

# Low-Level Radioactive Waste Disposal: Are We Having a **Crisis** Yet?

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By Nancy J. Zacha

Today, in the United States, there are three operating disposal facilities for commercial (that is, non-U.S. Department of Energy) low-level radioactive waste: the EnergySolutions facility in Barnwell, S.C., which accepts Class A, B, and C waste; the EnergySolutions facility in Clive, Utah, which accepts certain classes of Class A waste only (it does not accept sealed sources or biological wastes); and the US Ecology facility in Richland, Wash., which accepts Class A, B, and C waste, but only from 11 states (those in the Northwest and Rocky Mountain Low-Level Waste Compacts). A fourth facility, in far western Texas, has submitted a license application to become the LLW disposal site for the Texas Compact, but the licens-

ing process for that facility will extend until at least 2008. At a minimum, that site would accept all three classes of waste for the two states in the Texas Compact. (See accompanying table for a list of LLW compacts and their member states.)

Under current South Carolina law, however, the Barnwell site will close to all waste from outside the three states in the Atlantic Compact on July 1, 2008. At that time, there will be no available disposal facility for Class B and C waste generated by nongovernment entities in 36 states. These entities include nuclear power plants (by far the largest LLW generators), universities, hospitals and medical centers, research entities, and some general industrial facilities, including biotech and general pharmaceutical firms.

## **How Do You Define Crisis?**

One of the definitions of the word "crisis" in *Merriam-Webster's Collegiate Dictionary, Eleventh Edition* reads as follows: "an unstable or crucial time or state of affairs in which a decisive change is impending: esp. one with the distinct possibility of a highly undesirable outcome."

In the area of low-level radioactive waste disposal in the United States, a decisive change is pending, in that in little more than a year, we may be entering a period when the majority of generators of Class B and C low-level waste will have no safe, reliable, and cost-effective system for the disposal of that waste. That is something that is certainly highly undesirable.

One could conclude, therefore, that the United States is, indeed, at a crisis point in Class B and C LLW disposal. But given the disparate interests of disposal companies, compact and state officials, and low-level waste generators and radioactive materials users, there is no consensus on this issue.

According to Chem-Nuclear Systems Inc.—the EnergySolutions subsidiary that has operated the Barnwell facility for decades—at this time the annual Class B and C waste generation is around 20 000 cubic feet per year. Of that amount, about 15 000 ft<sup>3</sup> comes from the 36 states that will have no disposal access after next year; about 10 percent of that is medical and nonutility waste.

### THE COMPACT SYSTEM—A RECAP

In 1980, Congress passed the Low-Level Radioactive Waste Policy Act of 1980. This law was passed in response

to concerns by three states (South Carolina, Nevada, and Washington), which at that time were host to the only operating LLW disposal facilities in the country. Concerned that these facilities would continue to be the dumping ground for U.S. LLW in perpetuity, the three states pushed for a more equitable solution to LLW disposal.

The Low-Level Waste Policy Act of 1980 decreed that henceforth, states should be responsible for the LLW generated within their borders. The act encouraged states to join together into regional groups, termed *compacts*, to provide a regional solution to LLW disposal. States responded by developing what ultimately turned out to be 10 compacts.

### LLW Compacts and their Member States

Compact Name	States in Compact	Disposal Site
Appalachian Compact	Delaware, Maryland, Pennsylvania, West Virginia	None
Atlantic Compact	Connecticut, New Jersey, South Carolina	EnergySolutions Site, Barnwell, S.C.
Central Compact	Arkansas, Kansas, Louisiana, Oklahoma (Nebraska dropped out)	A license application for a site in Nebraska was denied by the state in 1998, resulting in a judgment against the state of more than \$140 million.
Central Midwest Compact	Illinois, Kentucky	None planned until 2032, or later, when Illinois nuclear power plants are scheduled to begin decommissioning.
Midwest Compact	Indiana, Iowa, Minnesota, Missouri, Ohio, Wisconsin	None
Northwest Compact	Alaska, Hawaii, Idaho, Montana, Oregon, Utah, Washington, Wyoming	US Ecology Site, Richland, Wash.
Rocky Mountain Compact	Colorado, Nevada, New Mexico	US Ecology Site, Richland, Wash.
Southeast Compact	Alabama, Florida, Georgia, Mississippi, Tennessee, Virginia (North Carolina dropped out after being designated the host state)	None
Southwestern Compact	Arizona, California, North Dakota, South Dakota	A license was granted for a site in Ward Valley, Calif., but the federal government refused to release the land, making the license moot.
Texas Compact	Texas, Vermont (Maine dropped out)	WCS has submitted a license application for a site in far western Texas; the licensing process is expected to be completed in 2008.
Unaffiliated States/Territories	District of Columbia, Maine, Massachusetts, Michigan, Nebraska, New Hampshire, New York, North Carolina, Puerto Rico, Rhode Island	None

The 1980 act contained both a “carrot” and a “stick.” The carrot was that a compact may exclude from its regional disposal facility LLW generated outside the compact region. The stick was that states where the LLW was generated were required to take title and possession of the waste if they have no access to a disposal facility (just as the DOE is required to take title of commercial spent nuclear fuel).

The Low-Level Radioactive Waste Policy Amendments Act of 1985 added some financial incentives and penalties to the policy.

States worked well together until it came time to designate a “host state,” the state that would actually have the responsibility for developing the infrastructure and policies to create a disposal site within its borders. States designated as host states in some cases dropped out of compacts or tried to interfere with the licensing process or both. Eventually, the Supreme Court struck down the “take title” portion of the waste policy acts. With the “stick” eliminated, most host states abandoned their siting processes, with the result that after 27 years, no new site has been developed and no new facilities are operating.

In the meantime, two of the three disposal sites operating in 1980 are still operating more than two-and-a-half

decades later. The Richland, Wash., site has been designated the disposal site for the Northwest Compact (and, since 1993, for the Rocky Mountain Compact as well).

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And the Barnwell, S.C., site continues to operate, although sometimes open only to compact states and sometimes open to all states. Only the third operating site, in Beatty, Nev., closed.

In the late 1980s/early 1990s, a new site opened, in Clive, Utah. Originally intended for government waste and developed outside the compact system, the site eventually began accepting some nongovernment Class A waste as well. The facility even applied for (and received) a state license to accept Class B and C wastes, but under pressure from state leaders, the facility owner, EnergySolutions, later declared that it would not pursue the Class

*Waste operations at the US Ecology facility in Richland, Wash. Photo courtesy US Ecology, a subsidiary of American Ecology.*





*The WCS facility in Andrews County, Tex.  
Photo courtesy Waste Control Specialists LLC.*

B and C license. A Utah law now bans the disposal of Class B and C waste in the state.

#### ARE THERE REPRIEVES IN THE WORKS?

##### *A Bill for Barnwell*

In early 2007, there have been a few new developments in the LLW story. In mid-February, some 30 South Carolina legislators cosponsored H 3545, a bill proposed to amend the South Carolina law regarding the exclusion of out-of-compact low-level radioactive waste from the Barnwell site. The bill would amend a 2000 law so that the Barnwell facility could accept up to 40 000 ft<sup>3</sup> of compact and noncompact LLW per year through fiscal year 2023 (that is, through June 30, 2023). In essence, the bill would grant the 36 states without access to their own disposal facility a 15-year reprieve in having to find a disposal solution for LLW generated within their borders. EnergySolutions reportedly was lobbying heavily for the bill's passage.

(This is not the first time there has been some wavering on Barnwell closures. In the early 1990s, the Barnwell facility

was briefly closed to waste generators outside the Southeast Compact [South Carolina was a member of this compact for several years]. It reopened to waste from other regions at the urging of then-Gov. David Beasley. For this reason, many in the affected 36 states have wondered all along if the June 30, 2008, closure date was really a done deal.)

South Carolina's motivations in advancing the bill are hardly altruistic. As with most things, the motive comes

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down to money. In recent years, while the facility has been operating, the state has received an income of around \$12 million from it, mostly in the form of fees and taxes on waste disposal. The facility provides some \$2 million annually to Barnwell County alone for its government and schools.

When Barnwell closes to out-of-compact waste, however, that income will drop to zero. According to EnergySolutions, by taking waste from only the three compact

states, the facility will see its annual income fall to a level some \$4 million below annual operating costs. Thus, instead of being an income generator, the Barnwell facility will become a drain on the state treasury—more than enough reason for some legislators to rethink the disposal policy.

The bill was assigned to the Committee on Agriculture,

Carolina's loss of income from the facility and that the compact could impose a surcharge on waste that is sent out of the region for disposal—thus encouraging waste generators in the Atlantic Compact to use the higher cost Barnwell site for disposal of Class A waste as well as the Class B and C waste.

And on March 28, the issue became moot, as the bill was killed—at least for this legislative session. The full Committee on Agriculture, Natural Resources and Environmental Affairs voted 16 to 0 to reject the bill. It is likely that EnergySolutions will try again next year in the 2008 legislative session, and perhaps in the years after that as well.

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Natural Resources and Environmental Affairs, and in mid-March, a House panel voted 3 to 2 to send the bill on to the full committee.

On March 19, however, the chairman of the Atlantic Compact Commission, Benjamin Johnson (delegate from South Carolina), sent a seven-page letter to South Carolina Gov. Mark Sanford, urging him to veto the bill should it pass the General Assembly. Johnson's letter disputed EnergySolutions's statements on the projected operating losses at the facility and noted that Connecticut and New Jersey have provided nearly \$13 million in compensation money to Barnwell County to make up for its income losses when the facility closes to out-of-compact waste. Johnson also suggested that the region's 13 nuclear power plants could give "voluntary" contributions in the range of \$200 000 to \$300 000 per year to cover South

### *A Compromise in Clive*

At the other end of the spectrum is the Clive, Utah, facility. In late February, Utah SB 155 became law. That bill, passed in the legislature by a veto-proof majority, allows a significant physical expansion of the EnergySolutions disposal facility. Utah Gov. Jon Huntsman Jr., who opposed the expansion, allowed the law to take effect without his signature.

Governor Huntsman then threatened to take up the issue with the Northwest Compact to try to limit the importing of any out-of-compact waste into a compact state. This threat led to a compromise between EnergySolutions and the governor to keep the disposal facility at its current size. In turn, EnergySolutions will be able to turn a cell on the site currently reserved for tailings waste into a

*The Clive, Utah, EnergySolutions facility.  
Photo courtesy EnergySolutions.*



Class A disposal cell. The company maintains that there is now adequate disposal space for Class A LLW for the next 23 years.

### What about Texas?

And then there's the Waste Control Specialists (WCS) site. In mid-March, the company submitted its final version (revision 12a) of the license application to the state, responding to technical questions and issues raised by the state. The state will then proceed to the final stage of the licensing process, which is supposed to be completed in 2008 (or 2009 at the latest).

One aspect of the WCS application that excites LLW generators is that according to the Texas LLW law, the state can consider disposing of out-of-compact waste if a majority of the members of the compact commission agree (although at this point there *is* no compact commission) and if such waste does not constitute more than 20 percent of the volume estimated to be disposed of over a 50-year period, with a further limit of no more than 20 000 ft<sup>3</sup> per year from out-of-compact generators. LLW generators are hoping that once the Barnwell site closes, the state of Texas will see the financial benefits of providing a waste disposal site that all states can use. Of course, there is the possibility that Texas will decide not to license the WCS site, or that if it licenses the site, it may decide to allow no out-of-compact waste.

### CRISIS? WHAT CRISIS?

Does all this mean there is a crisis in LLW disposal? It depends on whom you ask. At the very least, some feel, if this does not constitute a "crisis," it at least calls for prompt remedial action by Congress to assure access to disposal for users of radioactive materials who generate LLW.

The U.S. Nuclear Regulatory Commission has often expressed its concerns about LLW disposal. In 2002, then NRC Chairman Richard Meserve said, "... the low-level waste siting program in this country is not working. Moreover, barring congressional action, which is unlikely in the near term, the situation is unlikely to change."

However, according to NRC Chairman Dale Klein, speaking earlier this year at the Waste Management 2007 conference in Tucson, there is no crisis yet. In his address to the opening plenary session at the conference, Chairman Klein stated:

"We cannot discuss radioactive waste without also talking about low-level waste. We are in the process of doing a strategic assessment of options for disposal of low-level waste. It will be completed within the next several months. The strategic assessment is the first such effort undertaken by NRC staff since 1996. It is prompted in part by the prospect of the closure of the [Barnwell] facility and the concerns raised in reports by the National Academy of Sciences, the Government Accountability Office, and NRC's

Advisory Committee on Nuclear Waste.

"Many of you know that the closure of Barnwell has been debated in South Carolina for decades, but the site remains open—as it well may after this current debate ends.

"Nonetheless, the NRC has frequently commented that the reliability and cost-effectiveness of the low-level waste system could be improved. Waste generators need to be made aware of disposal options in order to plan their operations effectively.

"Although we are studying contingencies, *I don't foresee any kind of crisis in the disposal of low-level waste*, given the prospect of a new facility in Texas and the other activities being carried forward by the nuclear waste industry." [Italics mine.]

NRC Commissioner Pete Lyons, speaking at this year's Regulatory Information Conference in March, noted that having a majority of states with no disposal option for Class B and C wastes is "a far from ideal situation. The NRC would be faced, in all probability, with assuring that the absence of disposal capacity for such wastes doesn't translate into unsafe storage of such wastes by organizations generating it."

To which one might ask, At what point does a situation described as "far from ideal" morph into a "crisis"?

### WHAT ABOUT THE COMPACT SYSTEM?

A related question might be, How is the compact system working? Again, it depends on whom you ask. If you ask a representative of a compact, you might be surprised to learn that the compact system is working very well indeed. "It's working very well for Washington State," said Larry Goldstein, from the Northwest Compact, speaking at an LLW panel session at the Tucson conference, because it keeps the Richland site restricted to waste generators in just a handful of states. (Indeed, there is a clause in the Washington State lease for the US Ecology site, so that if Congress were to attempt to open the site to out-of-com-

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compact generators, the lease would be vacated and the site would presumably close.)

And according to another panelist in the same session, Leonard Slosky, from the Rocky Mountain Compact, the compact system is "a success." It has "spurred new solutions," including the Clive, Utah, site and the WCS project. A third panelist, Steve Creamer, president of EnergySolutions, commented that the compact system "has brought a focus to the issue, even if it has not resulted in new disposal sites."

Others, however, particularly those who work in areas affected by lack of access to LLW disposal, might disagree with the compact positions. "The compact system is an utter failure," stated industry consultant David James, a member of the audience at the Tucson session. Other audience members were struck by the arrogance of some of the panelists in giving credit to the compact system for the development of the Clive and WCS facilities. Conversations with audience members in the hallway after the session led this writer to conclude that most of them agreed with David James about the failure of the compact system, and most of them think that there most definitely is a crisis in LLW management, regardless of what compact representatives might say. (For details on the LLW panel session in Tucson, see "Focusing on LLW Issues at Waste Management '07," this issue, p. 17.)

### YES, VIRGINIA

So, where does this leave us? Is there a crisis or isn't there? And if there is, is that a good thing or a bad thing?

If the South Carolina state legislature does eventually pass a Barnwell extension or reopening, does this give the 36 states another reason to assume that Barnwell will always be there for them? And, is 15 years enough time? With the exception of Texas, no compact is even considering building a new facility within that time frame. Only the Central Midwest Compact has bothered to put a timetable on constructing and operating a disposal facili-

ty, and that one is 25 or more years out—in 2032 at the earliest, when Illinois's dozen or so nuclear power plants could begin decommissioning. So a 15-year reprieve would most likely do nothing but delay the crisis another 15 years. It would certainly not solve it.

On the other hand, the United States has become a nation that responds to an issue only when it becomes a crisis. Our politicians are not noted for their forward thinking. (Forward thinking in this country extends only to the next election.) Give them a crisis, on the other hand, and they can deal with it. Politicians love to be known as problem solvers. They do not, however, seem to want to be known as problem preventers.

With that in mind, there appears to be only one conclusion to reach:

Yes, Virginia (and California, and Pennsylvania, and Illinois, and the rest of the 36 states that will soon be without LLW disposal options), there *is* a crisis in LLW disposal in the United States. That being said, maybe we can now hope that our politicians are ready to solve it. ■

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