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Report to Congress

1995 Annual Report on Low-Level Radioactive Waste Management Progress

**U.S. Department of Energy
Office of Environmental Management**

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ABSTRACT

This report is prepared in response to the Low-Level Radioactive Waste Policy Act, Public Law 96-573, 1980, as amended by the Low-Level Radioactive Waste Policy Amendments Act of 1985, Public Law 99-240. The report summarizes the progress of states and compact regions during calendar year 1995 in establishing new disposal facilities for commercially-generated low-level radioactive waste. The report emphasizes significant issues and events that have affected progress, and also includes an introduction that provides background information and perspective on United States policy for low-level radioactive waste disposal.

EXECUTIVE SUMMARY

The Low-Level Radioactive Waste Policy Act, 1980 (Public Law 96-573), states that it is Federal policy that states be responsible for disposal of commercially-generated low-level radioactive waste and encouraged states to enter into compacts to fulfill the responsibility. (The current configuration of regional compacts is shown in [Figure 1](#).) That law was enacted at the request of states and with strong support from the National Governors' Association, following the closure of three of the six operating disposal facilities for low-level radioactive waste in the United States. The Low-Level Radioactive Waste Policy Amendments Act of 1985 (Public Law 99-240) (Act) amended the earlier law by adding a series of site development milestones along with penalties and incentives for states to develop the new disposal sites in a timely manner.

Section 7(b) of the Act requires the Department of Energy to “prepare and submit to Congress on an annual basis a report which summarizes the progress of low-level waste disposal siting and licensing activities within each compact region,” and reviews other topics related to the management and disposal of low-level radioactive waste. This is the tenth annual report prepared in response to the Act.

The Act required that any state unable to provide for disposal of low-level radioactive waste after 1995 be required to “take title” to the waste (or assume liability for all damages incurred by a generator as a consequence of the failure of the state to take title). In 1992, the United States Supreme Court struck down the “take title” provision, and held that states could not be compelled by the Federal Government to develop new disposal sites. In its opinion, the Court stated that:

“The affected States are not compelled by Congress to regulate, because any burden caused by a State’s refusal to regulate will fall on those who generate the waste and find no outlet for its disposal, rather than on the State as a sovereign. A State whose citizens do not wish it to attain the Act’s milestones may devote its attention and its resources to issues its citizens deem more worthy; the choice remains at all times with the residents of the State, not with Congress. The State need not expend any funds, or participate in any federal program, if local residents do not view such expenditures or participation as worthwhile.” [New York v. U.S.](#), 505 U.S. 144, 172-173 (1992)

Notwithstanding the Court’s opinion, a number of state governments continue actively to pursue the development of new disposal facilities in accordance with the terms of their interstate compact agreements.

At the same time, new initiatives by the private sector during 1995 may signal the beginning of a more hybrid system in which efforts by the private sector to meet market demands for waste management co-exist with the government/compact processes.

In June 1995, the Governor of South Carolina signed legislation re-opening the disposal site in Barnwell County to low-level radioactive waste generated nationally (except from North Carolina). Under the pre-existing state law, the site had, since June 30, 1994, discontinued accepting waste that was generated outside the Southeast Compact region. The renewed availability of the Barnwell site left other states and compact regions to wonder whether renewed access to the Barnwell site effectively resolved the low-level radioactive waste problem, obviating the need for new disposal sites. While the South Carolina legislation sets no terminal date for operation of the site, the decision to open or to close the site is a recurring topic of discussion in the South Carolina General Assembly. In addition, a lawsuit has been filed challenging the constitutionality of the South Carolina legislation extending out-of-region access to the site.

During the year, the states developing new disposal sites and the organizations that fund the projects also took notice of two other initiatives that potentially could affect the establishment of a national system for disposal of low-level radioactive waste. The Utah-based "Envirocare" site, originally licensed for disposal of naturally-occurring radioactive material, announced plans to expand its acceptance of low-level radioactive waste from across the nation, in accordance with policies of the Northwest Compact Committee. During 1995, the Compact Committee revised its waste import policy to allow the site to accept "large volume, soil or soil like materials or debris slightly contaminated with low-level waste." The Compact Committee has indicated that it will monitor implementation of its new Envirocare policy to ensure that acceptance of waste does not negatively impact disposal site development programs in other regions by reducing support for those projects among waste generators.

During 1995, several efforts were publicized to export low-level radioactive waste to disposal facilities in other nations. In August, one company submitted a license application to the Nuclear Regulatory Commission to export certain kinds of Class A low-level radioactive waste (the least radioactive category) to the Russian Republic of Dagestan. In October, the company contacted the Nuclear Regulatory Commission and asked that review of the application be temporarily suspended. The company did not provide reasons for its request.

As in previous years, national attention during 1995 was focussed on progress in California. In

1993, the state became the first since 1970 to issue an operating license for a new low-level radioactive waste disposal facility. Under Section 274 of the Atomic Energy Act of 1954, as amended, a majority of states, including California, derive authority to regulate possession of certain radioactive materials under agreements with the U.S. Nuclear Regulatory Commission. Because the California site is located on land owned by the U.S. Bureau of Land Management (BLM), the land must first be transferred to the state before the facility can be built. Construction of the facility has been delayed pending the land transfer. In May 1995, the Secretary of the Interior issued a statement indicating that he would transfer the land if California would agree to certain binding commitments related to operation of the disposal facility, including the imposition of fixed volume and radioactivity limits. Following a review of the Secretary's offer, the Governor of California declined, citing the state's right to regulate the site in accordance with rules and procedures established under the Atomic Energy Act. At year's end, discussions appeared to be at an impasse, and California was pursuing site transfer through the Federal legislative process.

The most significant action in 1995, related to the national configuration of compacts, was South Carolina's withdrawal from the Southeast Compact. The measure was part of the same law, noted above, that re-opened the Barnwell site to waste generators nationally (except those in North Carolina). A statement released by the Governor's office attributed the withdrawal to South Carolina's dissatisfaction with the pace of North Carolina's efforts to license and build a regional disposal facility to replace the Barnwell site. South Carolina's departure left the Southeast Compact Commission without the traditional funding source, a surcharge on waste received at the Barnwell site from regional generators. With renewed access by waste generators in the region to the Barnwell site, and continuing doubts about the chances of the Wake County, North Carolina, site to receive an operating license, the Compact Commission and regional waste generators, at year's end, faced difficult decisions on how to proceed.

More positive news during the year came from Texas. Review of a disposal facility license application in that state remained on schedule, with a licensing decision expected in early 1996. In early 1995, legislation was introduced in the U.S. Congress (H.R. 558, S.419) to grant the consent of the Congress to a new compact consisting of Texas, Maine, and Vermont. In September, the House voted against expedited consideration of the bill. In December, the House passed a resolution (H. Res. 313) outlining a streamlined procedure for considering the bill during the 1996 session.

In addition to these developments, Nebraska entered its fifth year of review of an application to

construct and operate a regional disposal facility in that state. Ohio enacted legislation to embark upon a site selection process, opting for a public sector program using top-down screening methods. (In top-down screening methods, land is eliminated from consideration in a series of steps, usually involving computer-generated maps, until only the candidate areas remain for further consideration.) Under a similar program in Illinois, a state panel issued draft siting criteria for public review. Four states, Connecticut, Michigan, New Jersey, and Pennsylvania, continued planning or implementing programs to solicit volunteer communities through collaborative methods involving incentives and shared decision making. One state, New York, declined further funding of its siting agency, effectively suspending activities by the public sector to establish a new disposal facility in that state.

In the future, the year 1995 might be reflected upon as a period of transition in the disposal of low-level radioactive waste, with the re-emergence of initiatives outside the traditional compact system to address the need for stable, long-term access to disposal capacity for commercially-generated low-level radioactive waste. It would be premature to conclude whether or not these initiatives will have a significant, lasting impact.

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INTRODUCTION

Section 7(b) of the Low-Level Radioactive Waste Policy Act, 1980 (Public Law 96-573), as amended by the Low-Level Radioactive Waste Policy Amendments Act of 1985 (Public Law 99-240), (Act) requires the Department of Energy to:

“...prepare and submit to Congress on an annual basis a report which (1) summarizes the progress of low-level waste disposal siting and licensing activities within each compact region, (2) reviews the available volume reduction technologies, their applications, effectiveness, and costs on a per unit volume basis, (3) reviews interim storage facility requirements, costs, and usage, (4) summarizes transportation requirements for such wastes on an inter- and intra-regional basis, (5) summarizes the data on the total amount of low-level waste shipped for disposal on a yearly basis, the proportion of such wastes subjected to volume reduction, the average volume reduction attained, and the proportion of wastes stored on an interim basis, and (6) projects the interim storage and final disposal volume requirements anticipated for the following year, on a regional basis.”

This is the tenth annual report prepared in response to the Act. As with previous reports in this series, the focus of the report is on state and compact progress in meeting the objectives of the Act, and on contemporary issues that may affect progress. The final section of this report addresses the other topics specified in the Act. Previous annual reports in this series, including the 1994 report (DOE/LLW-0277, April 1995), have included several appendices with sources of additional information. To conserve resources, these appendices are not repeated in this year's report.

LOW-LEVEL RADIOACTIVE WASTE POLICY THROUGH 1995

United States policy on the disposal of commercially-generated low-level radioactive waste has evolved through several distinct periods. In the 1950's, the Atomic Energy Commission (AEC), predecessor agency to the Department of Energy, disposed of radioactive wastes generated by the few organizations outside the agency that were licensed to possess nuclear materials.

During the late 1950's, the AEC licensed several firms to provide ocean disposal of certain low-level radioactive wastes. In 1960, at the urging of companies in the private sector, the AEC announced that it would license land disposal facilities, and would phase out the use of AEC facilities for disposal of commercially-generated low-level radioactive waste. The AEC expected the facilities to be developed in various regions in response to market demand. Under the new policy, such facilities were required to be located on government-owned land, either state or Federal.

About the same time, states began to assume authority for licensing and regulating the possession of certain radioactive materials, including low-level radioactive waste, as part of the "agreement state" program under a 1959 amendment to the Atomic Energy Act of 1954 (Section 274). These actions launched the era of private sector responsibility for the disposal of low-level radioactive waste. In the 1960's and 1970's, six commercially-operated disposal facilities were licensed to operate. Following are the original low-level radioactive waste disposal facilities and their operating dates:

Beatty, Nevada (1962-1992)
West Valley, New York (1963-1975)
Maxey Flats, Kentucky (1963-1977)
Richland, Washington (1965--)
Sheffield, Illinois (1968-1978)
Barnwell, South Carolina (1971--)

The performance of the land disposal sites has ranged from good to poor. Each site used a relatively simple approach called "shallow land burial," in which waste is placed into excavated trenches. The objective of shallow land burial is to isolate radionuclides in the waste from surface water and slow-moving groundwater long enough to allow the waste to undergo radioactive decay to levels approaching that of the earth's natural background. Three of the sites, however, closed prematurely for failure to perform up to

expectations. Reasons cited for the failures include:

- operational practices that allowed the infiltration of water into the trenches;
- unstable waste forms that collapsed, causing surface depressions that attracted surface water;
- geological conditions that prevented escape of water that infiltrated into the trenches, causing them to fill up quickly and overflow onto the surface;
- poor initial site locations where underground strata of sandy material could provide conduits for migration of radionuclides away from the trenches over longer periods of time.

The failure of three of the six disposal sites led in 1982 to the issuance by the Nuclear Regulatory Commission of comprehensive new regulations designed to address each of the siting, operations, closure, and waste form issues, as well as institutional issues related to long-term financial assurance and public confidence. By this time, however, it became apparent that the private sector would not be able to develop new disposal sites to replace those that had closed. While the experiences with shallow land burial had dealt a setback to disposal site developers, the public by this time had also become more skeptical about the safety of nuclear technologies generally. In 1982, an unsuccessful attempt by a company to site a new disposal facility in South Dakota signaled the end of an era in which private sector initiatives seemed adequate to meet the demand for disposal capacity.

Concerned that the remaining three disposal sites might be required indefinitely to meet the national demand for disposal capacity, political leaders in Nevada, South Carolina, and the State of Washington began to demand a return to the regional approach to low-level radioactive waste disposal. They were also concerned about a possible increase in waste volumes as new nuclear power reactors came on line during the decade. They urged leaders in other states to become more active in the development of new disposal sites and pressed the Nuclear Regulatory Commission to help through its licensing and regulatory role.

When these efforts had little effect, the governors of Nevada, South Carolina, and Washington, individually and collectively through organizations such as the National Governors Association, proposed Federal legislation that would allow states to enter into compact regions for disposal of low-level radioactive

waste. Once approved by Congress, the regional compacts would be granted authority to limit the acceptance of low-level radioactive waste to that generated within the compact region. The Low-Level Radioactive Waste Policy Act, enacted late in 1980, was essentially a Congressional policy statement inviting the states to form such compacts. These compacts, however, could not exclude out-of-region waste prior to 1986, and thereafter could exclude such waste only if they had been approved by Congress in subsequent Federal legislation. This law initiated the era of “state responsibility” for the disposal of low-level radioactive waste. (The current configuration of regional compacts is shown in [Figure 1](#).)

Although seven compacts were introduced into Congress for approval between 1983 and 1985, Congress did not immediately approve them. So much time had elapsed that it appeared unlikely that new disposal sites could be established by 1986, after which access to the operating facilities could be denied to the non-sited states and regions. This would leave many generators without access to disposal capacity and without the means to temporarily store their low-level radioactive waste. After a series of negotiations involving the states and compact regions, the three compact regions with disposal sites agreed to extend access to the operating facilities through 1992, in exchange for what they believed were stringent milestones. They believed the milestones would lead to the establishment of new disposal sites by 1993, or, at the latest, 1996. Section 5(d)(2) of the Act, which was added pursuant to the Low-Level Radioactive Waste Policy Amendments Act of 1985, required that any state unable to provide for disposal after 1995 “take title” to the waste (or assume liability for all damages incurred by a generator as a consequence of the failure of the state to take title).

Since enactment of the Federal law, states have made substantial efforts to establish new disposal sites. From 1982 through 1987, nine compact regions were formed, host states chosen, enabling legislation enacted, and site development programs begun. To date, however, no new disposal facilities have been built. In some states over the years, site development programs have been suspended (Michigan, New York). In some, site selection processes were halted, and then resumed or started over using new criteria or procedures (Connecticut, Illinois, Pennsylvania, Texas). And in some states, while the programs have maintained continuity, the pace of site development has been far slower than originally planned (Nebraska, New Jersey, North Carolina). Only one license has been issued (California) to construct and operate a new disposal facility, while three other license applications are under review (Nebraska, North Carolina, Texas). Although no new disposal sites are operating, the states, in fact, succeeded in meeting most of the Federally-imposed milestones, leading the Department of Energy to observe in its 1989 report that, technical fulfillment of the

milestones may not be a good indication of the progress of a state or compact in meeting the goal of providing disposal capacity. (1989 Annual Report to Congress on Low-Level Radioactive Waste Management Progress, DOE/EM-0006P, October 1990, p.123.)

In 1992, the U.S. Supreme Court upheld the surcharge rebate mechanism and the site development incentives in the Act, but struck down the take title provision, relieving states without disposal sites from the final penalty of assuming title to low-level radioactive waste. In its opinion, the Court stated that:

“The affected States are not compelled by Congress to regulate, because any burden caused by a State's refusal to regulate will fall on those who generate waste and find no outlet for its disposal, rather than on the State as a sovereign. A State whose citizens do not wish it to attain the Act's milestones may devote its attention and its resources to issues its citizens deem more worthy; the choice remains at all time with the residents of the State, not with the Congress. The State need not expend any funds, or participate in any federal program, if local residents do not view such expenditures or participation as worthwhile.” New York v. United States, 505 U.S. 144, 172-173 (1992)

Notwithstanding the Court's opinion, a number of state governments continue actively to pursue the development of new disposal facilities in accordance with the terms of their interstate compact agreements. At the same time, new initiatives by the private sector during 1995 signaled the beginning of a more hybrid system in which corporate efforts to meet market demands for waste management services co-exist with the public sector processes of the states and compacts.

The reopening of the Barnwell, South Carolina, disposal facility to waste generators nationally, and the announcement by a disposal facility in Clive, Utah, that it would increase its acceptance of some types of Class A low-level radioactive waste has caused decisionmakers and project sponsors in some states to question whether new disposal sites are needed at all.

On the other hand, the on-again, off-again nature of access to Barnwell over the past several years suggests to many that it is not a viable long-term solution. Some also balk at paying the disposal fees and new state taxes levied at the site. Likewise, limitations on the kinds of waste the Utah facility can accept have left most to conclude that such a solution is not a substitute for the establishment of new disposal capacity for

the entire range of low-level radioactive wastes generated in each state or region. Some utilities may see long-term storage of waste, along with the possibility of its ultimate entombment in the reactor building, as an alternative that is preferable to protracted uncertainty over access to disposal capacity. Coupled with these developments, the publication of efforts by private companies to export low-level radioactive waste to disposal sites outside the United States has given pause to waste generators who are asked to pay for the expensive site development programs.

In the future, the year 1995 might be reflected upon as a period of transition in the disposal of low-level radioactive waste, with the re-emergence of initiatives outside the traditional compact system to address the need for stable, long-term access to disposal capacity for commercially-generated low-level radioactive waste. It would be premature to conclude whether or not these initiatives will have a significant, lasting impact.

SIGNIFICANT NATIONAL ACTIVITIES IN 1995

Reopening of the South Carolina disposal site

On June 29, 1995, the Governor of South Carolina signed legislation that re-opened the Barnwell County disposal facility to low-level radioactive waste across the Nation (except from North Carolina, the host of the proposed regional site). As explained by its proponents, the purpose of the legislation was twofold: to avoid on-site storage of waste within South Carolina once the site had closed as scheduled at the end of 1995, and to raise additional state revenues through an increase in the disposal tax.

The decision to extend the operating life of the Barnwell facility, and to accept out-of-region waste, was vigorously debated in the General Assembly, as it has been each previous legislative session. In 1983, the South Carolina legislature amended the compact language to provide that “in no event” shall the Barnwell facility serve as the regional disposal facility after December 31, 1992. Each of the party states, in turn, adopted the compact amendment. Separate South Carolina legislation enacted in 1986 required the site to close altogether after 1992. In 1992, as it became apparent that the North Carolina disposal site would not be operating by 1993, South Carolina amended its version of the Southeast Compact language to allow the site to serve as the regional disposal site through December 1995. This law also allowed waste generators outside the Southeast to use the facility for an additional 18 months, through June 1994.

The question facing other states and regions is whether the renewed access to the Barnwell disposal site effectively resolves the low-level waste problem, thus obviating the need for new disposal sites. While the South Carolina legislation sets no ending date for operation of the site, the status of the disposal site has become an ongoing issue in the General Assembly. As this report was being prepared, litigation has commenced challenging the legislation under South Carolina Constitutional provisions outlawing riders not germane to the subject of a bill, in this case the annual appropriations bill. The issue of stability aside, the substantial fees charged for disposal of waste at Barnwell (both the operator's fee and the state tax) have led some generators to look at other options, such as storing waste on site until a more economical option becomes available.

Southeast Compact loses South Carolina

In 1995, South Carolina withdrew from the Southeast Compact, under a provision that was part of

the same law that reopened the Barnwell disposal facility to low-level radioactive waste nationally (see previous section). In promoting the state's withdrawal from the Compact, the Governor expressed impatience with North Carolina's lack of progress in developing a new regional disposal facility.

Within the Southeast Compact region, South Carolina's withdrawal compounded an already difficult situation. The North Carolina Division of Radiation Protection indicated that it was not ready to render a decision on the license application for a proposed site in Wake County until the license applicant conducted additional work and analysis on the site. The license application for the site was submitted in December 1993. An independent consultant's report for the North Carolina Low-Level Radioactive Waste Authority confirmed that additional work was needed. A report on the results of the additional studies is scheduled for January 1996. The Radiation Protection Division has stated that, even with the additional information, there may not be a sufficient basis to decide in favor of issuing a license. The director of the division, in a letter dated November 9, 1995, indicated that the division "must be, and has been, careful not to indicate that any approach or result necessarily will satisfy licensing requirements."

Faced with the possibility that the Radiation Protection Division may not issue a license for the proposed facility, the Southeast Compact Commission must decide in 1996 whether to continue providing funding for the site. Prior to South Carolina's withdrawal from the compact, much of the funding for the project was derived from a direct assessment on regional waste generators, based on the amount of waste they disposed at the Barnwell facility. Because these waste generators currently have access to the South Carolina disposal site, the decision to continue funding the North Carolina project is more problematic.

The withdrawal of South Carolina from the Southeast Compact is perhaps the most important change in the configuration of compact regions since the inception of the waste compacts. As one of three states with an operating disposal site, South Carolina had been active throughout the 1980's in promoting the compacting process, and opposing efforts to disrupt the current course. The Southeast Compact, because of South Carolina's presence and because of its large size, had been considered a model for the "national system."

In September 1995, a group of public interest organizations challenged the South Carolina law on state constitutional grounds. The lawsuit challenges both the provision extending operation of the Barnwell facility past 1995, and the provision withdrawing the state from the Southeast Compact. The case is scheduled to be decided by the state Supreme Court in early 1996. Regardless of the outcome, the fate of the

Barnwell site and South Carolina's membership in the Southeast Compact is expected to continue to be a perennial legislative topic.

Utah facility expands plans to accept low-level radioactive waste

During 1995, there was considerable interest and some confusion over another potential solution to the low-level waste problem. The "Envirocare" facility, a Utah site initially licensed for disposal of naturally occurring radioactive materials, announced plans to expand its acceptance of some kinds of low-level radioactive waste from waste generators outside the Northwest compact region.

In order to accept such waste, Envirocare sought and received an exception to an earlier Northwest Compact Committee policy. The earlier policy limited importation of low-level waste into the region for purposes of disposal beginning in 1993. To address Envirocare's plans, the exception to the policy exempted from this ban any low-level radioactive waste resulting from "large volume, very low concentration low-level radioactive waste from cleanup operations." The exception was intended to provide a disposal option for low-level radioactive waste that the Committee considered "orphan" wastes not addressed during formation of the Federal laws.

In April 1995, the Compact Committee again amended its policy. The new resolution grants authority for the Envirocare facility to accept:

"Large volume, soil or soil like materials or debris slightly contaminated with low-level radioactive waste (as defined in P.L. 99-240 and as allowed under the radioactive materials license of Envirocare of Utah, Inc.) as determined by the State of Utah is allowed access to the licensed Envirocare of Utah, Inc., facility in the Northwest Interstate Compact region."

While the Committee's revised policy was intended to retain the objective of the original policy (to limit low-level radioactive waste accepted at Envirocare to waste not addressed during formation of the Federal laws), it raised the potential for Envirocare to accept a wide range of waste types. Although the term "debris" is often associated with cleanup activities, the term is defined more broadly in Envirocare's operating license as "any radioactive waste for disposal other than soils." Because of this, there are no formal limitations on out-of-region waste other than those imposed in the operating license.

Trade press stories during the year pronounced that the new Committee policy might clear the way for Envirocare's acceptance of a large percentage of the Nation's low-level radioactive waste. According to an August 21, 1995, letter from Envirocare to the Nuclear Energy Institute, waste acceptable at the facility includes "most Class A low-level radioactive soil, dry active waste (DAW), dry sludges, many types of resins, and debris such as metal, wood, and large objects." A letter issued on the following day indicates that radionuclide concentration limits in the facility license are determined when the waste "is actually placed in the cell," allowing for the averaging of concentration values among waste from various containers or shipments, a practice that might allow for blending of higher activity waste that would not initially meet the license restrictions "as generated" or "as shipped."

At year's end, the potential impact of the Committee's policy on acceptance of waste by Envirocare was still a topic of discussion. Concerned about the potential impacts of Envirocare's expanded acceptance of low-level radioactive waste on programs in other states to develop new disposal facilities, the Northwest Compact Committee has indicated that it will continue to monitor implementation of the new policy and revise it if necessary.

Private sector companies propose to export low-level radioactive waste

During the year, several efforts were publicized to export low-level radioactive waste generated in the United States to disposal facilities in other nations. Revised Nuclear Regulatory Commission regulations, issued in July 1995, require that requests for approval to export radioactive waste address several criteria, including: "The receiving country, after being advised of the information required by (these regulations), finds that it has the administrative and technical capacity and regulatory structure to manage and dispose of the waste and consents to the receipt of radioactive waste..." [10 CFR 110.42(d)(2)]. In addition, the Department of State, under the 1990 International Atomic Energy Agency Code of Practice in International Transboundary Movement of Radioactive Waste, must consult with the country receiving the waste.

On August 22, 1995, Master International Systems USA Corporation submitted an application to the Nuclear Regulatory Commission to export certain kinds of Class A low-level radioactive waste to the Russian Republic of Dagestan. The waste would consist primarily of incinerator ash and building materials such as cement, stone, brick, and metals. As described in the application, Scientific Ecology Group (SEG) of Oak Ridge, Tennessee, would collect and package up to 9,750,000 cubic feet of waste for shipment. The waste

would be transported to Bangor, Maine, where it would be loaded onto Aeroflot cargo planes and flown to Dagestan. Once there, the Moscow-based Cosmos Company would take possession of the waste and transport it to a bunker in the Caucus Mountains originally built to house former Soviet officials in the event of nuclear war. In October, Master International Systems contacted the Nuclear Regulatory Commission and asked that review of the application be temporarily suspended. The company provided no reasons for the request, and the Nuclear Regulatory Commission has taken no further action on the application.

California continues push toward disposal

As it has for several years, national attention during 1995 remained focused on progress in California. In 1993, the state became the first since 1970 to issue an operating license for a new low-level radioactive waste disposal facility. The site is located in the southern California desert in Ward Valley. Three issues related to development of the Ward Valley site were addressed during 1995: transfer of the land from the Federal Bureau of Land Management (BLM) to the State of California; litigation over the operating license; and interagency consultation over the desert tortoise, an endangered species.

Land transfer. In general, construction of a new disposal facility would begin immediately after issuance of the operating license. In California, however, construction has not begun due to delays in transferring the land on which the Ward Valley site is located to the state of California from the BLM under the Department of the Interior. The land transfer has been delayed pending resolution of several issues.

A month after the license was issued, a report by three US Geological Survey (USGS) geologists (the Wilshire report) concluded that the site posed “significant potential for radioactive contamination of the groundwater and eventual contamination of the Colorado River.” Before the Interior Department would agree to transfer the land, a special 17-member committee of the National Academy of Sciences (NAS) was convened to evaluate the issues raised in the Wilshire Report. On May 11, 1995, the NAS committee issued a report and held a news conference essentially rebutting the assertions contained in the Wilshire Report.

On May 31, the Secretary of the Interior issued a statement indicating that he would transfer the land if California would agree to certain binding commitments. These were: (1) The state would adopt recommendations in the NAS report pertaining to monitoring; (2) it could not amend the license condition

specifying a volume and radioactivity limit on waste accepted at the site; and (3) there would be a specific limit on plutonium accepted at the site.

Following review of the Secretary's offer, the Governor of California declined, citing the state's right to regulate the site in accordance with rules and procedures established under the Agreement State amendments to the Atomic Energy Act of 1954. In a letter to the Chairman of the House Committee on Energy and Natural Resources, the Governor stated, "Because the State cannot agree to such an intrusion by an agency that lacks the authority and regulatory expertise, the representatives of Interior have made clear that further negotiations for the transfer of the land are unlikely to produce a successful conclusion." At year s end, negotiations between the Interior Department and California remained at an impasse, and California was pursuing site transfer through the Federal legislative process.

Litigation over operating license. In October 1995, a California appellate court overturned a lower court ruling that would have required reexamination of the decision to issue an operating license for the Ward Valley site. The lawsuit, which was filed in 1993 by several organizations opposed to the site, requested that the licensing decision be reopened in light of new negative findings in the Wilshire report (see above). In overturning the decision, the appellate court directed the lower court to reinstate the license. The appellate court decision has been appealed to the California Supreme Court.

Desert tortoise. On August 31, 1995, the U.S. Fish and Wildlife Service issued a biological opinion that the Federal action to approve transfer of land for use as a low-level radioactive waste disposal site is "not likely to jeopardize the continued existence of the desert tortoise or result in destruction or adverse modification of critical habitat." The Environmental Protection Agency had requested the opinion preliminary to its granting an approval to construct under the National Emissions Standards for Hazardous Air Pollutants (NESHAPS).

KEY EVENTS IN OTHER STATES AND REGIONS

In addition to North Carolina and California, which were addressed in the previous section, several other states are also planning to establish new disposal facilities, or are actively evaluating whether to develop such facilities. Key activities in these states are summarized below. In addition to these states, Maine and Vermont have enacted state legislation to join the state of Texas in a new compact (see page 19).

Several states and compact regions initiated or continued legal action during 1995 related to the eligibility for or distribution of surcharge rebate funds from the Surcharge Escrow Account administered by the Department of Energy. These activities will be summarized in the report, "Summary of Expenditures of Rebates from the Low-Level Radioactive Waste Surcharge Escrow Account for Calendar Year 1995," which is prepared pursuant to Section 5(d)(2)(E)(ii)(II) of the Act.

Connecticut pursues volunteer process

Connecticut and New Jersey constitute the Northeast Compact. In late 1987, the Compact Commission decided that both states should establish disposal facilities.

The Connecticut Hazardous Waste Management Service (CHWMS) executed a top-down screening process leading to selection of three candidate sites in June 1991. Following strenuous local objections, the state enacted legislation in May 1992 eliminating the three chosen sites and directing CHWMS to develop new siting criteria. The law did not specify a site selection method. Since then, CHWMS has prepared a new plan that features a voluntary approach to site selection. This plan was submitted to the Connecticut legislature in February 1993. Since the legislature did not exercise its option to disapprove the plan within 90 days, the plan has gone into effect.

Three communities thus far have expressed interest in learning more about the volunteer site identification process. Two of the towns are located near currently operating nuclear powerplants. A third is located in the northeastern portion of the state.

Illinois panel issues new site selection criteria

Illinois and Kentucky constitute the Central Midwest Compact. Because it generates more low-level radioactive waste, Illinois is the compact region's first host state for a disposal facility.

Following rejection of a proposed disposal site location in Martinsville by a legislatively created panel, Illinois enacted legislation in 1993 establishing a revised process for selecting a site. The Illinois Low-Level Radioactive Waste Task Group was appointed by the Governor in late 1993 to develop site-selection criteria. Using the criteria, the State Geological Survey and the State Water Survey will conduct a top-down screening of the state to identify “at least 10 locations, each of at least 640 acres, that appear likely to meet the criteria.” A contractor working for the Department of Nuclear Safety will select three sites from the suite of at least 10, and the Task Group will determine whether the three meet the site selection criteria. From three approved sites, the contractor will then select one for detailed characterization.

In August 1995, following a series of public hearings and informational meetings, the Task Group issued proposed site selection criteria for public comment. The final selection criteria are expected to be adopted in early 1996.

Massachusetts initiates statewide screening process

Massachusetts is unaffiliated with a compact. The state enacted legislation in 1987 to establish a disposal facility for the state's waste, “if necessary.”

In early 1994, Massachusetts began a three-year siting process. In 1995, the state hired a contractor to plan and conduct a statewide mapping and screening program to exclude areas unsuitable for the disposal facility. The exclusionary screening will be the first stage of a three-stage program. The Board plans to suspend the second and third stages of technical screening (called Possible Locations and Candidate Site Identification) in order to give landowners some time to volunteer sites and provide for local review and approval in a municipal referendum.

Michigan revises site selection plans

The Midwest Compact Commission revoked Michigan's membership in 1991, for failure to

discharge its host state responsibilities. The state is evaluating plans to develop its own disposal facility.

Since losing its compact affiliation in 1991, Michigan has been evaluating its options. In late 1994, Michigan enacted legislation requiring the establishment of a Board of Governors to advise the legislature and assist the Authority in the development of a volunteer site selection plan. In September 1995, the Board issued a report to the state legislature on the “management options and a voluntary host process for low-level radioactive waste management in Michigan.” The report reviews Michigan’s earlier attempt to site a low-level radioactive waste disposal facility through top-down screening methods and concludes that a voluntary approach emphasizing cooperation between the state and communities would stand a better chance of succeeding. The report proposes a multi-phase process for identifying suitable sites in supportive communities.

Late in 1995, draft legislation was circulated to establish a new low-level radioactive waste authority to site, develop and operate a disposal facility. The draft legislation would direct the authority to implement a voluntary site selection program.

Nebraska license application review enters fifth year

Nebraska is host state for the Central States Compact. Other member states are Kansas, Oklahoma, Arkansas and Louisiana.

In July 1990, US Ecology, site operator-designee for the Central States Compact, submitted a license application to develop and operate a regional disposal facility in Boyd County, Nebraska. In August 1993, the company submitted an amended application that reduces the size of the site from 320 acres to 110 acres in order to exclude wetlands that were located within the original site boundaries. The possible presence of wetlands on the reconfigured site remains a topic of discussion between US Ecology and the U.S. Army Corps of Engineers.

During 1995, the Nebraska Department of Environmental Quality and the Department of Health continued to prepare the environmental assessment and safety analysis report for the proposed site to provide technical support for a decision on whether to grant the operating license. In October 1995, a federal district court dismissed a lawsuit filed by the State of Nebraska to allow enforcement of amendments to the compact

that had been enacted by the member states. The amendments would, among other things, add additional members to the Compact Commission from the host community. The lawsuit challenged a Kansas legislative proviso delaying the effective date of the amendments until a license has been issued for the disposal facility.

New Jersey launches volunteer siting process

New Jersey and Connecticut constitute the Northeast Compact. The Compact Commission decided that both states should establish disposal facilities.

The New Jersey Low-Level Radioactive Waste Disposal Facility Siting Board began its site selection process about six months after Connecticut's began. Following the opposition that was generated in response to Connecticut's top-down screening process, New Jersey decided to conduct a voluntary approach. Following a public comment period, the Board formally adopted its site selection process in February 1995. Within the first three months, the Board received preliminary inquiries from civic leaders, local officials, and/or landowners in 12 municipalities. Three municipalities expressed interest in the project publicly, but two later decided not to pursue it. One town is considering establishing a citizens advisory committee to explore the process further.

New York discontinues funding for siting effort

New York is not affiliated with a compact region. The state has enacted legislation to establish a disposal facility for low-level radioactive waste generated within the state.

Following strong local protest over the selection of candidate disposal site locations, the Governor in 1989 suspended site evaluation activities. During the 1995 legislative session, the state legislature declined to approve funding for the New York Low-Level Radioactive Waste Siting Commission. Without funding, their responsibilities have been assumed by the State Energy Research and Development Authority. The Authority does not have plans to resume site selection activities.

Ohio enacts legislation to develop disposal site

In 1991, Ohio became the host state for the Midwest Compact after Michigan's compact membership was revoked for failure to discharge its host state obligations. Other members of the Midwest

Compact are Minnesota, Missouri, Wisconsin, Iowa, and Indiana.

During 1995, Ohio joined the ranks of states planning to develop new disposal facilities for low-level radioactive waste. On June 9, 1995, the state enacted legislation authorizing a program to develop the new disposal site.

Following a model established by the majority of other states developing new disposal sites, the Ohio legislation establishes a new, quasi-state agency, the Ohio Low-Level Radioactive Waste Facility Development Board, to site, develop and operate the disposal facility. The agency is governed by a nine-member board of directors who serve for fixed terms. The law establishes a relatively complex process for approval of a proposed facility. Following approval of the license application by the state regulatory agency, the decision would be reviewed by a three-member License Review Board, followed by another review by an adjudicatory-style panel. The law requires that a contractor hired by the Board conduct a statewide screening process to identify candidate sites for the facility.

Pennsylvania shifts to volunteer site selection plan

Pennsylvania is host state for the Appalachian Compact. Other member states are Delaware, Maryland and West Virginia.

Disposal site operator-designee Chem-Nuclear began a top-down screening process in 1991 to identify three potentially suitable sites to submit to the state's Environmental Quality Board (EQB) for approval. The first phase, completed the same year, eliminated about 23 percent of the state from further consideration. After phase two, completed in February 1993, 46 percent of the state was disqualified. After phase three, 75 percent of the state was disqualified. All 67 counties, however, still contained some eligible land.

Prior to commencing the final phases, Pennsylvania decided to discontinue the top-down screening approach in favor of a "community partnering plan," a volunteer solicitation program emphasizing shared decisionmaking and siting incentives. A draft version of the plan was distributed for public comment in November 1995. Under the plan, the state would still fully characterize three candidate sites.

In May 1995, the Legislative Budget and Finance Committee released its “Status Report on Siting a Regional Low-Level Radioactive Waste Disposal Facility in Pennsylvania.” The report concluded that despite the delays and cost increases, the site operator-designee had complied with the contract requirements. The Committee noted that numerous circumstances unforeseen at the time of contract initiation had significantly affected project costs and schedule. The Committee observed that schedule delays, increasing costs, and controversy in Pennsylvania were similar to experiences in other states siting new disposal facilities for low-level radioactive waste.

Texas. license application review remains on track

A proposed low-level radioactive waste compact among Texas, Maine, and Vermont has been introduced into the U.S. Congress for approval. Texas initiated a program to establish a new disposal facility in 1982.

Following legal and political opposition to the selection of candidate sites through top-down screening methods, the Texas legislature, in 1991, passed legislation directing the Texas Low-Level Radioactive Waste Disposal Authority to select and characterize a site in a 400 square mile area in eastern Hudspeth County.

The Authority purchased a potential site (known as the Eagle Flat site or the Faskin ranch) near the town of Sierra Blanca. Site characterization was completed, and a license application was submitted in March 1992. During 1995, the license application was under review by the Texas Natural Resources Conservation Commission. In response to interrogatories by the Commission, the Authority has submitted twelve revisions to its license application. The Authority expects the Commission to make a decision on the license application in time to begin administrative hearings in early 1996. In the meantime, design work is being completed on an interchange at the interstate highway for improved site access. Construction of the facility could begin in 1997.

In early 1995, legislation was introduced in the U.S. Congress (H.R. 558 and S. 419) to grant the consent of Congress to the Texas Low-Level Radioactive Waste Disposal Compact, consisting of Texas, Maine, and Vermont. In September, the House of Representatives voted against expedited consideration of the bill. In December, the House passed a resolution (H.R. 313) outlining a streamlined process for considering the bill during the 1996 session. The Senate has placed S. 419 on its Legislative Calendar for

future consideration.

OTHER ANNUAL REPORT TOPICS

In addition to summarizing the progress of siting and licensing activities within the states, the Act requires the Department of Energy to report annually on several other specific topics.

Volume reduction technologies

Virtually all low-level radioactive waste today is treated or stabilized in some manner prior to final shipment for disposal. In addition to improving the waste form, waste treatment often accomplishes significant reductions in the volume of waste requiring disposal. Treatment may take place at large, centralized commercial facilities, or at the place of generation using smaller scale treatment facilities or mobile units.

In 1995, the Nation's largest commercial low-level and mixed waste processing facility, the Scientific Ecology Group (SEG) facility in Oak Ridge, Tennessee, reduced 2,344,909 cubic feet of low-level radioactive waste to 130,273 cubic feet for disposal. Over 560,000 cubic feet of waste was incinerated in a new incinerator that went into service in the second half of 1995. SEG processed low-level radioactive waste from over 90 percent of the nuclear power reactors in the United States. During the year, the company implemented new technologies for treating filters and ion exchange resins, two waste forms that had previously been less amenable to treatment.

In December 1988, the Department of Energy's National Low-Level Radioactive Waste Program published the "Low-Level Radioactive Waste Volume Reduction and Stabilization Technologies Resource Manual" (DOE/LLW-76T) which addresses most of the topics raised in the Amendments Act. During 1996, the National Program plans to revise and update the document. Another document, "Review of Private Sector Treatment, Storage, and Disposal Capacity for Radioactive Waste" (INEL-95/0020, April 14, 1995), provides a summary of private sector companies that provide low-level radioactive waste treatment and related services.

Transportation requirements

On September 28, 1995, the Department of Transportation, in cooperation with the Nuclear Regulatory Commission, published a final rule in the Federal Register (“Hazardous Materials, Transportation Regulations; Compatibility with Regulations of the International Atomic Energy Administration,” 60 FR 50292) on offsite transportation of radioactive materials, which includes low-level radioactive waste. The purpose of the rule is to bring United States radioactive material transportation requirements in line with International Atomic Energy Agency standards. Most provisions of the new rule will become effective April 1, 1996; a period of voluntary compliance began November 1, 1995.

Among other changes, the new rule revises the requirements for shipping “low specific activity” (LSA) material, which is radioactive material that does not exceed specific concentrations. A large portion of low-level radioactive waste meets the requirements to be shipped as LSA material. The new rule divides LSA material into three categories requiring levels of industrial packaging rated from 1 to 3, with 3 being the most secure. Because the new rule lowers the radionuclide concentration levels subject to LSA packaging, the rule could require such packaging for a substantial volume of contaminated soils and uranium mill tailings that previously could be shipped as unpackaged bulk materials. The new regulations will also require the use of the international system of units for the measurement of radioactivity, effective April 1, 1997. According to industry officials, the new rule should have little effect on domestic transportation of low-level radioactive waste.

Interim storage requirements

Section 5(b) of the Act, which was added by the Low-Level Radioactive Waste Policy Amendments Act of 1985, allowed the three states with operating disposal sites to limit the volume of waste accepted at those sites between 1986 and 1992, referred to as the “interim access period.” It also limited the volume of waste each nuclear power reactor could ship for disposal during that period. Because of these limits, it was believed that many waste generators might be forced to store significant amounts of waste until new regional disposal facilities were established.

Although no new low-level radioactive waste disposal facilities have been built, the reopening of the South Carolina disposal facility (see page 7), and availability of the Utah facility (see page 9) for some kinds

of low-level radioactive waste have alleviated the need for waste generators to provide on-site storage. While some waste generators, for a variety of reasons, choose to store their waste rather than ship it for disposal, the amounts are not considered to be significant. Where waste is stored on site, it is done in accordance with license conditions imposed by the Nuclear Regulatory Commission or state agencies. The Department of Energy does not have access to information on waste currently stored on site.

Interim storage and disposal requirements for the forthcoming year

Because generators of commercial low-level radioactive waste are regulated by the Nuclear Regulatory Commission and various state agencies, the Department of Energy has no basis for projecting disposal requirements for the upcoming year. With the significant amount of volume reduction that has taken place over the past decade, there do not appear to be operational limitations on the amount of waste that can be disposed at the Nation's two disposal sites. In 1995, the two sites together received 689,957 cubic feet of waste for disposal. In 1985, the same two disposal sites received over 2,600,000 cubic feet of waste.

Likewise, the Department has no basis to project interim storage needs for the coming year. Because disposal facilities are, in fact, available to waste generators in all states except North Carolina (see page 8), the lack of availability of disposal capacity no longer provides an underlying reason for temporary storage of waste. In 1994, waste generators in North Carolina shipped 30,707 cubic feet of low-level radioactive waste for disposal. Unless access to disposal capacity is restored, waste generators in that state can be expected to store approximately that amount on site during the coming year.

Waste shipped for disposal

The Department of Energy provides detailed data on the volumes and categories of waste shipped for disposal on an annual basis in a separate report, the "State-by-State Assessment of Low-Level Radioactive Waste Shipped for Disposal." The report for 1994, document number DOE/LLW-224, was issued in September 1995. The annual data report for calendar year 1995 is scheduled to be published in September 1996. Copies of the State-by-State Assessment for 1995 will be provided to Congressional Committees of jurisdiction.