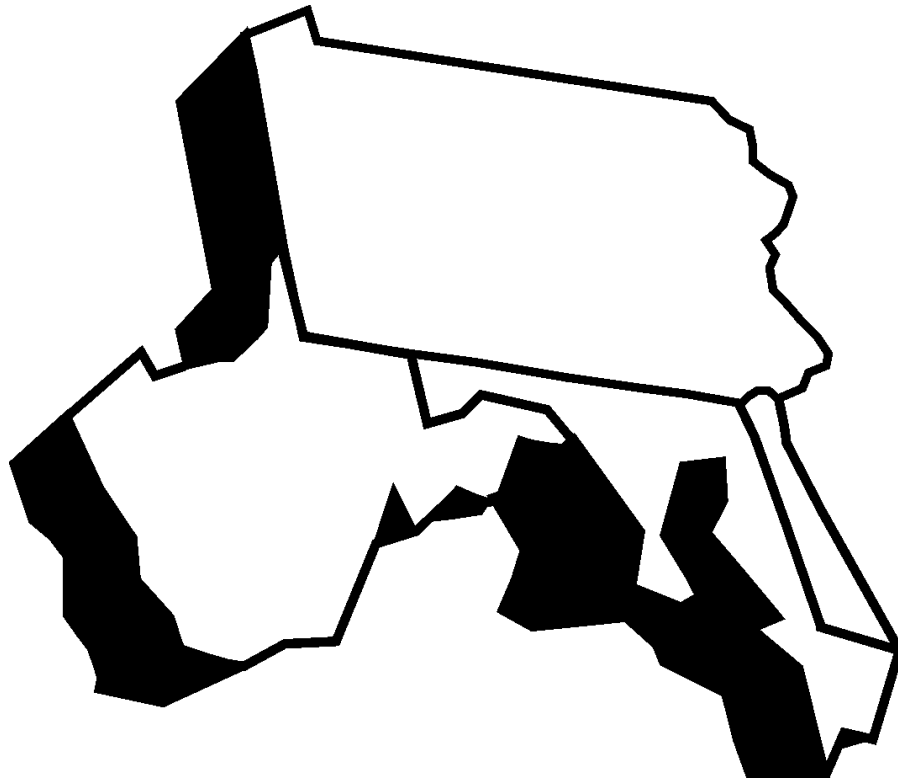


APPALACHIAN STATES LOW-LEVEL RADIOACTIVE WASTE COMMISSION

**2002 - 2003
ANNUAL REPORT**



DELAWARE • MARYLAND • PENNSYLVANIA • WEST VIRGINIA



**Commonwealth of Pennsylvania
Edward G. Rendell, Governor**

**Department of Environmental Protection
Kathleen A. McGinty, Secretary**

**APPALACHIAN STATES
LOW-LEVEL
RADIOACTIVE
WASTE COMMISSION**

**2002 - 2003
ANNUAL REPORT**

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APPALACHIAN STATES LOW-LEVEL RADIOACTIVE WASTE COMMISSION ANNUAL REPORT

Introduction

The General Assembly of the Commonwealth of Pennsylvania created the Appalachian States Low-Level Radioactive Waste Commission (Commission) by enacting the Appalachian States Low-Level Radioactive Waste Compact Act, Pennsylvania Act 1985-120. Under the authority of this act, the states of Delaware, Maryland, West Virginia and the Commonwealth of Pennsylvania formed a compact to provide for the regional management and disposal of low-level radioactive waste (LLRW) in response to federal law, Low-Level Radioactive Waste Policy Act of 1980 and Low-Level Radioactive Waste Policy Amendment Act of 1985. Congress consented to the Appalachian States Low-Level Radioactive Waste Compact in May 1988.

The commission provides for representation of the compact party states in establishing a regional facility to dispose of their LLRW. Its duties and powers are listed in the "Duties and Powers of the Commission" section of this report.

Pennsylvania has been designated as the initial host state for the regional LLRW disposal facility because it generates the largest amount of LLRW in the compact. However, on December 31, 1998, the Pennsylvania Department of Environmental Protection (DEP) suspended the siting process after discussing the issue with the Commission.

This report covers the period of **July 1, 2002** through **June 30, 2003**.

What is Low-Level Radioactive Waste?

LLRW is defined as radioactive waste that is not high-level radioactive waste (HLRW), spent nuclear reactor fuel, wastes from reprocessed reactor fuel, uranium mine and mill tailings, waste containing higher quantities of transuranic elements or radioactive wastes generated in the production of nuclear weapons. LLRW includes naturally occurring or accelerator-produced radioactive material or any other waste classified as low-level radioactive waste by the federal acts. LLRW is trash or other materials that have been contaminated with radioactivity and consists of contaminated protective clothing, paper, metal and glass items, ion exchange resins, filter media, solidified waste, incinerator ash, reactor components, radiation gauges and sealed sources.

In the Appalachian States Compact region, LLRW is produced by nuclear power reactors, hospitals, universities, military and various industrial and research firms.

Pennsylvania will only regulate the disposal of LLRW at the regional facility. The federal government is responsible for the disposal of HLRW, transuranic and greater than Class C wastes. Items such as spent nuclear fuel, some nuclear reactor components, some radiation gauges and sealed sources fall under the federal responsibility.

History of the Commission

Until December 31, 1992, the nation had three commercial low-level radioactive waste disposal facilities. They were located in Barnwell, South Carolina; Beatty, Nevada; and Richland, Washington. Congress passed the Low-Level Radioactive Waste Policy Act (P.L. 96-573) in 1980 to remove the burden from these three states of accepting LLRW from all 50 states. This act required states to manage the disposal of all LLRW generated within their borders, except defense-related waste generated by the Department of Energy. The act authorized states to form compacts to establish and operate regional disposal facilities.

Despite the enactment of the Federal Low-Level Radioactive Waste Policy Act of 1980, by 1985 the states had made little progress towards establishing regional LLRW disposal facilities. Therefore, in January 1986 Congress passed the Low-Level Radioactive Waste Policy Amendments Act of 1985 (P.L. 99-240). The 1985

Policy Amendments Act provided several incentives and sanctions to encourage states to join compacts and develop and operate regional LLRW disposal facilities.

The Pennsylvania General Assembly enacted Act 1985-120 to create the Commission and provide for its powers and duties. It also provided for the rights, responsibilities and obligations of the party states. The respective legislatures and governors of Delaware, Maryland, Pennsylvania and West Virginia approved the Appalachian States Low-Level Radioactive Waste Compact between 1985 and 1987. Congress consented to the compact on May 19, 1988, (P.L. 100-319). The compact designated Pennsylvania as the initial host state for a regional LLRW disposal facility.

Administration of the Commission

The Commission currently consists of ten members: four from Pennsylvania and two each from Delaware, Maryland and West Virginia. The governor of Pennsylvania will appoint an 11th member from the municipality or county where the regional disposal facility is located.

The Commission became operational June 4, 1990. The Commission is required to hold an annual meeting. The chairman, a majority of the Commission members, or two Commission members from the host state can call additional meetings during the year. Since the suspension of the siting process, the Commission has only been holding annual meetings. These meetings are open to the public.

Commission members, alternates and officers as of **June 30, 2003** are as follows:

OFFICERS	Chairman	Vacant
	Vice-Chairman	Vacant
STAFF	Counsel	John W. Carroll, Esquire Tim Anderson, Esquire Pepper Hamilton LLP
STATE	COMMISSION MEMBER	COMMISSION ALTERNATE
DELAWARE	Honorable Gregg C. Sylvester¹, M.D.	Kevin Charles Section Chief, Health Systems Protection Division of Public Health Department of Health and Social Services
	Honorable John A. Hughes Secretary Department of Natural Resources and and Environmental Control	Harry W. Otto, Ph.D. Administrator, Interagency Programs Division of Water Resources Department of Natural Resources and Environmental Control
MARYLAND	Honorable Georges C. Benjamin¹, MD	Arlene H. Stephenson Deputy Secretary Department of Health and Mental Hygiene
	Honorable Kendl P. Philbrick Acting Secretary Department of the Environment	Jonas A. Jacobson Waste Management Administration Department of the Environment
PENNSYLVANIA	Honorable David E. Hess¹	David J. Allard Director Bureau of Radiation Protection Department of Environmental Protection
	Honorable Bradley L. Mallory¹	Michael Ryan¹
	Honorable Samuel A. McCullough¹	Timothy McNulty¹
	Honorable Robert S. Zimmerman¹,	Dr. James N. Logue

Jr.

Director, Div. of Environmental Health Assessment
Department of Health

WEST VIRGINIA

Honorable Randy C. Curtis
Director, Radiation, Toxics and Indoor Air
Division
Bureau of Public Health

Dan Hill
Chief, Radiological Health Program
Office of Environmental Health Services
Department of Health and Human Resources

Honorable Michael O. Callaghan¹

H. Michael Dorsey
Assistant Director
Division of Waste Management
Department of Environmental Protection

NOTE: ¹ Left their previous offices due to change in administrations of those states, but did not officially resign from the Commission. The next annual report (FY 2003-04) will include a list of new commission appointees.

Commission alternates in Maryland and Pennsylvania may serve as an alternate to any member from that party state. Alternates from Delaware and West Virginia may only serve as an alternate for his/her designated member.

Duties and Powers of the Commission

The Appalachian States Low-Level Radioactive Waste Compact Act, Pennsylvania Act 1985-120, empowers the Commission to carry out certain duties, the most significant of which are as follows:

- Conduct research and establish regulations to promote reduction in volume and curie content of LLRW generated within the region.
- Ensure that LLRW generated within the region is safely disposed.
- Designate “host states” to establish LLRW disposal facilities as required by the compact.
- Prepare contingency plans for the management and disposal of LLRW if a regional disposal facility is closed or unavailable.
- Examine all records of operators of regional disposal facilities pertaining to operating costs, profits, charges, fees or surcharges and make recommendations to the host state.
- Provide public information concerning LLRW management and disposal needs, technologies and problems.
- Keep current and annual inventories of all generators by name and quantity of LLRW generated within the region. Inventory information shall include volume, curie content, chemical composition and toxicity of such waste.
- Keep an inventory of all regional facilities and specialized facilities in the nation.
- Enter into temporary agreements with non-party states or other regional boards for the emergency disposal of the regional LLRW.
- Publish an annual report detailing its programs, operations and finances.

Activities of the Commission

In July 2002, the Commission's independent auditor, Greenawalt & Company, P.C., conducted an annual audit of the Commission's financial statements for fiscal year 2001-02. The audit did not identify any instances of non-compliance that are required to be reported under Government Auditing Standards.

In November 2002, the Commission held its annual meeting. The primary purpose of this meeting was to: (1) review the independent auditors' report of the Commission's financial statements for fiscal year 2001-02; (2) consider a revised budget for fiscal year 2002-03 and a proposed budget for fiscal year 2003-2004; (3) review and discuss the national developments related to LLRW management and disposal; (4) review information on LLRW generation within the compact; and (5) elect the Commission's officers.

In March 2003, a representative from the Commission attended the Low-Level Radioactive Waste Forum (LLW Forum) meeting in Austin, Texas. The LLW Forum was established to facilitate state and compact implementation of the Low-Level Radioactive Waste Policy Amendments Act of 1985 and to promote the objectives of LLRW regional compacts. The LLW Forum provides an opportunity for state and compact officials to share information with one another and to exchange views with officials of federal agencies and other interested parties.

Waste Disposed by the Compact Member States

Waste quantities disposed of by the member states of the Appalachian States Compact in calendar year 2002 are shown on Pages 6 and 7. These quantities were obtained from the Department of Energy's Manifest Information Management System (MIMS). The MIMS contains information on LLRW shipments received at the commercial disposal facilities.

Pennsylvania disposed of 55,024.7 cubic feet of LLRW, most of which was generated by utility generators, followed by industrial facilities. Maryland disposed of 6,692.7 cubic feet, most of which was generated by government, utility and industrial facilities. West Virginia and Delaware generated 181 and 366 cubic feet, respectively, mainly from industrial facilities.

Pennsylvania disposed of 6,586 curies of radioactivity, most of which was generated by the utility and industrial facilities. Maryland generated 241 curies, also largely from utility and industrial facilities. West Virginia and Delaware generated only 0.1 and 0.5 curies, respectively.

It is important to note that the other Appalachian States Compact members disposed of less than 25 percent of the LLRW volume or curies disposed by Pennsylvania. The Pennsylvania Act 1985-120, Article 2, states that the Commission is empowered to designate as "host state" any party state which generates 25 percent or more of Pennsylvania's volume or total curie content of the LLRW generated based on a comparison of averages over three successive years, as determined by the Commission. This determination shall be based on volume or total curie content, whichever is greater. Based on the volume or curie content, the Commission has declared that Pennsylvania has thus far been the only designated host state.

Appalachian States Compact LLRW Disposal Trends

The LLRW disposal trends for the Appalachian States Compact are shown on Pages 8 and 9.

The data shows that, overall, there has been a significant reduction in the volumes of LLRW generated in the Appalachian States Compact since 1986, due to waste minimization practices by LLRW generators. The large increase in the volumes of LLRW in 1991 was due to decommissioning waste from an industrial facility in Pennsylvania. The significant increase in the LLRW volume in 2000 and 2001 was also mainly from decommissioning waste. In 2002, waste shipped by industrial generators decreased significantly, resulting in much lower disposed volume. At present, the majority of decommissioning waste from the Appalachian Compact is being disposed of at the Envirocare facility in Clive, Utah.

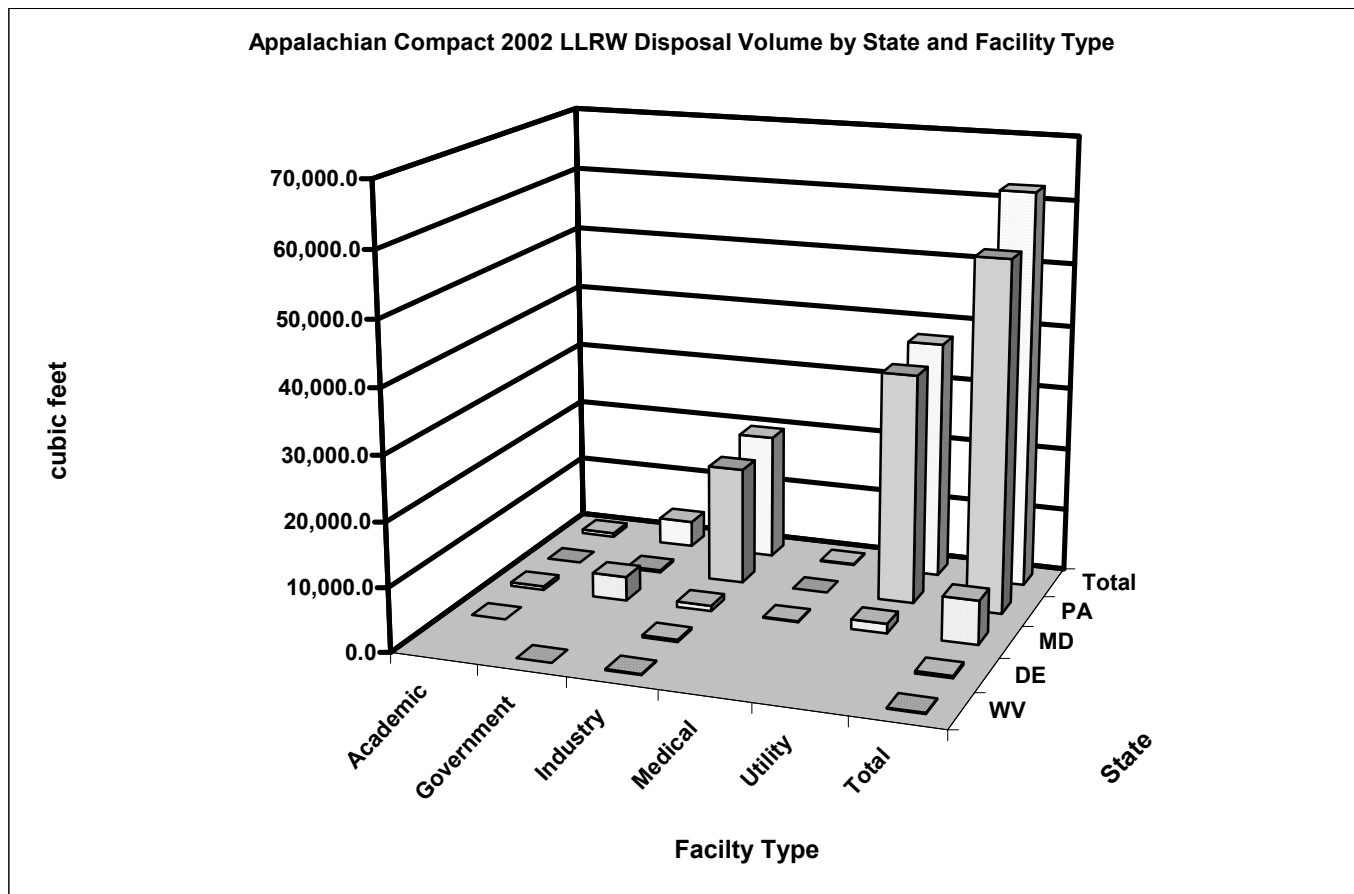
The significant increase in the radioactivity level of LLRW in 1991 was due to a large amount of non-routine irradiated components from nuclear power facilities. This type of waste also contributed significantly to the increase in the radioactivity of LLRW in 2000 and 2001. Although waste minimization methods and processes have been effective in reducing the volume of LLRW, they have not been as effective in reducing the radioactivity level of the waste.

It should also be mentioned that the MIMS database does not include LLRW disposed at the Envirocare facility prior to 1998. This omission of the historical data would affect waste disposal trend information for volume, but would not have a significant impact on the radioactivity of LLRW disposed. This is because historically 99 percent of the compact's radioactivity of LLRW has been shipped to the Barnwell disposal site for burial. The MIMS database includes LLRW volume and activity data for the Barnwell disposal site from 1986 through 2002.

Appalachian Compact 2002 LLRW Disposal Volume by State and Facility Type

Facility Type/State	WV	DE	MD	PA	Total
Academic	0	9.5	579.9	28.1	617.5
Government	5.3	0	3,592.8	433.0	4,031.0
Industry	175.8	356.9	853.1	18,405.2	19,791.0
Medical	0	0	157.3	23.9	181.1
Utility	0	0	1,509.7	36,134.5	37,644.2
Total	181.1	366.4	6,692.7	55,024.7	62,264.9

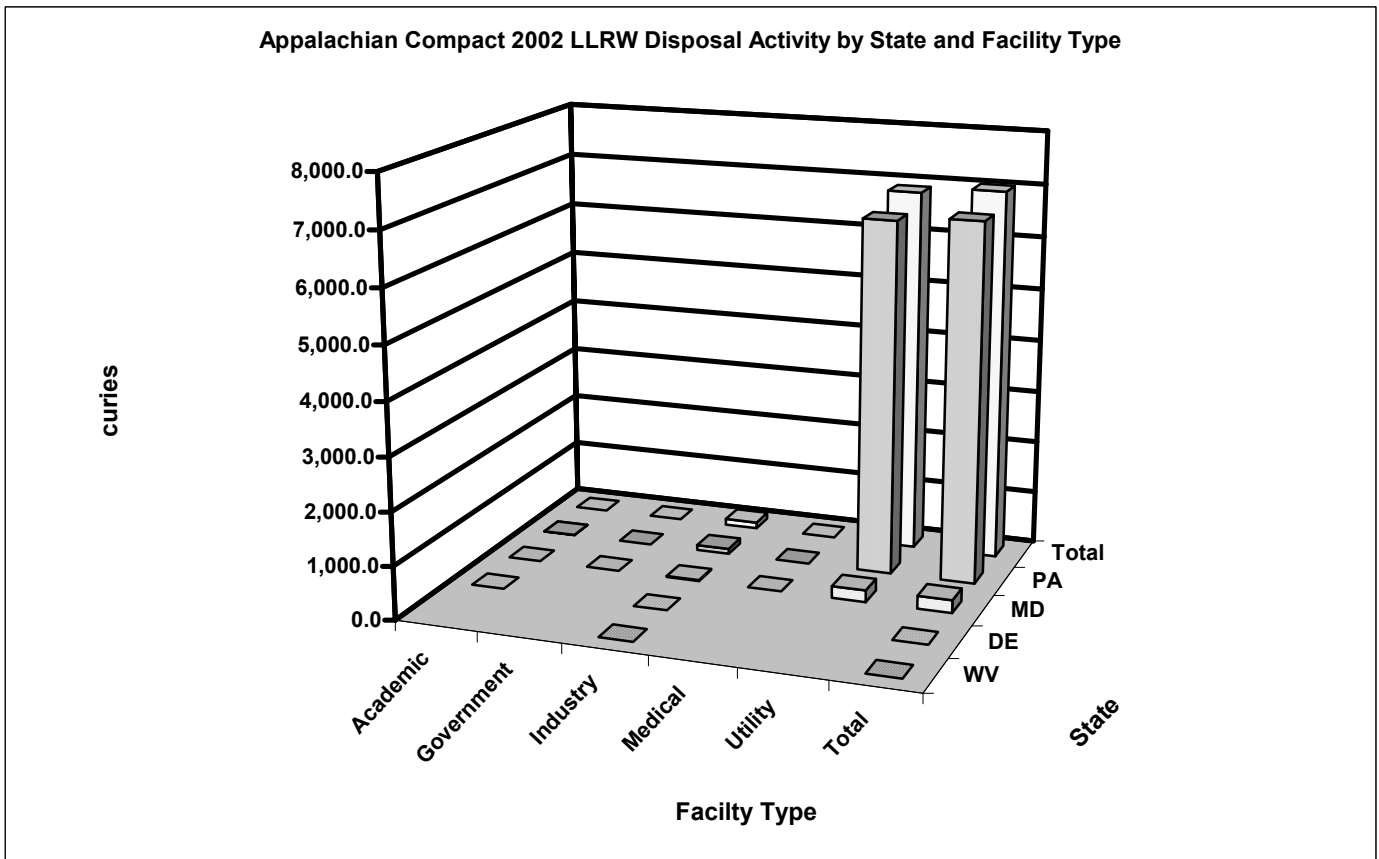
This data is from the Pennsylvania Department of Environmental Protection and the Manifest Information Management System (MIMS) – U.S. Department of Energy as of March 1, 2004. Volume is in cubic feet.



Appalachian Compact 2002 LLRW Disposal Activity by State and Facility Type

Facility Type/State	WV	DE	MD	PA	Total
Academic	0	0.3	1.0	0.2	1.5
Government	0.01	0	2.2	0.1	2.3
Industry	0.1	0.2	14.3	84.3	98.9
Medical	0	0	0.2	1.2	1.4
Utility	0	0	223.6	6,500.5	6,724.1
Total	0.1	0.5	241.3	6,586.4	6,828.2

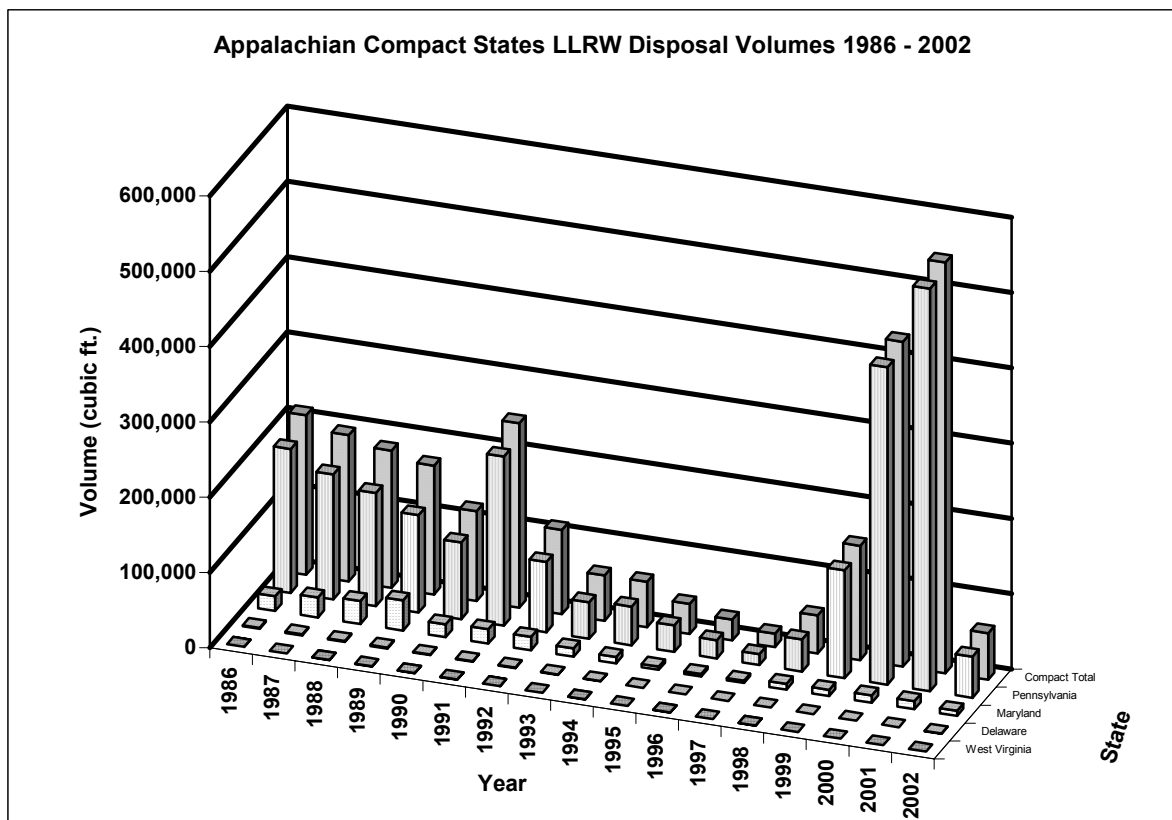
This data is from the Pennsylvania Department of Environmental Protection and the Manifest Information Management System (MIMS) – U.S. Department of Energy as of March 1, 2004. Activity is in curies.



Appalachian Compact LLRW Disposal Volume from 1986 to 2002

Year	West Virginia	Delaware	Maryland	Pennsylvania	Compact Total
1986	189.8	1,473.4	19,425.0	191,073.4	212,161.5
1987	112.1	1,560.1	26,549.3	166,139.8	194,361.3
1988	148.2	1,420.2	30,603.7	150,297.8	182,469.8
1989	411.1	1,376.4	39,995.7	129,484.7	171,267.9
1990	95.2	843.8	17,037.9	101,604.1	119,581.1
1991	368.2	775.5	19,224.3	224,563.6	244,931.6
1992	192.2	986.5	17,673.6	93,189.4	112,041.6
1993	26.8	479.8	11,358.8	48,439.3	60,304.7
1994	81.8	374.8	8,421.1	51,441.6	60,319.3
1995	4.2	57.8	4,428.7	35,199.6	39,690.3
1996	34.8	127.2	3,391.1	24,203.1	27,756.1
1997	1.8	23.9	3,096.5	14,486.2	17,608.4
1998	48.0	173.8	7,604.6	42,686.0	50,512.4
1999	158.7	80.6	8,406.8	143,043.7	151,689.8
2000	53.4	27.6	9,766.8	421,398.1	431,246.0
2001	44.1	76.2	10,759.9	534,429.4	545,309.6
2002	181.1	366.4	6,692.7	55,024.7	62,264.9
Total 1986 to 2002	2,151.4	10,224.0	244,436.3	2,426,704.5	
				Grand Total	2,683,516.2

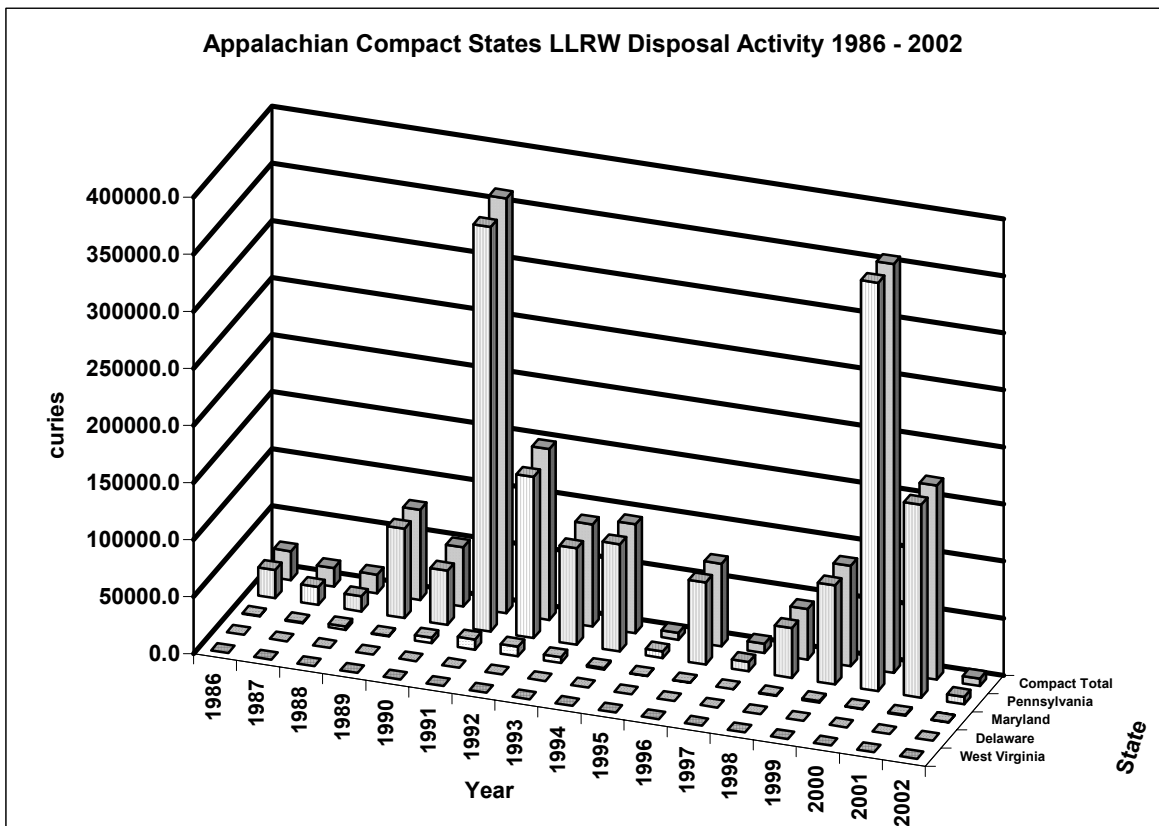
This data is from the Pennsylvania Department of Environmental Protection and the Manifest Information Management System (MIMS) – U.S. Department of Energy as of March 1, 2004. Data does not include LLRW disposed at the Envirocare site prior to 1988. Volume is in cubic feet.



Appalachian Compact LLRW Disposal Activity from 1986 to 2002

Year	West Virginia	Delaware	Maryland	Pennsylvania	Compact Total
1986	12.9	4.1	492.2	24,737.5	25,246.6
1987	0.0	0.9	688.4	15,672.9	16,362.2
1988	3.2	1.8	3,009.7	13,310.9	16,325.7
1989	23.5	2.0	648.3	78,347.8	79,021.6
1990	0.2	0.4	4,725.1	47,305.7	52,031.3
1991	15.5	0.6	8,969.0	354,340.7	363,325.8
1992	30.7	0.9	8,419.9	141,251.8	149,703.3
1993	5.5	45.1	5,019.4	84,346.7	89,416.7
1994	0.5	69.3	1,439.7	93,729.6	95,239.0
1995	4.6	0.01	346.2	5,691.9	6,042.7
1996	0.1	5.6	349.1	71,900.5	72,255.4
1997	0.0	1.3	198.5	8,017.9	8,217.7
1998	37.3	0.1	531.5	43,691.0	44,259.9
1999	0.5	0.1	1,335.7	86,618.0	87,954.3
2000	2.2	0.02	484.0	357,624.4	358,110.7
2001	0.03	0.03	903.3	168,919.6	169,822.9
2002	0.09	0.51	241.3	6,586.4	6,828.2
Total 1986 to 2002	136.9	132.9	37,801.1	1,602,093.1	
				Grand total	1,640,164.0

This data is from the Pennsylvania Department of Environmental Protection and the Manifest Information Management System (MIMS) – U.S. Department of Energy as of March 1, 2004. Data does not include LLRW disposed at the Envirocare site prior to 1998. Activity is in curies.



Status of Regional Disposal Facility Siting Project

In August 1990, DEP signed a contract with Chem-Nuclear Systems, Inc. (CNSI), which later changed its name to Chem-Nuclear Systems, LLC (CNS), to site, design, construct, operate and eventually decommission the regional LLRW disposal facility. Under the contract, CNS would identify three potentially suitable sites in Pennsylvania. The Pennsylvania Environmental Quality Board would review the administrative record describing the three sites to ensure that the sites meet all regulatory requirements. Detailed on-site studies would be conducted by CNS at each of the three potentially suitable sites. CNS would submit a license application for the best site to DEP. The secretary of DEP would make the final decision on the site selection.

Pennsylvania is committed to protect the health and safety of its citizens, and its LLRW disposal facility would be designed and operated to protect the general public, facility workers and future generations by isolating the LLRW. It promulgated some of the most stringent regulations governing the management and disposal of LLRW in the nation. Pennsylvania regulations would also prevent problems experienced at other LLRW disposal sites. The following features would be included in site selection and facility design:

- The selected site for the facility would be free of disqualifying features such as areas containing floodplains, mines, limestone, gas, oil, sources of drinking water and agricultural security areas.
- The facility would be designed with a series of engineered barriers or layers of protection to prevent water from coming in contact with the waste and thus prevent the radionuclides from escaping the facility.
- The facility would accept only dry, solid LLRW in sturdy containers. These containers would be placed in thick concrete overpacks that act as the first barrier.
- Filled overpacks would then be placed inside large, thick-walled, reinforced, concrete structures called disposal units, which provide the second barrier.
- The third barrier would be a multi-layered, engineered cover constructed over the disposal unit. It would be gently sloped to divert water away from the disposal units.
- A comprehensive monitoring system would be installed at and beyond the facility boundaries to detect leakage or escape of radioactive material from the disposal units.

DEP approved CNS's Phase I Siting Plan in August 1991. The siting plan described the process to identify three of the best potentially suitable sites for the facility. The first of a three-stage process of applying disqualification criteria to land areas in Pennsylvania was completed in November 1991. Approximately 23 percent of the state was disqualified. A series of 14 public meetings were held at seven locations across Pennsylvania during November and December 1991 to present the results of the stage one screening process, answer questions from the public and solicit their comments concerning the siting process.

In January 1993, CNS issued its Stage Two Regional Disqualification Map. This map eliminated approximately 46 percent of Pennsylvania from further consideration as a potential site. During stage two, CNS applied nine new disqualifying features including active faults, lands protected by the Wild and Scenic Rivers Program, designated natural and wild areas, oil and gas well fields, various types of mines and county parks. In addition, CNS reviewed and updated disqualifying information that had been first applied during stage one. CNS held 16 public meetings plus numerous other meetings between February and May 1993 to present the data and solicit comments from the public.

DEP also issued its rebuttable presumption regulations, which state that the regional facility operator is liable and responsible for all damages and radioactive contamination within three miles of the boundary of the regional facility unless it can prove the facility is not responsible for the damage and radioactive contamination. It also began development of permitting regulations, which all generators would have to comply with before being allowed to use the disposal facility.

CNS released its Stage Three Disqualification Map in May 1994. At this stage, CNS disqualified additional land using 18 new disqualifying features such as public water supplies, river floodplains, active faults, important

wetlands, municipal parks and agricultural security areas. At stage three, about 78 percent of the land area in Pennsylvania had been disqualified.

DEP approved CNS's Evaluation Screening Manual in August 1994. This manual was to be used to conduct a more subjective evaluation of the remaining 22 percent of the eligible land leading to the selection of the three potentially suitable sites in the Commonwealth.

At the request of the Pennsylvania House of Representatives, the Legislative Budget and Finance Committee conducted an audit of the siting project to determine how funds for the project had been spent. The report, entitled *Status Report on Siting a Regional Low-Level Radioactive Waste Disposal Facility in Pennsylvania*, provided an excellent summary of the work completed through May 1995. It also explained how funds were spent and why the project was behind schedule and over budget.

In July 1995, DEP announced that it would pursue a different approach for siting the regional LLRW disposal facility. It decided that the best way to allay the fears that many people had about the LLRW disposal facility was to let them decide for themselves what risk was acceptable. A community partnering plan was therefore announced to allow the municipalities to study the risks and benefits associated with the disposal facility. After weighing the risks and benefits, municipalities in non-disqualified or eligible areas could volunteer to host the disposal facility. DEP emphasized that a volunteer site would have to meet the same stringent criteria for protecting people and the environment as a site chosen through the screening process.

In August 1995, CNS and DEP met with experts on voluntary siting and community partnering and drafted the community partnering principles. Comments on the principles were obtained from the CNS and DEP advisory committees and leaders of business, labor, environmental, sportsmen, agricultural, professional, religious, civic and medical groups. Based on these comments and recommendations, CNS revised the principles and wrote a draft plan for comments from elected officials, local leaders and other interested citizens. At DEP's request, CNS also conducted eight workshops across the Commonwealth to seek additional comments and recommendations to improve the draft plan. CNS received more than 1,600 comments and suggestions, most of which were incorporated into the final community partnering plan. The community partnering plan was unveiled March 1, 1996.

DEP and CNS conducted nine open houses across the Commonwealth during May 1996 to explain the new community partnering plan and to provide information on the LLRW disposal facility. Detailed maps of the eligible areas provided local residents with specific information about their communities. Representatives from DEP, CNS, Appalachian States LLRW Commission, Pennsylvania State Association of Township Supervisors (PSATS), Penn State's Public Education on Low-Level Radiation and Appalachian Compact Users of Radioactive Isotopes (ACURI) were available to answer questions and provide more information.

The community partnering plan required CNS to meet with individuals and groups representing townships, counties, economic development planners, sportsmen and various LLRW generators. These efforts were directed towards encouraging municipalities to consider the benefits and risks associated with the LLRW disposal facility. Between March 1996 and May 1998, CNS staff traveled over 93,000 miles statewide to participate in more than 340 outreach meetings involving more than 3,200 individuals. While interest was expressed in several areas of the state, no community formally notified CNS of its interest in becoming a volunteer.

In December 1998, DEP officially suspended the LLRW disposal facility siting project. The reasons for suspending the siting process included the dramatic reduction in the amount of LLRW being generated in the Appalachian Compact and the current availability of out-of-state disposal capacity. Other states and compacts have taken similar actions for the same reasons. Although the siting process has been suspended, the Commission has established a restart fund of \$200,000 for the purpose of reestablishing the Commission's office and staff should the need arise to restart the siting process.

Other Project Activities

During calendar year 2001, Chem-Nuclear Systems, LLC (CNS) provided the Department with the status report entitled, *Issues Affecting Low-Level Radioactive Waste (LLRW) Disposal in the United States*. The purpose of this report was to assist the Department in assessing the availability of LLRW disposal sites in the United States. In particular, the report considered the volume of commercial LLRW generated; the availability of LLRW disposal facilities; the status of regional compacts formed to provide disposal across the country; federal legislative initiatives related to LLRW disposal; and other circumstances materially affecting LLRW disposal in the United States.

CNS' report was called for under the terms of the Suspension Plan and Mutual Release Agreement between the Department and CNS dated August 4, 1999, regarding the Appalachian Compact LLRW Regional Disposal Facility. The Department's contract with CNS was terminated in January 2002.

**APPALACHIAN STATES LOW-LEVEL
RADIOACTIVE WASTE COMMISSION
INDEPENDENT AUDITORS' REPORT
FOR
FISCAL YEAR 2002 – 2003**

For more information,
visit DEP's website at www.state.pa.us
Keyword: "DEP Radiation Protection"
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Contact the Bureau of Radiation Protection at: 717-787-2480

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