the County and State were eager to reap the economic benefits associated with such a facility.

The relative ease with which Barnwell was developed contrasts sharply with the effort in North Carolina to site and develop the second regional facility. Despite the time spent and expenses incurred, efforts to solicit a volunteer community to host the facility have been unsuccessful. Attempts to develop host community benefit packages have been characterized by the affected communities as "bribes", and contractors working at the candidate sites have been threatened with physical violence. The opponents are not willing to accept jobs at the expense of what they perceive to be environmental degradation. And they don't trust government to regulate waste management facilities properly.

Litigation

Opponents in North Carolina have successfully used litigation to delay the siting process. The most dramatic example of this was a 1990 lawsuit by Richmond County contending that an Environmental Impact Statement (EIS) was required to assess the potential impacts of environmental testing on the Richmond County site. The irony of the claim was that one of the purposes of conducting the environmental testing was to collect field data for the EIS! Despite the fact that the case was eventually dismissed, the legal process required to resolve the suit delayed the beginning of the testing at the site for several months.

Across the nation, development of regional LLRW disposal facilities has also been delayed by litigation. In some cases, the plaintiffs appear to have legitimate, sincere concerns about some aspect of the siting process. More often, however, litigation is used as a stall tactic. In this sense, the litigant often achieves his purpose of delay even if the lawsuit itself fails. Opponents of waste disposal projects hope that if the project drags on long enough, someone will decide that the facility is no longer needed, and the problem will just "go away". Many of the national groups opposing LLRW disposal projects primarily object to nuclear power and believe that power plants will eventually shut down if they have nowhere to dispose of their waste.

Another common stall tactic is to pass local ordinances explicitly prohibiting the location of facilities using radioactive or hazardous materials. Even though North Carolina has given its Governor's Waste Management Board the power to override such ordinances, the arbitration process used by the Board requires a minimum of six months to complete. The NC Authority found it more expedient to resort to the courts when opponents at the proposed site in Richmond County, North Carolina, passed a local ordinance requiring preparation of an environmental impact statement before field testing at the site could begin. Although the Authority emerged successful in its challenge to the local ordinance, field testing was still delayed for months until a state superior court judge granted an injunction to override the local ordinance. Although the opponents of the project did not prevail, they succeeded in delaying the project.

Both litigation and project delays have been significant factors in the budget overruns incurred by the North Carolina project. Total litigation expenses incurred by the Authority and its contractors through 1991 are \$1.3 million¹, and the Authority has not yet even chosen a preferred site. Once a site has been selected and licensed, even more legal challenges are expected.

The litigation expenses incurred by the North Carolina project are staggering to consider, but the costs associated with project delays are even worse. In order to fulfill its responsibility to manage the region's LLRW economically, the Southeast Compact Commission hired a well-known accounting firm to conduct an audit of the North Carolina project cost and schedule in 1991. Although the auditor found that the schedule delays and costs incurred by the project were "reasonable" given the circumstances, the report estimated that the costs incurred by the project for each month of delay were approximately \$660,000². These are the fixed costs associated with the Authority and its prime contractor's operations, and including interest charges and inflationary effects. By 1992, the total cost of developing the North Carolina site, exclusive of construction, had increased from an original estimate of approximately \$20.8 million to approximately \$75 million³. While some of the increase can be attributed to unforeseen technical complexities, a large portion of this increase is due to project delays.

Politics

Facility siting activities are also slowed down by the NIMTO (Not in My Term of Office) syndrome. This attitude is often adopted by politicians in response to opposition voiced by NIMBY (Not In My Back Yard) constituents. Even lacking a vocal opposition among constituents, many politicians take advantage of such controversial issues because they provide excellent public exposure. Siting efforts were seriously impaired by the public positions taken by Governor Blanchard and Governor Engler in Michigan and by Governor Nelson in Nebraska. On January 31, 1989, Governor James Blanchard unilaterally halted siting activities in Michigan and threatened to introduce legislation withdrawing Michigan from the Midwest Compact. In February of 1990, he issued a press release stating that, "Our goal is to keep a low-level radio-active waste dump out of Michigan." On October 6, 1990, in a gubernatorial election debate between Governor Blanchard and the Senate Majority Leader, John Engler, both candidates opposed the site. Governor Blanchard stated that, "...I don't believe for one minute we'll ever have a site in the State of Michigan." Engler said that, "I would continue as Governor to fight the location of this dump in Michigan because ultimately in the nation there will only be three or four dumps and it's in our interest to make sure one of them isn't in Michigan."

Since site development often spans several terms of office, continuity of support presents problems. Although governors in all fifty states supported the passage of the Policy Act in 1980, this consensus was lost as the issue was narrowed to siting in specific states. Similarly, a politician does not necessarily feel bound by the agreements made by his predecessor. In Nebraska, Governor Kay Orr had supported the siting process but her successor Governor Ben Nelson did not. To add to the confusion, many politicians are not willing to publicly support a facility that they might privately acknowledge is environmentally sound and needed for the protection of public health and safety. They believe that to do so would amount to political suicide. Thus, a vacuum of leadership exists.

Politics also has more subtle affects on siting efforts. Project delays may be caused by the desire to avoid controversial issues near election times. Similarly, statutes often are written to include unnecessary barriers to siting in an effort to placate the opposition. These measures rarely decrease opposition, but they do complicate or prolong the site development process. For example, North Carolina legislators gave in to public pressure to include in their siting law a restriction on shallow land burial, the disposal technology in use at the Barnwell, South Carolina facility. They also included a requirement in the legislation that additional engineered barriers be included in the North Carolina facility design. Because licensing regulations require that the suitability of a site to contain waste be determined based on geological characteristics, the additional engineered barriers are not necessary from a technical standpoint. They will, however, add considerable time and expense to the site development process in terms of technology selection, design, and construction costs.

It is too early in the process to say whether such technology enhancements will help to increase public acceptance of the site and confidence in the safety of the project. It could be argued that the effect of enhanced technology will actually be the opposite of that which is desired. That is, efforts to add design elements to reduce risks to public health and the environment may only serve to contribute to the public perception that disposal of LLRW is risky and unsafe.

SLOW BUT STEADY WINS THE RACE: WHY THE PROCESS IS WORKING

When one considers that development and implementation of the regional compact system has never been done before, it is easier to appreciate the difficult context within which the compacts are operating. Although the schedule delays and budget increases associated with the North Carolina project are disheartening, they are consistent with the delays, cost overruns, public opposition, legal difficulties, and political obstacles encountered by other compacts across the nation, and indeed by anyone trying to develop any type of waste facility.

In spite of the odds, significant progress has been made on the North Carolina project. Many of the immediate legal barriers to site characterization were eliminated in December 1991, and environmental testing has begun at the two potentially suitable sites in Richmond and Wake/Chatham counties. In addition, the project enjoys the support and leadership of several North Carolina politicians, which has been key to the success of the project thus far. Republican Governor James G. Martin, a former chemistry professor at Davidson College, has been a strong supporter of the North Carolina project. However, Martin's constitutional power is limited because he lacks a gubernatorial veto. Another powerful proponent of the project is Representative George Miller, a democrat from Durham, North Carolina, who has served as a Commissioner representing North Carolina on the Southeast Compact Commission since the Compact's inception in 1983. Miller's leadership has been crucial to garnering continued support for the project from the North Carolina legislature.

THE CHALLENGE OF THE INTERIM PERIOD

One of the greatest challenges facing compacts today is what to do with LLRW during the period between the closure of the three existing sites and the opening of the new generation of regional facilities. The situation appears quite worrisome to state officials who face the possibility of being asked in 1996 to take title to waste generated in their state. In 1996, the "Take-Title" Provisions of the Policy Act allows generators to request their state to take title to, and possession of, their waste if a disposal facility is not available. Further, the Act requires that the states do so. The liability implications of the Take-Title Provisions are staggering to consider and serve to create a crisis atmosphere associated with the interim period.

The Take-Title Provision presents somewhat less alarm in the Southeast, perhaps partly because the second regional facility is scheduled to be operational by early 1996. It seems unlikely that generators would bother to invoke the Take-Title Provision for the sake of storing waste for an additional two months past the January 1, 1996 deadline. There are, however, several other significant issues related to the interim period from 1993 to 1996 that are actually of far greater concern to the Southeast Compact Commission.

The single most important issue related to the interim period for the Southeast Compact Commission is the potential diversion of resources from the development of the second regional facility in North Carolina. If the Barnwell facility closes at the end of 1992, the current source of revenues used to fund development of the North Carolina facility would be eliminated as it is financed from surcharges on wastes disposed at the Barnwell facility. In addition, if the Southeast Compact Commission is forced to pursue other strategies for managing LLRW during the interim period, its efforts to support the development of the regional facility in North

Carolina will be diluted. Further, it is likely that the project would suffer a loss of support from generators if they are forced to expend additional money and resources to store their wastes.

In 1991, the Southeast Compact Commission appointed a special task force to study the various options for managing the region's waste during the interim period. The Task Force studied three option areas: 1) continued disposal at the Barnwell facility; 2) storage at a regional facility or by each individual generator on-site; and 3) negotiation for access to a storage or disposal facility in another region. The Task Force assembled their analysis into two reports which they submitted to the Commission in October of 1991^{4,5}. After studying the reports, the Commission adopted a resolution declaring that disposal at Barnwell was the option which would be the most protective of human health, safety and the environment, and requesting that the South Carolina General Assembly keep the Barnwell facility open as a regional disposal facility until the second regional facility is operational.

Success in implementing this recommendation will not come easily. Tempers have always run hot on this issue in the South Carolina General Assembly and the 1992 session will be no exception. At the time this article was drafted, the session had not yet started; but the issue was already being debated in the news media. Legislators from Barnwell and its surrounding counties are supportive of continuing the operation of the disposal facility. Other legislators, however, including the Speaker of the House, Robert J. Sheheen, have publicly announced their adamant opposition. But it is still too early to predict a tally of the votes. The majority has not expressed an opinion publicly, and there are many new faces in the legislature this session.

One thing is certain--in South Carolina the attitude still prevails that it is unfair for that state to bear the burden for waste from other states. The difference of opinion lies in which tactic will be the quickest and most successful in getting South Carolina out of the disposal business. Many South Carolinians believe that North Carolina is dragging its feet in siting and they are skeptical that North Carolina will ever actually open a disposal facility for the region. This skepticism is made worse by the fact that North Carolina failed in 1990 to fulfill its part of a regional agreement for the management of hazardous waste. Therefore, they maintain that continued access to the Barnwell facility will only serve to ease the pressure on North Carolina and cause them to slow down.

It is also unclear how much influence will be exerted by Republican Governor Carroll A. Campbell Jr., a second-term governor. One clue lies in his recommendation to the South Carolina Budget and Control Board concerning revenue generation. For FY 92-93 Campbell proposed raising \$200 million in additional revenues for the state by increasing the surcharges on wastes disposed at the facility after its supposed closure in 1992. By emphasizing revenue generation, Campbell avoided the direct endorsement of continued operation of the facility past 1992. It remains to be seen how large an incentive the possible revenues will provide as weighed against the feelings of inequity and skepticism.

SAVING FACE AND GETTING RESULTS

The authors speculate that if an agreement is to be successfully negotiated to keep Barnwell open past 1992, the South Carolina legislators must "save face" after staunchly insisting on its closure for over a decade. This compromise will have to involve more than mere words of assurance

that South Carolina will soon be out of the disposal business and much more than monetary compensation for the sacrifices made by South Carolina. The proposal made by Governor Campbell included a suggestion that North Carolina be required to meet certain siting milestones, and that failure to meet such milestones should result in the payment of \$5 million to South Carolina. This may plant the seed for a suitable compromise agreement among the states. It is far too early to predict the outcome of this issue in the South Carolina legislature.

The fact that Campbell's proposal did not preclude the possibility of taking out-of-region waste after 1992 has caused quite a stir across the nation, raising false hopes among other states and compacts that they will not need to site facilities in their own regions. It is, however, the Southeast Compact Commission which has the final say on this issue. Even if the South Carolina Legislature were to decide to make the Barnwell facility available to waste across the nation, the Southeast Compact Commission has the power to deny access to its regional facility for waste outside the southeast region. In making this decision, the Commission will certainly need to weigh the potential impact on facility siting in other regions. To sustain motivation in other states and regions for expeditious site development, it may be appropriate to only accept waste for disposal from states judged to be acting in good faith.

CONVERTING CRISIS TO OPPORTUNITY

Many think one of the greatest challenges facing the implementation of the regional compact system today will be overcoming the crisis associated with the interim period. We take a different view. Historically, crisis has often been the catalyst needed to overcome inertia and effectuate much needed change. The crisis atmosphere of the interim period may be just what the Compacts need to convince the public of the necessity of the regional disposal facilities and to overcome the legal inertia plaguing siting processes across the nation.

We envision the interim period as the ultimate culmination of the implementation of the LLWPA. It will be a period during which politicians and their constituents will be forced to either assume the perceived costs of developing LLRW disposal capacity, or to forgo the benefits of using materials which result in the generation of LLRW. During the interim period, the sited states will close their disposal facilities and those who have depended upon them to shoulder the burden of waste disposal will be out of luck. States which have not joined compacts and regions which have not proceeded seriously with facility siting efforts will be the hardest hit. The generators in these recalcitrant states and regions will no longer have a place to put their LLRW, and their generators will be forced to provide for additional processing and storage of their wastes. This will result in greatly increased costs for some utilities, medical facilities, and manufacturing operations. In some cases, costs will become so high as to be prohibitive, and some goods and services will become scarce or unavailable. As the costs of electric power and certain medical therapies become unaffordable, or unavailable, consumer awareness and concern and media attention to the issue will increase. This will garner the attention of the politicians who will perceive increased constituent support for resolution of the LLRW disposal crisis. This constituent support will provide the impetus for politicians to take the steps necessary to get LLRW facilities sited and operating, and to restore the economical goods and services demanded by the public.

In order for the scenario envisioned above to succeed, the sited states must remain committed to closing their disposal sites at the end of 1992. A crisis of disposal capacity is the only factor that will compel the recalcitrant states and regions to get their site development efforts back on track. The Policy Act was designed to create a crisis in 1993 and this crisis must be allowed to occur. No assistance or interference from the U.S. Congress is required.

Although opponents of the LLWPA include ten unaffiliated states, they constitute only a vocal minority, accounting for less than 15 percent⁶ of the volume of the LLRW disposed annually by the nation (see Figure 3). For the vast majority of LLRW requiring disposal in the U.S., compacts are taking seriously their responsibility for developing sites to handle their waste. These facts alone make it unlikely for Congress to be willing to revisit such a controversial issue. State officials will have much greater incentive than will Congress to resolve a crisis felt in a limited number of states.

SUMMARY

Congress developed the Low-Level Radioactive Waste Policy Act and its Amendments in large part because three states were tired of shouldering the responsibility for providing disposal capacity for the rest of the United States. Since the LLWPA's inception, little has changed in this area. There still aren't any states that are willing to serve as disposal sites for the rest of the nation's LLRW. The problem remains the same--one of equity. Trying to change the solution by reopening the LLWPA isn't going to accomplish anything. In fact, it will merely serve to undermine the progress that's been made to date. The sited states have twice agreed to continue to dispose of the nation's LLRW, first for six additional years in 1980, and then for an additional seven years in 1985. They have upheld their part of the bargain. The rest of the nation is indebted to them and has a duty to uphold their part of the bargain by relieving them of their responsibility to serve as national disposal sites. Let's go the final mile and complete the implementation of the regional waste disposal system envisioned by Congress in the LLWPA.

Notes

1. NCLLRWMA, January 1992, Conversation with Tom Galligan.
2. Ernst &Young, Diagnostic Review of Pre-Licensing Activities and Expenditures for the Regional LLRW Disposal Facility in North Carolina, April 1991, Washington, D.C.
3. NCLLRWMA, January 1992, Conversation with Sara Voorhees.
4. SECC, "Report One: Alternatives for Managing LLRW during the Interim Period Between the Closing of the Barnwell Facility in 1992 and the Opening of the North Carolina Facility."
5. SECC, "Report Two: An Evaluation of Options for LLRW Management in the Southeast Region During the Interim Period 1993-1996."
6. Radioactive Exchange, January 31, 1991, Volume 10, No. 2, Edward Helminski, Publisher, Washington, D.C.