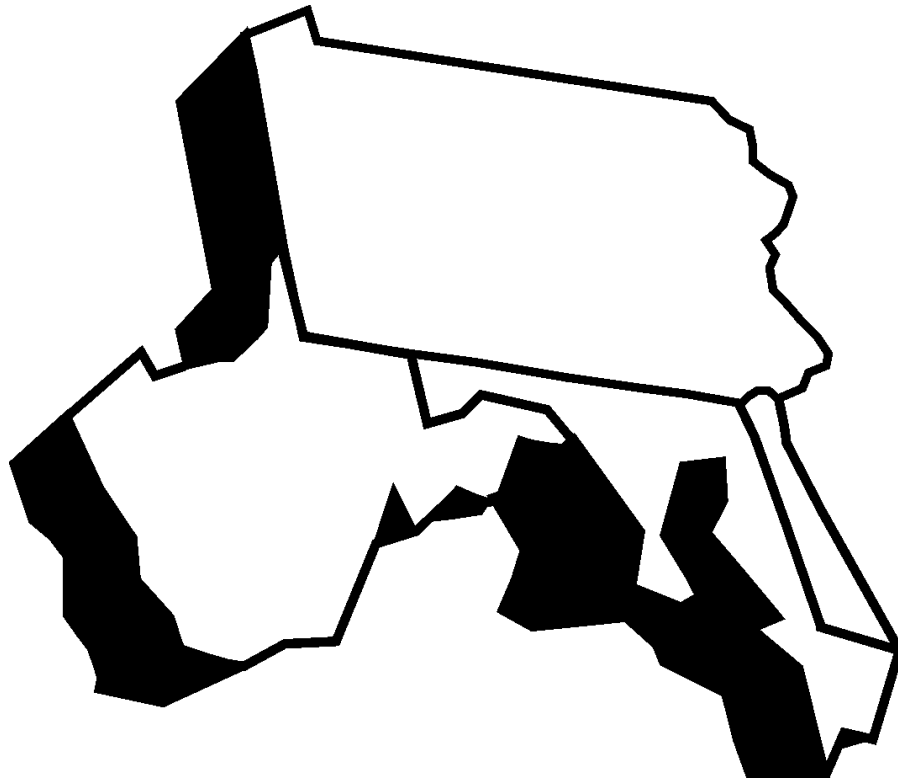


APPALACHIAN STATES LOW-LEVEL RADIOACTIVE WASTE COMMISSION

2000 - 2001
ANNUAL REPORT



DELAWARE • MARYLAND • PENNSYLVANIA • WEST VIRGINIA



Commonwealth of Pennsylvania
Mark Schweiker, *Governor*

Department of Environmental Protection
David E. Hess, *Secretary*

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

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Table of Contents

	Page
Introduction	1
What is Low-Level Radioactive Waste	1
History of the Commission	1
Administration of the Commission	2
Commission Members and Alternates for 2000-2001.....	2
Duties and Powers of the Commission	3
Activities of the Commission During 2000-2001	4
Waste Disposed by Compact States in 2000.....	4
Waste Disposal Trends 1986-2000	5
Status of Regional Disposal Facility Siting Project	10
Other Project Activities	12
Independent Auditors' Report for Fiscal Year 2000-2001	

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 by enacting the Appalachian States Low-Level Radioactive Waste Compact Act, PA 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 the 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 Dec. 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, 2000 through June 30, 2001.

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. It also 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 the 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. The commission normally meets one or two times each year. All meetings are open to the public.

Names of commission members, alternates and officers are provided below:

Commission members, alternates and officers as of **June 30, 2001**, are as follows:

OFFICERS	Chairman	Vacant ¹
	Vice-Chairman	Honorable Jane T. Nishida
STAFF	Counsel	John W. Carroll, Esquire Pepper Hamilton LLP
STATE	COMMISSION MEMBER	COMMISSION ALTERNATE
DELAWARE	Honorable Gregg C. Sylvester, M.D. Secretary Department of Health and Social Services	Kevin Charles Section Chief, Health Systems Protection Division of Public Health Department of Health and Social Services
	Honorable Nicholas DiPasquale 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. Benjamin Secretary, Public Health Services Department of Health and Mental Hygiene	Arlene H. Stephenson Deputy Secretary Department of Health and Mental Hygiene
	Honorable Jane T. Nishida Secretary Department of the Environment	Richard Collins Director Waste Management Administration Department of the Environment
PENNSYLVANIA	Vacant	Denise Chamberlain Deputy Secretary Office of Air, Recycling and Radiation Protection
	Honorable Bradley L. Mallory Secretary Department of Transportation	Michael Ryan Deputy Secretary for Highway Administration Department of Transportation
	Honorable Samuel A. McCullough Secretary	Timothy McNulty Executive Deputy Secretary

Department of Community & Economic
Development

**Honorable Robert S. Zimmerman,
Jr.**

Secretary
Department of Health

Department of Community and Economic
Development

Dr. James N. Logue

Director, Div. of Environmental Health Assessment
Department of Health

WEST VIRGINIA

Honorable Randy C. Curtis

Bureau of Public Health
Director, Radiation, Toxics and Indoor Air
Division

Beattie L. DeBord

Chief, Radiological Health Section
Office of Environmental Health Services
Department of Health and Human Resources

Honorable Michael O. Callaghan

Secretary
Department of Environmental Protection

H. Michael Dorsey

Assistant Chief
Office of Waste Management
Division of Environmental Protection

NOTE: James Seif resigned as the Chairman of the Commission in April 2001. Jane Nishida assumed the power to perform the duties of the chairman. 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 During 2000-2001

At the end of December 1998, the Commission’s office was closed. In January 1999, James Seif, the Chairman, assumed the duties of executive director. The Vice-Chairman began serving as the secretary and treasurer.

In March and September 2000, a representative from the Commission participated in the LLW Forum meeting.

In July 2000, the Commission's independent auditor, Greenawalt & Company, P.C. conducted an annual audit of the Commission's financial statements for fiscal year 1999-2000. The audit did not identify any instances of non-compliance that are required to be reported under Government Auditing Standards.

In August 2000, a representative from the Commission participated in the workshop, sponsored by the Pennsylvania Department of Environmental Protection, regarding the new regulations and guidance pertaining to radiation monitoring at solid waste disposal facilities.

In October 2000, the Commission held its annual meeting. The primary purpose of this meeting was to: (1) review the independent auditors' report of Commission's financial statements for fiscal year 1999-2000; (2) review the Commission's annual report for fiscal year 1999-2000; (3) consider a proposed budget for fiscal year 2001-2002; (4) review and discuss the national developments related to LLRW management and disposal; (5) review information on LLRW generation within the compact; and (6) elect the Commission's officers.

In March 2001, a representative from the Commission participated in the meeting of the newly formed Low-Level Radioactive Waste Forum, Inc.

In April 2001, James Seif resigned as the Chairman of the Commission. As a result, the Vice-Chairman, Jane Nishida, assumed the power to perform the duties of the Chairman until a new election of the Commission is held.

In June 2001, the Commission published its final annual report for fiscal year 1999-2000.

Waste Disposed by the Compact Member States In 2000

Waste quantities disposed of by the member states of the Appalachian States Compact in calendar year 2000 are shown on Pages 6 and 7. These quantities were obtained from the Manifest Information Management System (MIMS) operated by the Idaho National Engineering and Environmental Laboratory (INEEL). The MIMS contains information on LLRW shipments received at the commercial disposal facilities.

In 2000, Pennsylvania disposed of 421,398 cubic feet of LLRW, most of which was generated by industrial generators, utility and government facilities. The increase in the LLRW volume generated in Pennsylvania was mainly due to decommissioning and decontamination (D&D) waste from the industrial category. This D&D waste is very high in volume and extremely low in radioactivity and consists of mostly contaminated soil. Maryland disposed of 9,767 cubic feet, most of which came from government and utility facilities. West Virginia and Delaware generated 53 and 28 cubic feet, respectively.

In 2000, Pennsylvania disposed of 357,624 curies of radioactivity most of which was generated by the utility and industrial facilities. Maryland generated 484 curies, mostly from the utility facilities. West Virginia and Delaware generated only 2.2 and 0.02 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 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. A member state designated as a host state must begin the development of a LLRW disposal facility. 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 graphs on Pages 8 and 9 show the LLRW generation trends for the Appalachian States Compact for the period of 1986-2000.

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 significant increase in the LLRW volume in 1999 and 2000 was mainly from D&D waste. The large increase in the volumes of LLRW in 1991 was due to D&D waste from an industrial facility in Pennsylvania. At present, the majority of D&D waste from the Appalachian Compact is being disposed of at the Envirocare facility in Clive, Utah.

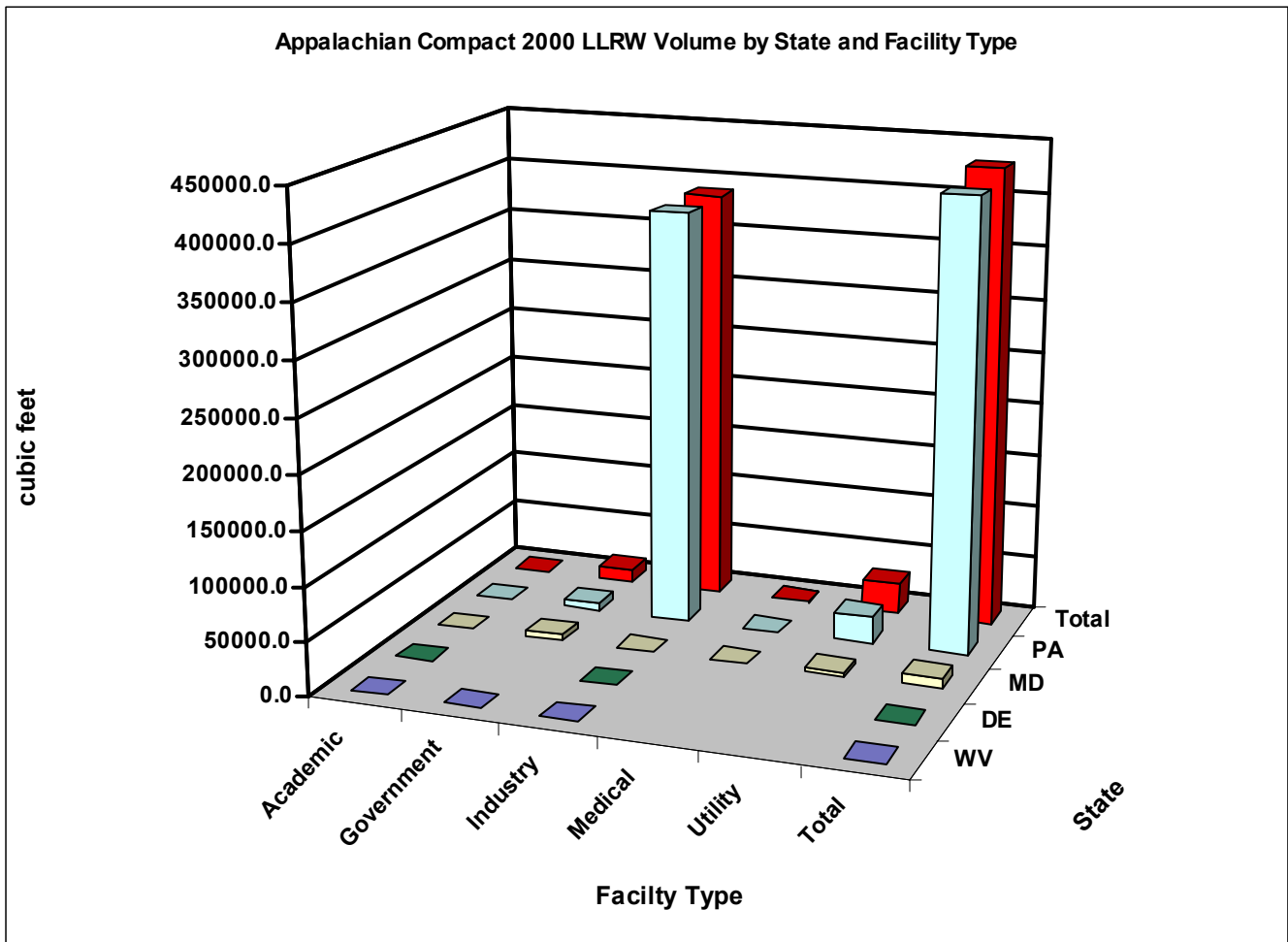
The significant increase in the radioactivity level of LLRW in 1991 was due to a large amount of non-routine irradiated components from nuclear power facilities. This type of waste also contributed to the increase in the radioactivity of LLRW in 2000. The significant reduction in the radioactivity level of LLRW in 1995 was due to the unavailability of the Barnwell disposal facility to the Appalachian Compact LLRW generators during the first half of 1995.

The historical data shows that the radioactivity of the LLRW has generally remained constant since 1993. This indicates that, although waste minimization methods and processes have been very effective in reducing the volume of LLRW, they have not been as effective in reducing the radioactivity level of the waste during this period.

Appalachian Compact 2000 LLRW Volume by State and Facility Type

Facility Type/State	WV	DE	MD	PA	Total
Academic	17.0	8.8	1.4	50.8	78.0
Government	26.8	0	5856.2	6561.2	12444.2
Industry	9.6	18.8	282.7	388548.4	388859.6
Medical	0	0	5.6	213.9	219.5
Utility	0	0	3620.9	26023.8	29644.7
Total	53.4	27.6	9766.8	421398.1	431246.0

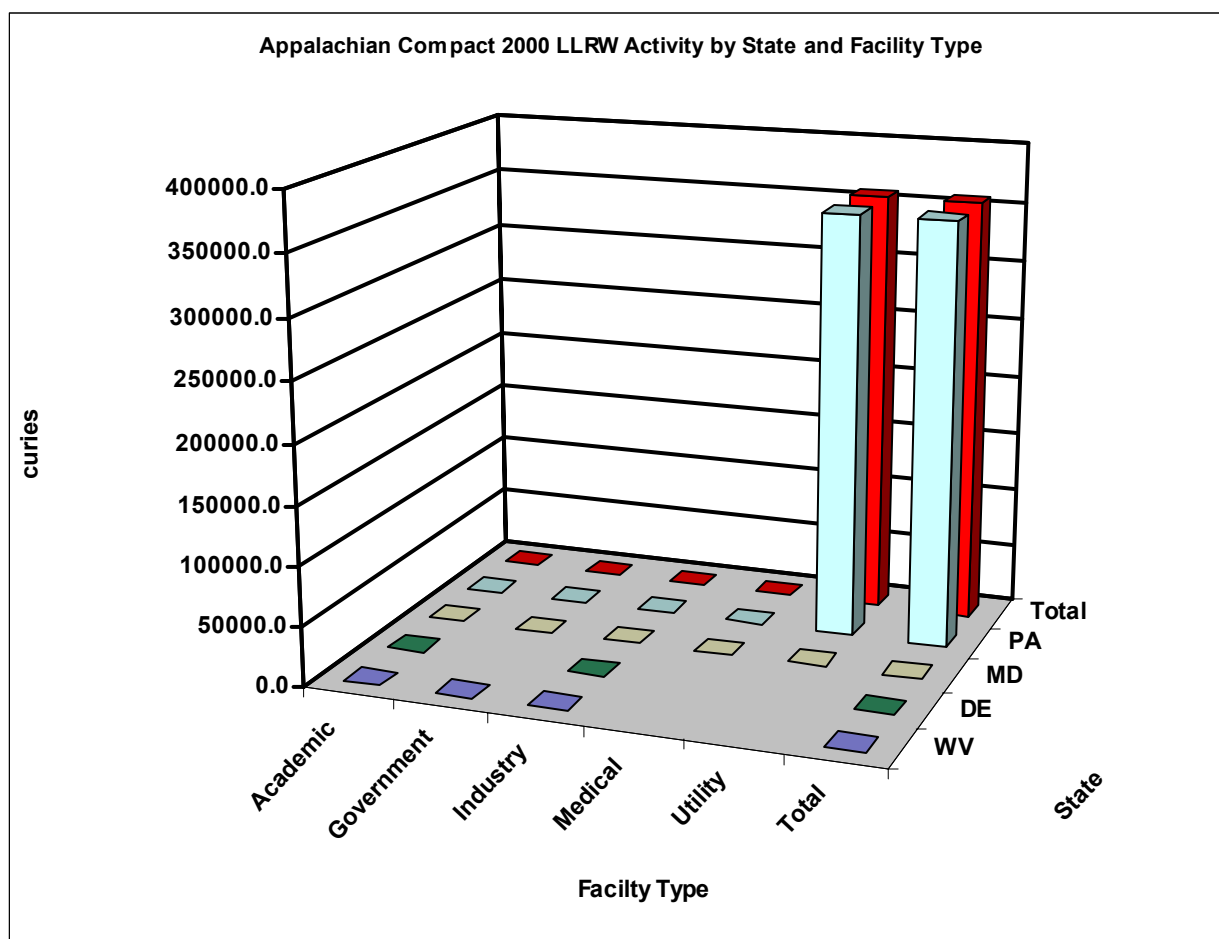
This data is from the Pennsylvania Department of Environmental Protection and the Manifest Information Management System (MIMS) – The Idaho National Engineering and Environmental Laboratory as of 3/1/2001. Volume is in cubic feet.



Appalachian Compact 2000 LLRW Activity by State and Facility Type

Facility Type/State	WV	DE	MD	PA	Total
Academic	0.03	0.02	0.01	0.1	0.2
Government	0.8	0	6.7	8.2	15.7
Industry	1.4	0.001	1.9	78.1	81.4
Medical	0	0	0.01	1.0	1.0
Utility	0	0	475.4	357537.0	358012.4
Total	2.2	0.021	484.0	357624.4	358110.7

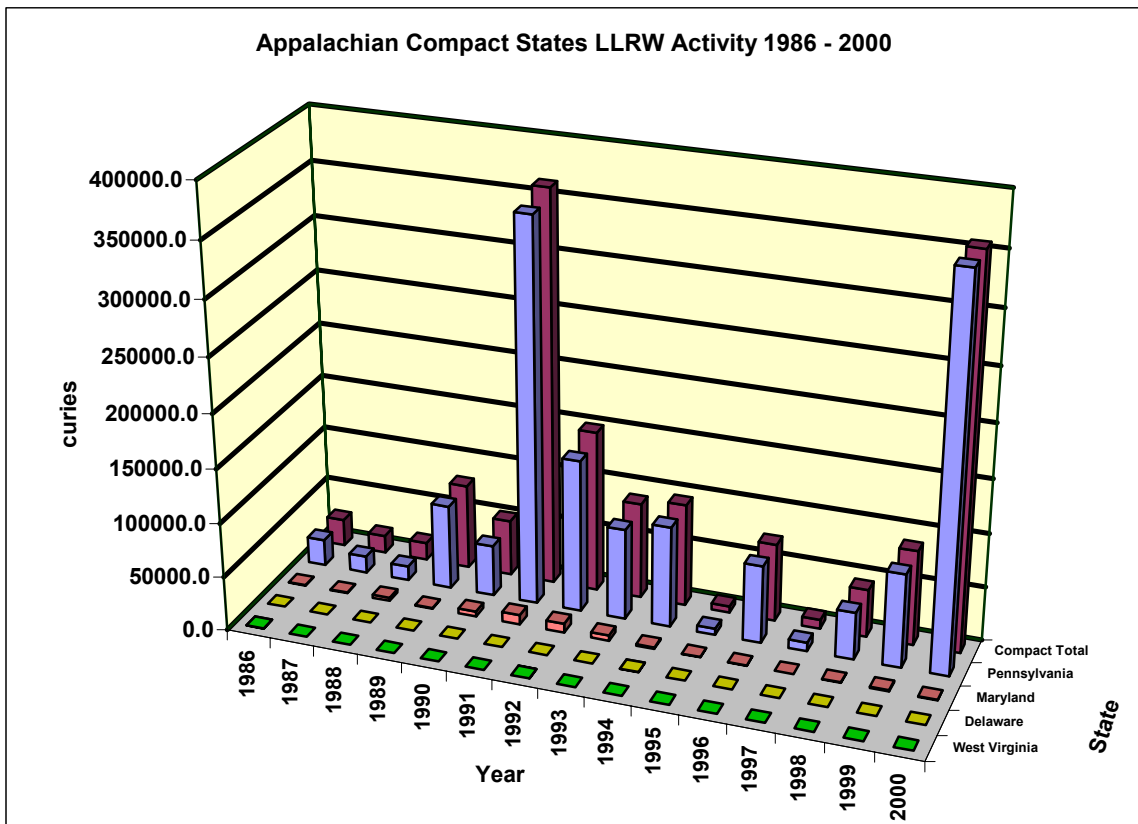
This data is from the Pennsylvania Department of Environmental Protection and the Manifest Information Management System (MIMS) – The Idaho National Engineering and Environmental Laboratory as of 3/1/2001. Activity is in curies.



Appalachian Compact LLRW Activity from 1986 to 2000

Year	West Virginia	Delaware	Maryland	Pennsylvania	Compact Total
1986	12.9	4.1	492.2	24737.5	25246.6
1987	0.0	0.9	688.4	15672.9	16362.2
1988	3.2	1.8	3009.7	13310.9	16325.7
1989	23.5	2.0	648.3	78347.8	79021.6
1990	0.2	0.4	4725.1	47305.7	52031.3
1991	15.5	0.6	8969.0	354340.7	363325.8
1992	30.7	0.9	8419.9	141251.8	149703.3
1993	5.5	45.1	5019.4	84346.7	89416.7
1994	0.5	69.3	1439.7	93729.6	95239.0
1995	4.6	0.01	346.2	5691.9	6042.7
1996	0.1	5.6	349.1	71900.5	72255.4
1997	0.0	1.3	198.5	8017.9	8217.7
1998	37.3	0.1	531.5	43691.0	44259.9
1999	0.5	0.1	1335.7	86618.0	87954.3
2000	2.2	0.02	484.0	357624.4	358110.7
Total 1986 to 2000	136.8	132.3	36656.6	1426587.2	grand total 1463512.8

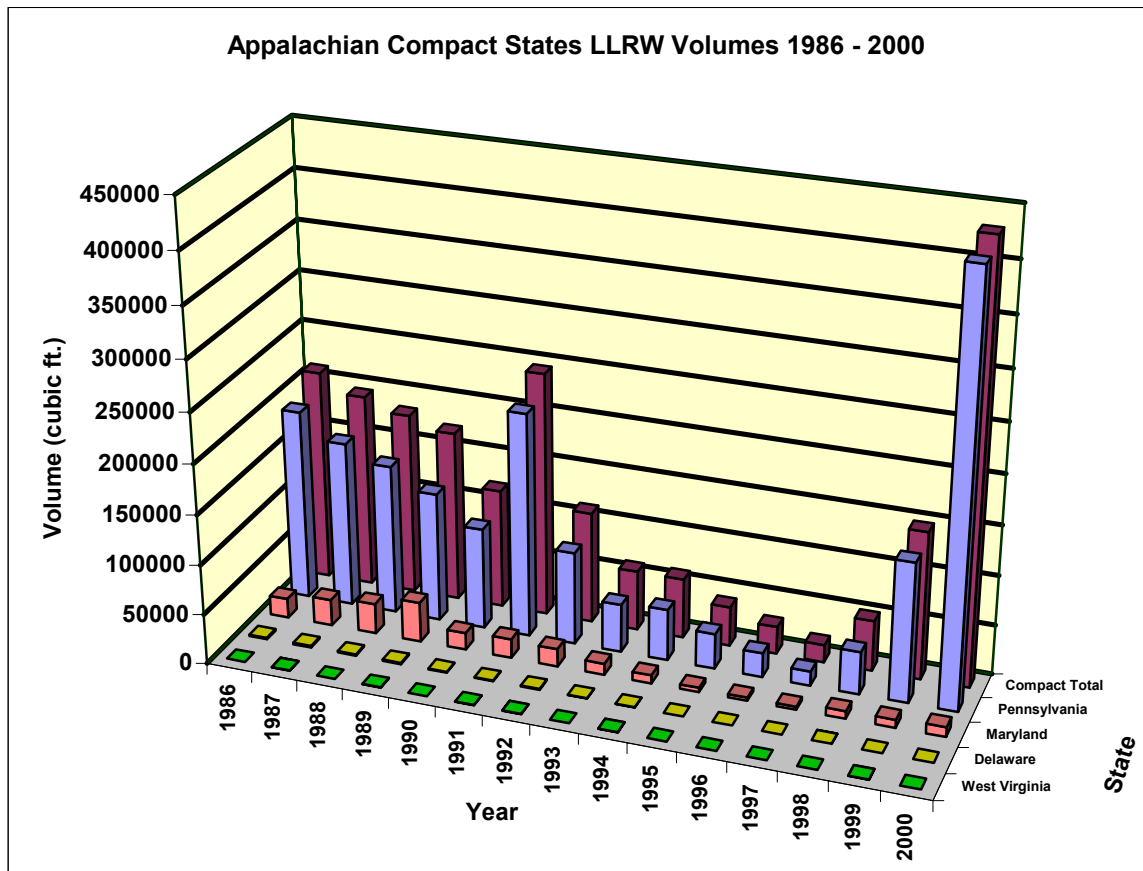
This data is from the Pennsylvania Department of Environmental Protection and the Manifest Information Management System (MIMS) – The Idaho National Engineering and Environmental Laboratory as of 3/1/2001. Activity is in curies.



Appalachian Compact LLRW Volume from 1986 to 2000

Year	West Virginia	Delaware	Maryland	Pennsylvania	Compact Total
1986	189.8	1473.4	19425.0	191073.4	212161.5
1987	112.1	1560.1	26549.3	166139.8	194361.3
1988	148.2	1420.2	30603.7	150297.8	182469.8
1989	411.1	1376.4	39995.7	129484.7	171267.9
1990	95.2	843.8	17037.9	101604.1	119581.1
1991	368.2	775.5	19224.3	224563.6	244931.6
1992	192.2	986.5	17673.6	93189.4	112041.6
1993	26.8	479.8	11358.8	48439.3	60304.7
1994	81.8	374.8	8421.1	51441.6	60319.3
1995	4.2	57.8	4428.7	35199.6	39690.3
1996	34.8	127.2	3391.1	24203.1	27756.1
1997	1.8	23.9	3096.5	14486.2	17608.4
1998	48.0	173.8	7604.6	42686.0	50512.4
1999	158.7	80.6	8406.8	143043.7	151689.8
2000	53.4	27.6	9766.8	421398.1	431246.0
Total 1986 to 2000	1926.2	9781.4	226983.7	1837250.4	grand total 2075941.8

This data is from the Pennsylvania Department of Environmental Protection and the Manifest Information Management System (MIMS) – The Idaho National Engineering and Environmental Laboratory as of 3/1/2001. Volume is in cubic feet.



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 which 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 flood plains, 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 titled, *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 volunteered 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 (PSOTS), 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

In December of 2000, CNS provided DEP with a report entitled, "*Issues Affecting Low-Level Radioactive Waste (LLRW) Disposal in the United States.*" The purpose of this report is to assist DEP in assessing the availability of LLRW disposal sites in the United States. In particular, the report considers 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.

The above report was prepared under the terms of the Suspension Plan and Mutual Release Agreement between DEP and CNS dated August 4, 1999, regarding the Appalachian Compact LLRW Regional Disposal Facility. The purpose of this agreement is to maintain the ability to expeditiously restart the siting process, if necessary.

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

INDEPENDENT AUDITORS' REPORT

FOR

FISCAL YEAR 2000 - 2001

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