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NATIONAL LOW LEVEL  
RADIOACTIVE WASTE DISPOSAL POLICY:  
A SUCCESS OR A FAILURE?

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INTRODUCTION

Good afternoon. It is again a pleasure to be part of the NRC's annual conference. You may recall that when I spoke to you last year I chose to speak about subjects that are not normally discussed at this conference. These subjects were radioactive material safety and radiation health effects research. At that time, I observed that NRC staff has no record of any nuclear power plant operation or accident, including TMI, that resulted in radiation exposure of members of the public in excess of applicable 10 CFR Part 20 dose limits for the public. That is still the case. I also observed that the same cannot be said with respect to the use of radioactive materials and that there is a need to pay more attention to radiation safety regulation of radioactive materials. This also continues to be the case. Today, however, I will depart from these themes to discuss low level radioactive waste issues.

But, before I do, I would like to briefly note what I consider to be some of the major accomplishments of the Commission in the past year.

The Commission approved radiological criteria for license termination. In doing so, we had hoped that agreement would be reached with the EPA so the criteria would also be found acceptable by the EPA. As you know, this has not occurred. Commissioner McGaffigan will speak more about the different views of the NRC and the EPA. Let me say at this point that the criteria that the NRC have adopted are based upon sound scientific principles and are fully consistent with recommendations of the International Commission on Radiological Protection and the National Council on Radiation Protection and Measurements. Most importantly, and contrary to the EPA's assertions, the criteria *are* protective of the public health and safety.

You may recall that last year I also spoke about the problems resulting from licensees not exercising adequate control and accountability of radioactive sources and devices resulting in both entering the public domain in an uncontrolled manner. I am pleased to report that this

year the Commission has agreed that improvements are needed in our oversight of users of sealed sources and devices. A fee supported registration program for generally licensed sources and devices will be developed to ensure greater accountability. The Commission also directed the staff to take steps to assure that when radioactive sources or devices are found unexpectedly in the public domain, the persons who find such sources are relieved of responsibility for their storage and disposal.

We continue to address PRA issues and have taken actions to stabilize and improve the 50.59 process. I appreciate the hard work done by the NRC staff and the cooperation and efforts of our licensees, various industry and professional groups and other interested parties to achieve these successes.

Now, I would like to move to a discussion of low level radioactive waste (LLW) issues, in particular, are we, or are we not, on a path that will lead to successful implementation of the National policy for low level radioactive waste disposal?

#### A SHORT HISTORY OF COMMERCIAL LLW MANAGEMENT IN THE U.S.

After World War II, LLW was managed by the Atomic Energy Commission (AEC). Disposal practices included ocean disposal, a practice that was discontinued in 1970. Land disposal of LLW was also practiced at several AEC operated sites. The Oak Ridge National Laboratory and the National Reactor Testing Station, now the Idaho National Engineering Laboratory, were the principal sites where commercial LLW was handled. However, the AEC discontinued accepting commercial LLW in 1962 when it announced that it would accept license applications from private companies that wished to operate LLW disposal sites.

The first commercial LLW disposal site opened in Beatty, Nevada in 1962. A site in Maxey Flats, Kentucky opened the following year. By 1971, there were six commercial LLW disposal sites in operation; the aforementioned sites in Beatty and Maxey Flats plus sites in Barnwell, South Carolina, West Valley, New York, Hanford, Washington, and Sheffield, Illinois. However, by 1979, West Valley, Sheffield and Maxey Flats were closed for a variety of reasons including leakage at the sites. In July 1979, Nevada Governor List ordered Beatty shut down after two incidents involving trucks carrying radioactive waste to the site. The governors of Nevada, South Carolina and Washington wrote to the NRC asking for improved oversight of such shipments. Also, problems with waste shipments bound for Hanford resulted in shutdown of that site later in 1979. Although the Beatty and Hanford sites reopened, the governor of South Carolina, noting that the Barnwell site was receiving 90% of commercial LLW and, after looking at the projections of LLW that would be generated in the aftermath of TMI, announced that TMI waste would not be accepted at Barnwell.

Although the primary concern of the three States was protection of the health and safety of its citizens, the States also were concerned over the equity issue resulting from their receiving all of the commercially generated LLW in the U.S.

Congress turned its attention to the problem and initially proposed a Federally oriented program. However, the three States suggested that alternative approaches might be possible. As a result of this suggestion, the National Governors' Association formed a task force to recommend a National policy for management of LLW. Its recommendations resulted in the passage of the Low Level Radioactive Waste Policy Act of 1980 (1980 Act) which provided a State oriented approach. This act was subsequently amended in 1985.

## THE 1980 AND 1985 LOW LEVEL RADIOACTIVE WASTE POLICY ACTS

The 1980 and 1985 Acts made each State responsible for providing for LLW disposal. To be more specific, Section 3 of the Low Level Waste Policy Act Amendments Act of 1985 states that "Each State shall be responsible for providing, either by itself or in cooperation with other States, for the disposal of [low level radioactive wastes specified in the Act]". The Act designated certain other wastes as a Federal responsibility.

The acts also provided for management of LLW on a regional basis by enabling States to form compacts to meet their disposal needs and to minimize the number of new sites. Compacts thus formed would require Congressional consent. To encourage this approach, the 1980 Act provided that compacts could restrict the use of their disposal facilities to wastes generated within their regions beginning January 1, 1986.

By 1983, it became clear that while substantial progress had been made in forming compacts, no new disposal sites would be ready for at least another five years. Consequently, the Low Level Radioactive Waste Policy Amendments Act of 1985 was enacted. Under this act, waste generators in States without access to disposal facilities were given a seven-year extension for shipping waste to the existing disposal sites. Additional assurances were provided to the three States which wanted to restrict access to their sites that the other States would develop programs to manage LLW. Deadlines and milestones were provided. Financial and other penalties were established if certain milestones were not met. Among the penalties was a provision requiring States that had not met certain milestones for providing disposal to take title to the generators' waste at their request. The take title provision of the 1985 Act was challenged by New York. In 1992, the Supreme Court ruled that this provision was unconstitutional but held that it was severable from the remainder of the 1985 Act.

## OTHER SIGNIFICANT DEVELOPMENTS

On December 31, 1992, Nevada permanently closed the Beatty site thus reducing the number of commercial LLW sites to Barnwell and Hanford. In accordance with the provisions of the 1985 Act, the Southeast and Northwest Compacts restricted access to Barnwell and Hanford to members of these compacts. However, under an agreement with the Northwest Compact, members of the Rocky Mountain compact have access to the Hanford site. On July 1, 1994, as a result of these actions and the fact that no new disposal sites had been established only waste generators in States belonging to these compacts had access to LLW disposal facilities. Waste generators in the other 33 States no longer had access to LLW disposal facilities.

Then, in July 1995, South Carolina withdrew from the Southeast Compact and reopened the Barnwell site to all U.S. commercial LLW generators except those in North Carolina. The exclusion of North Carolina was related to the lack of perceived progress by that State in developing a new disposal site for the compact. The action by South Carolina to reopen access to the other States appears to have motivated by the opportunity of using waste disposal surcharges to fund State education projects. The contributions to the education fund are predicated on the volume of waste projected to be disposed of at the site. If volume is less than expected, the surcharge shortfall must be paid by the licensee. This became a reality in 1997 and, in response, the licensee proposed an initiative to provide customers long term access to the site in return for commitments to purchase specified amounts of capacity. Early

this year, it announced it was delaying its implementation to provide additional time for both customers and the State legislature to study the proposal. It is entirely possible that one consequence of this

initiative, should it be put into place, would be a rethinking of current practices -and their associated costs - to reduce waste volume.

A new commercial LLW disposal site is now available in Clive, Utah, although this site is limited to disposal of low specific activity LLW. This site provides an economical alternative for waste generators faced with managing high volume, low specific activity LLW streams. The site operator has recently submitted an application for a license amendment to the State of Utah that would increase the allowable concentrations of LLW that are disposed of at the site. This application is undergoing technical review by the State. In addition to technical considerations, the application will raise questions with respect to Compact policy governing the disposal of LLW that is now accepted only at the Hanford site.

Other disposal facility development efforts deserve mention. In Texas, Waste Control Specialists (WCS) has received an authorization for disposal of NORM waste and for treatment, processing and storage - but not disposal - of LLW and mixed waste at its Andrews County facility. WCS is considering requesting authorization for disposal of commercial mixed waste which the State of Texas is not planning to accept at its planned LLW facility. In Utah, Laidlaw Environmental is also planning a facility similar to the Clive facility for commercial waste. The NW compact would have to give its approval for receipt of out-of-compact waste received at this site.

Two other developments that occurred after the passages of the 1980 and 1985 acts should be noted. The first is the significant reduction of LLW volume requiring disposal and the second, and somewhat countervailing change, is the very sharp increase in the cost of disposing LLW. Recall that it was concern about the large volumes of LLW needing disposal that caused the governor of South Carolina to limit access to the Barnwell site in 1979. LLW volume reduction became possible because of significant paradigm shifts in the management of LLW by waste generators. The industry is deserving of credit for enacting these changes. An interesting outcome of this development is that the volume of LLW now has a different significance in shaping the policy for National LLW disposal that it had in 1980. As noted earlier, volume reduction has created a financial problem at least for the operator of the Barnwell site.

The reasons for the sharply escalating costs of waste disposal are complex. It certainly is a significant driver in the process of reducing LLW volume and, with respect to large volume, low specific activity LLW, is a factor in the development and operation of the Clive, Utah site.

In retrospect, the sharp declines in LLW volume and the sharp increases in the costs of disposal are developments that were not fully anticipated when the 1980 and 1985 acts were enacted. With respect to the increasing costs, it should be observed that equity issues was the driving force behind the 1980 and 1985 acts.

## THE STATUS OF COMMERCIAL LLW MANAGEMENT IN 1998

Presently, there are 10 compacts and eight unaffiliated States including South Carolina. Two compacts (Northwest and Rocky Mountain), use an established site, Hanford. Sites have

been selected in three compacts (Central Interstate, Southwestern and Texas) and the process for selecting a site is underway in States in each of three other compacts (Appalachian, Central Midwest, and Northeast). Recent developments in the Southeast Compact make its status uncertain at the moment. One compact (Midwest) is not siting a facility.

Among the unaffiliated States, Massachusetts suspended portions of its siting process, Michigan suspended its process and, in New York, the process seems to be on hold. The others are not siting a facility. The Hanford license is under timely renewal and the Barnwell license has been renewed through July 2000.

There are, however, LLW streams that are not presently disposed of at the operating sites. The primary examples of these include untreated mixed wastes, transuranics (TRU) and Greater than Class C (GCC) wastes. Mixed wastes must first be treated before they can be disposed of at the commercial sites. Not all mixed waste streams have proven amenable to treatment at reasonable costs. Providing for the disposal of TRU and GCC wastes is a Federal responsibility. Here, progress has been slow.

#### THE NATIONAL LLW DISPOSAL POLICY - SUCCESS OR FAILURE?

Given this status, what assessment can be made of the National policy for managing LLW waste as set out by the 1980 and 1985 acts? Has it been a success or a failure?

With the exception of North Carolina, generators in all States have access to LLW disposal sites, and generators in all States have access to the Clive, Utah site for low specific activity LLW. LLW generators in North Carolina are managing their waste primarily through a combination of decay in storage, long term storage and disposal of low specific activity wastes to Clive.

The health and safety of the public and workers and the environment are being protected.

The fact that not all compacts and unaffiliated States have developed, or are developing, sites is not a sign of failure. The intent of the 1980 and 1985 acts was to place responsibility within the States to provide for disposal. There is no requirement that every compact and every unaffiliated State must develop a site. Thus, the agreement between the Northwest and Rocky Mountain compacts that enables generators in the States of the latter to dispose of the LLW at Hanford is, in fact, in keeping with the acts' intentions. Similarly, the current arrangement in South Carolina that permits generators in 49 of the 50 States to use the Barnwell site is not contrary to the requirements of the acts.

Although the sharp changes in the LLW volumes that require disposal and the costs of LLW disposal were not fully anticipated, the effects of these changes have been accommodated. Similarly, the development of the Clive site was not anticipated but it has proven to fulfill a need within the National LLW disposal program. The decision of South Carolina to drop out of the Southeast Compact and make the Barnwell site available to generators in most of the United States is certainly the most unexpected development especially when viewed in the context of the situation in 1979. Even so, development of new sites, while slow, remains on track. One may conclude from this that the acts have proven to be sufficiently flexible to enable the National policy to stay on track in spite of unanticipated

developments.

When seen this light, the National low level radioactive waste disposal policy can be viewed as having had some success.

On the other side, both the 1980 and 1985 acts anticipated that new sites would be operational by now. While development of several is on track, there have been delays. The developments with respect to Ward Valley have been frustrating to the State and to waste generators in the compact. Nationally, efforts to develop new LLW disposal sites have cost, thus far, about five hundred million dollars.

The sharp reduction in LLW volume has greatly decreased the demand for disposal site capacity. This development coupled with the availability of the Clive site has caused some to question whether new sites should be developed. Followed to its logical conclusion, this would mean that three States, South Carolina, Washington and Utah, should serve as recipients of all of U.S. commercial LLW.

Does this sound familiar? It should because the current situation closely resembles that in 1979 when the issue of equity was raised because three States were responsible for the disposal of all commercial LLW. Indeed, two of the three States in 1979 and 1998 are the same. At the February 1998 meeting of the Low Level Waste Forum, several Forum members commented that the current situation "is ripe" for a repeat of the 1979 situation.

Such an assessment does not mean that there is a need now to consider whether the present National policy for LLW disposal should be amended nor am I suggesting that this be done now. It should, however, serve as a precautionary warning to the States that do not currently have sites or plans for developing sites that, under the provisions of the 1985 Act, they do not have any guarantee of continued access to existing LLW disposal facilities. For this reason, the development of new sites must continue.

At the present time, there are a variety of views on what to do next. Some are calling for repeal of the Low Level Waste Policy Acts and elimination of the compact system. While the lower volumes of LLW that now need disposal would argue for fewer LLW disposal sites, some believe that eliminating the compact system could lead to the opening of more sites and the resulting competition would lead to lower disposal costs.

Another current issue is the disposal of DOE LLW. A recent court decision ruled out NRC or Agreement State licensing of such sites as long as they receive DOE LLW only. However, were such a site to expand its operations to receive commercial LLW, then such disposal would be subject to NRC or Agreement State regulation.

The Commission's Strategic Assessment and Rebaselining initiative included low level waste as a Direction Setting Issue (DSI). Although the Commission initially supported a strong NRC regulatory role in the LLW area, its final decision on this DSI was to maintain the NRC program at its current, reduced levels. At the time, I favored a stronger role. The current situation is one that requires close monitoring of developments by the NRC and assurance that the NRC can quickly and fully assess newly emerging issues in LLW waste disposal policy. For this reason, I continue to favor a stronger NRC role in LLW and I would support a modest increase in the resources currently budgeted for the NRC LLW program to assure that these critical needs will be met.

## CONCLUSIONS

The National low level radioactive waste disposal policy was created by the Congress in 1980 and refined by amendment in 1985. It has certainly not been a failure but neither have the objectives of the 1980 and 1985 acts been fully realized. Deadlines and milestones have been missed. No new site, other than the unique Clive site, has been opened. Most significant is the possibility of a repeat of the 1979 situation.

Nonetheless, there has been palpable progress in meeting the objectives of the acts. New sites are being developed. Primary responsibility remains in the States' hands which is in keeping with the recommendations of the National Governor's Association. The National policy has proven to be (perhaps unexpectedly) flexible by accommodating changes in the management of LLW that were not anticipated when the National policy was formulated. Public health and safety and the environment are being protected.

But, as I view the situation today, I believe the future must see continued progress in developing new sites and the work in this area deserves your strong support. There is also an increasingly pressing need for the Federal government to address management of LLW streams which are not the responsibility of the States.

In conclusion, success in fully implementing the National low level radioactive waste disposal policy is attainable but will require a determined, continued effort by all the affected parties. I am personally committed to this objective and remain supportive of the process that the 1980 and 1985 acts provide. I encourage your strong support as well.