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New York State Low-Level Radioactive Waste Status Report for 1998

June 1999

New York State
Energy Research and Development Authority

NYSERDA

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Unless otherwise noted, all data were derived from low-level radioactive waste generator reports received by NYSERDA as of May 4, 1999.

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INTRODUCTION

This report summarizes data on low-level radioactive waste (LLRW)[1] generated in New York State.[2] It is based on reports from generators that must be filed annually with the New York State Energy Research and Development Authority (NYSERDA) and on data from the U.S. Department of Energy (U.S. DOE).

The New York State Low-Level Radioactive Waste Management Act (State Act) requires LLRW generators in the State to submit annual reports detailing the classes and quantities of waste generated. This is the 13th year generators have been required to submit these reports to NYSERDA.

The data are summarized in a series of tables and figures. There are four sections in the report. Section 1 covers volume, activity, and other characteristics of waste shipped for disposal in 1998. (Activity is the measure of a material's radioactivity, or the number of radiation-emitting events occurring each second.) Section 2 summarizes volume, activity, and other characteristics of waste held for storage as of December 31, 1998. Section 3 shows historical LLRW generation and includes generators' projections for the next five years. Section 4 provides a list, by county, of all facilities from which 1998 LLRW reports were received.

Volume is presented in cubic meters and activity is presented in gigabecquerels (GBq) or megabecquerels (MBq). These units have been adopted to be consistent with U.S. Nuclear Regulatory Commission uniform national LLRW manifest requirements. The Conversions for Units table on the inside back cover and footnotes to the relevant tables provide information for converting the data to the previously used units of cubic feet and curies.

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[1] Low-level radioactive waste is one category of waste produced through processes that use radioactive materials. In the U.S., radioactive wastes are classified according to a number of different categories by federal law and U.S. Nuclear Regulatory Commission regulations.

[2] Waste generated by certain federal installations or programs, such as the Brookhaven National Laboratory, the Knolls Atomic Power Laboratory, and the West Valley Demonstration Project, are not included in this report or in the requirements for generator reporting to NYSERDA. Under the federal Low-Level Radioactive Waste Policy Act as amended in 1985 (Public Law 99-240), the federal government, not the states, is responsible for disposal of LLRW owned or generated by the U.S. DOE, the U.S. Navy as a result of decommissioning vessels, or the federal government as a result of research, development, testing, or production of nuclear weapons.

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Section 1

LOW-LEVEL RADIOACTIVE WASTE SHIPPED FOR DISPOSAL BY NEW YORK STATE GENERATORS IN 1998

This section summarizes data reported by LLRW generators in New York State on waste transferred to licensed LLRW disposal facilities in Barnwell, South Carolina; Clive, Utah (Envirocare); and Richland, Washington, during 1998.

While the Barnwell facility will accept most types of LLRW, the Clive and Richland facilities are more restrictive. While the Clive facility can accept most Class A waste, it cannot accept Class B or C waste. It can also accept, treat, and dispose of most solid, mixed waste (*i.e.*, LLRW that also contains hazardous chemicals) that meets the site's radioactivity concentration limits. The Richland facility is authorized to accept limited volumes of LLRW containing small quantities of naturally occurring radioactive material (*e.g.*, uranium, thorium) from New York State generators.

Volume is presented in cubic meters and activity is presented in gigabecquerels (GBq) or megabecquerels (MBq). These units have been adopted to be consistent with U.S. Nuclear Regulatory Commission uniform national LLRW manifest requirements. The Conversions for Units table on the inside back cover and footnotes to the relevant tables provide information for converting the data to the previously used units of cubic feet and curies.

In 1998, generators in New York State reported disposing of 354 cubic meters (12,510 cubic feet) of LLRW containing 2,023,092 GBq (54,678 curies) of radioactivity. About 15% of the volume of LLRW, containing less than 1% of the radioactivity, was shipped to the Clive, Utah, facility. The Barnwell, South Carolina, facility received 85% of the volume and more than 99% of the radioactivity.

Individual entries in the following tables have been rounded using standard procedures. Because the totals shown represent the sum of the rounded entries, they may vary slightly from one table to another and may not always equal 100%. Waste volumes have been rounded to the nearest 10th of a cubic meter. In most cases, activity has been rounded to the nearest 10,000th of a GBq. Percentages have been rounded to the nearest 10th of a percent in the tables and figures.

Unless otherwise noted, all data were derived from low-level radioactive waste generator reports received by NYSERDA as of May 4, 1999.

Table 1-1: Generators Reporting and Shipping Waste for Disposal[1]

Generator Type	Number Reporting	Number[2] Shipping
MEDICAL		
Government	21	4
Private	210	6
College	20	13
Other	5	0
Total Medical	**256**	**23**
INDUSTRIAL		
Manufacturing	10	4
Research & Development	17	9
Other	2	0
Total Industrial	**29**	**13**
ACADEMIC (non-medical)		
College or University	32	9
Other	3	1
Total Academic	**35**	**10**
GOVERNMENT (non-medical)		
New York State	2	2
Other	6	2
Total Government	**8**	**4**
TOTAL NON-POWER PLANT	**328**	**50**
NUCLEAR POWER PLANT	**6**	**6**
TOTAL	**334**	**56**

[1] In addition to shipping LLRW for disposal, other waste management methods include storage of LLRW pending disposal and storage for decay. Section 2 provides information on stored LLRW.

[2] Refers to the number of generators who reported transferring LLRW either directly or via a broker or processor to one of the available licensed LLRW disposal facilities.

Unless otherwise noted, all data were derived from low-level radioactive waste generator reports received by NYSERDA as of May 4, 1999.

Table 1-2: Volume and Activity of Waste Shipped for Disposal[1]

Generator Type	Volume (m^3)[2]	% of Total	Activity (GBq)[2]	% of Total
MEDICAL				
Government	1.0		10.6323	
Private	16.0		22.0977	
College	34.6		69.9981	
Total Medical	**51.6**	**14.6**	**102.7281**	*
INDUSTRIAL				
Manufacturing	8.0		1.0201	
Research & Development	7.0		64.0337	
Total Industrial	**15.0**	**4.2**	**65.0538**	*
ACADEMIC (non-medical)				
College or University	10.6		63.3536	
Other	0.6		0.1110	
Total Academic	**11.2**	**3.2**	**63.4646**	*
GOVERNMENT (non-medical)				
New York State	0.7		0.7315	
Other	2.9		0.5566	
Total Government	**3.6**	**1.0**	**1.2881**	*
TOTAL NON-POWER PLANT	**81.4**	**23.0**	**232.5346**	*
NUCLEAR POWER PLANT	**272.9**	**77.0**	**2,022,859.4769**	**100.0**
TOTAL	**354.3**	**100.0**	**2,023,092.0115**	**100.0**
	(12,510 ft^3)		**(54,678 curies)**	

[1] Refers to LLRW transferred either directly or via a broker or processor to one of the available licensed LLRW disposal facilities.

[2] To obtain volume in cubic feet, multiply the number of cubic meters by 35.31. To obtain activity in curies, divide the number of gigabecquerels (GBq) by 37.

* Less than 0.1%.

Unless otherwise noted, all data were derived from low-level radioactive waste generator reports received by NYSERDA as of May 4, 1999.

Table 1-3: Waste Shipped[1] for Disposal, by Class[2] and Generator Type

Generator Type	Class A		Class B		Class C	
	Volume (m^3)[3]	Activity (GBq)[3]	Volume (m^3)[3]	Activity (GBq)[3]	Volume (m^3)[3]	Activity (GBq)[3]
MEDICAL	51.6	102.6081	0.0	0.0000	*	0.1200
INDUSTRIAL						
Manufacturing	8.0	1.0201	0.0	0.0000	0.0	0.0000
Research & Development	6.9	57.5588	0.0	0.0000	0.1	6.4750
ACADEMIC	11.2	63.4646	0.0	0.0000	0.0	0.0000
GOVERNMENT	3.6	0.7331	*	0.5550	0.0	0.0000
NUCLEAR POWER PLANT	193.5	24,151.6870	35.7	17,322.7407	43.7	1,981,385.0491
TOTAL	**274.8**	**24,377.0717**	**35.7**	**17,323.2957**	**43.8**	**1,981,391.6441**
	(9,703 ft^3)	**(659 curies)**	**(1,261 ft^3)**	**(468 curies)**	**(1,546 ft^3)**	**(53,551 curies)**

[1] Refers to LLRW transferred either directly or via a broker or processor to one of the available licensed LLRW disposal facilities.

[2] Classes A, B, and C are waste-classification categories established by the U.S. Nuclear Regulatory Commission (NRC) in Title 10 of the Code of Federal Regulations, Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste," and adopted by the New York State Department of Environmental Conservation in 6 NYCRR Part 382, "Regulations for Low-Level Radioactive Waste Disposal Facilities."

[3] To obtain volume in cubic feet, multiply the number of cubic meters by 35.31. To obtain activity in curies, divide the number of gigabecquerels (GBq) by 37.

* Less than 0.1 cubic meter.

Unless otherwise noted, all data were derived from low-level radioactive waste generator reports received by NYSERDA as of May 4, 1999.

Table 1-4: Distribution of Waste Among Disposal Facilities[1]

Disposal Facility	Volume (m^3)[2]	% of Total	Activity (GBq)[2]	% of Total
Barnwell, South Carolina	301.8	85.2	2,023,078.4057	99.9
Clive, Utah	52.3	14.8	13.6056	*
Richland, Washington	0.2	*	0.0002	*
TOTAL	**354.3**	**100.0**	**2,023,092.0115**	**100.0**
	(12,510 ft^3)		**(54,678 curies)**	

[1] Refers to LLRW transferred either directly or via a broker or processor to the respective disposal facility.

[2] To obtain volume in cubic feet, multiply the number of cubic meters by 35.31. To obtain activity in curies, divide the number of gigabecquerels (GBq) by 37.

* Less than 0.1%.

Unless otherwise noted, all data were derived from low-level radioactive waste generator reports received by NYSERDA as of May 4, 1999.

Table 1-5: Treatments[1] Reported for Waste Shipped for Disposal, by Generator Type

Generator Type	Number of Generators Shipping LLRW[2]	Number of Shipping Generators Reporting Waste Treatment and Predominant Treatments
MEDICAL	23	On Site: 16 • Compaction • Solidification Off Site: 9 • Supercompaction • Incineration
INDUSTRIAL	13	On Site: 4 • Compaction • Solidification Off Site: 8 • Supercompaction • Incineration
ACADEMIC	10	On Site: 4 • Compaction • Solidification Off Site: 8 • Supercompaction • Incineration
GOVERNMENT	4	On Site: 2 • Compaction • Solidification Off Site: 2 • Supercompation • Evaporation
NUCLEAR POWER PLANT	6	On Site: 2 • Dewatering Off Site: 6 • Supercompaction • Incineration • Decontamination • Sorting/Segregation • Catalytic Extraction Process

[1] Treatment refers to the processing of LLRW to reduce its volume or activity, or change its chemical or physical form, prior to transfer to a disposal facility. Some generators reported using both on-site and off-site waste treatment facilities.

[2] Refers to the number of generators who reported transferring LLRW either directly or via a broker or processor to one of the available licensed LLRW disposal facilities.

Unless otherwise noted, all data were derived from low-level radioactive waste generator reports received by NYSERDA as of May 4, 1999.

Table 1-6: Number of Facilities Shipping Various Waste Types for Disposal

Waste Type[1]	Medical	Industrial	Academic	Government	Nuclear Power Plants	Total
Activated Material	0	1	0	0	0	1
Aqueous Liquids	5	6	3	2	0	16
Biological Material (excluding animal carcasses)	3	0	0	0	0	3
Carcasses (animal)	5	1	1	0	0	7
Compacted Trash	22	9	10	2	6	49
Contaminated Equipment	0	0	0	0	3	3
Charcoal	0	1	0	0	2	3
Demolition Rubble	0	0	0	0	2	2
Evaporator Bottoms/Sludges	0	0	0	0	2	2
Filter Media	0	1	0	0	3	4
Filter (Mechanical)	0	2	0	0	2	4
Glassware/Labware	3	1	1	1	0	6
Ion Exchange Media	0	0	0	0	6	6
Material to be Incinerated	1	1	0	0	1	3
Non-Compacted Trash	2	0	1	1	4	8
Oil	0	1	0	0	1	2
Organic Liquids (excluding oil)	2	0	1	0	0	3
Sealed Source/Device	5	1	2	2	0	10
Soil	0	0	0	1	1	2
Other[2]	3	2	3	1	1	10

[1] Waste types listed are as defined by the U.S. Nuclear Regulatory Commission Uniform Manifest.

[2] In certain cases, generators reported shipping waste that did not fit into any of the categories listed. Those data are reported here.

Unless otherwise noted, all data were derived from low-level radioactive waste generator reports received by NYSERDA as of May 4, 1999.

Table 1-7: Waste Shipped for Disposal, by County of Origin[1]

County	Number of Generators Reporting	Number of Generators Shipping LLRW[2]	Volume (m^3)[3]	% of Total	Activity (GBq)[3]	% of Total
Albany	11	3	4.2	1.2	2.6589	*
Allegany	0	0	0.0	0.0	0.0000	0.0
Bronx	12	2	0.1	*	7.0894	*
Broome	6	1	*	0.0	0.0224	*
Cattaraugus	1	1	*	0.0	0.0128	*
Cayuga	1	0	0.0	0.0	0.0000	0.0
Chautauqua	2	0	0.0	0.0	0.0000	0.0
Chemung	4	1	0.4	0.1	0.0857	*
Chenango	0	0	0.0	0.0	0.0000	0.0
Clinton	4	2	0.2	0.1	3.1820	*
Columbia	0	0	0.0	0.0	0.0000	0.0
Cortland	1	0	0.0	0.0	0.0000	0.0
Delaware	2	0	0.0	0.0	0.0000	0.0
Dutchess	8	1	0.1	*	0.0029	*
Erie	20	2	8.6	2.4	12.6530	*
Essex	3	1	0.1	*	0.0021	*
Franklin	2	0	0.0	0.0	0.0000	0.0
Fulton	0	0	0.0	0.0	0.0000	0.0
Genesee	1	0	0.0	0.0	0.0000	0.0
Greene	0	0	0.0	0.0	0.0000	0.0
Hamilton	0	0	0.0	0.0	0.0000	0.0
Herkimer	1	0	0.0	0.0	0.0000	0.0
Jefferson	3	0	0.0	0.0	0.0000	0.0
Kings	18	2	2.5	0.7	0.1059	*
Lewis	0	0	0.0	0.0	0.0000	0.0
Livingston	1	0	0.0	0.0	0.0000	0.0
Madison	2	0	0.0	0.0	0.0000	0.0
Monroe	12	2	8.2	2.3	42.4332	*
Montgomery	2	0	0.0	0.0	0.0000	0.0
Nassau	34	4	5.0	1.4	2.2035	*
New York	32	11	25.7	7.2	74.1764	*
Niagara	2	1	0.2	0.1	0.0010	*
Oneida	4	0	0.0	0.0	0.0000	0.0
Onondaga	11	2	0.6	0.2	6.6949	*

Unless otherwise noted, all data were derived from low-level radioactive waste generator reports received by NYSERDA as of May 4, 1999.

Table 1-7: Waste Shipped for Disposal, by County of Origin[1] (continued)

County	Number of Generators Reporting	Number of Generators Shipping LLRW[2]	Volume (m^3)[3]	% of Total	Activity (GBq)[3]	% of Total
Ontario	3	0	0.0	0.0	0.0000	0.0
Orange	8	0	0.0	0.0	0.0000	0.0
Orleans	1	0	0.0	0.0	0.0000	0.0
Oswego	3	3	164.7	46.5	1,910,519.5262	94.4
Otsego	3	0	0.0	0.0	0.0000	0.0
Putnam	2	0	0.0	0.0	0.0000	0.0
Queens	13	1	0.2	0.1	1.6939	*
Rensselaer	4	1	2.1	0.6	0.2634	*
Richmond	5	0	0.0	0.0	0.0000	0.0
Rockland	8	3	1.1	0.3	56.4719	*
St. Lawrence	3	0	0.0	0.0	0.0000	0.0
Saratoga	3	0	0.0	0.0	0.0000	0.0
Schenectady	4	1	1.1	0.3	1.0981	*
Schoharie	0	0	0.0	0.0	0.0000	0.0
Schuyler	0	0	0.0	0.0	0.0000	0.0
Seneca	1	1	2.9	0.8	0.0016	*
Steuben	2	0	0.0	0.0	0.0000	0.0
Suffolk	33	1	3.6	1.0	1.8305	*
Sullivan	0	0	0.0	0.0	0.0000	0.0
Tioga	0	0	0.0	0.0	0.0000	0.0
Tompkins	3	1	0.8	0.2	3.9351	*
Ulster	6	0	0.0	0.0	0.0000	0.0
Warren	1	0	0.0	0.0	0.0000	0.0
Washington	0	0	0.0	0.0	0.0000	0.0
Wayne	2	1	15.6	4.4	7,319.1620	0.4
Westchester	26	7	106.5	30.1	105,036.7059	5.2
Wyoming	0	0	0.0	0.0	0.0000	0.0
Yates	0	0	0.0	0.0	0.0000	0.0
TOTALS	**334**	**56**	**354.3 (12,510 ft^3)**	**100.0**	**2,023,092.0115 (54,678 curies)**	**100.0**

[1] Section 4 of this report identifies the individual facilities reporting and shipping waste for disposal.
[2] Refers to the number of generators that reported transferring LLRW either directly or via a broker or processor to one of the available licensed LLRW disposal facilities.
[3] To obtain volume in cubic feet, multiply the number of cubic meters by 35.31. To obtain activity in curies, divide the number of gigabecquerels (GBq) by 37.
* Less than 0.1 cubic meter or 0.1%

Unless otherwise noted, all data were derived from low-level radioactive waste generator reports received by NYSERDA as of May 4, 1999.

Table 1-8: Radionuclide Content of Waste[1] Shipped for Disposal (in MBq)[2]

Radionuclide	Half-Life[3,4]	Academic	Government	Industrial	Medical	Nuclear Power Plants	Total
Ag-110	249.8 d				0.148		0.148
Ag-110m	21.8 y				0.003	21,883.120	21,883.123
Am-241	432.7 y	0.002	0.333		4.000	15,864.915	15,869.250
Am-242	1141y					36.000	36.000
Am-243/244	7.4 E3 y					110.000	110.000
Ba-133	10.5 y	0.021			0.044		0.065
Bi-207	32 y				0.037		0.037
Bi-210	3 E6 y	0.001					0.001
C-14	5730 y	3,045.091	279.440	21,251.403	6,898.940	199,125.221	230,600.095
Ca-45	162.7 d	0.925			212.965		213.890
Cd-109	462.0 d	1.850		0.020	40.000		41.870
Ce-144	284.6 d					110,769.053	110,769.053
Cl-36	3.01 E5 y	0.148			157.703		157.851
Cm-242	162.8 d					168.257	168.257
Cm-243	29.1y					72.150	72.150
Cm-243/244	29.1 y					132.979	132.979
Cm-244	18.1 y					6.180	6.180
Co-57	271.8 d	3.815		888.000	352.743	21,641.807	22,886.365
Co-58	70.9 d			253.400	3.700	1,847,943.921	1,848,201.021
Co-60	5.2 y	480,064.943		263.400	106.880	1,213,319,724.124	1,213,800,159.347
Cr-51	27.7 d	0.185		193.500	866.020	117,558.215	118,617.920
Cs-134	2.0 y					2,372,237.422	2,372,237.422
Cs-137	30.2 y	4.677	0.007		37,987.392	6,914,342.731	6,952,334.807
Fe-55	2.7 y				3.737	648,029,386.006	648,029,389.743
Fe-59	44.5 d	0.111			37.000	53,502.548	53,539.659
Gd-153	241.6 d	1.258			0.037		1.295
Ge-68	270.8 d				3.700		3.700
H-3	12.3 y	10,348.679	452.087	48,316.008	32,087.035	2,480,898.264	2,572,102.073
Hg-203	46.6 d				0.074	343.360	343.434
I-125	59.4 d	0.446		190.469	13,020.411		13,211.326
I-129	1.6 E7 y		0.001		0.037	14.795	14.833
I-131	8.0 d					1,080.400	1,080.400
In-111	2.8 d				93.000		93.000
In-114	49.5d	0.037					0.037
Mn-54	312.2 d	0.077		171.300	42.200	29,438,902.600	29,439,116.177
Na-22	2.6 y	3.221			7.846		11.067
Nb-94	2.0 E4 y					3,171.000	3,171.000
Nb-95	35.0 d				18.500	4,496.339	4,514.839

Unless otherwise noted, all data were derived from low-level radioactive waste generator reports received by NYSERDA as of May 4, 1999.

Ni-59	7.6 E4 y					885,870.650	885,870.650
Ni-63	100 y	1,908.460	555.000	370.000	113.300	110,721,098.183	110,724,044.943
P-32	14.3 d			82.259	469.900		552.159
P-33	25.3 d			517.325	25.000		542.325
Pm-147	2.6 y	0.001					0.001
Pu-238	87.7 y					287.419	287.419
Pu-239	2.4 E4 y	0.002				236.020	236.022
Pu-239/240	2.4 E4 y					345.278	345.278
Pu-241	14.4 y					102,114.855	102,114.855
Ra-226	1.6 E3 y		1.110		8.400		9.510
Rb-86	18.7 d				43.000		43.000
Re-186	2 E5 y	0.002					0.002
Ru-103	39.3 d				18.500	59.000	77.500
Ru-106	1 y					31,524.000	31,524.000
S-35	87.2 d	0.004		268.159	3,503.646		3,771.809
Sb-124	60.2 d					7,568.360	7,568.360
Sb-125	2.8 y					502,142.118	502,142.118
Sc-46	83.8 d	0.002			18.537		18.539
Se-75	119.8 d				40.000		40.000
Sn-113	115.1 d	0.178			18.500	1,608.090	1,626.768
Sn-117m	13.6 d					27.000	27.000
Sr-89	50.5 d					821.128	821.128
Sr-90	29.1 y				6,321.450	28,845.718	35,167.168
Tc-99	2.1 E5 y	43.800	0.002			2,735.700	2,779.502
Tc-99m	6.0 h			18.500			18.500
Th-232	1.4 E10 y	4.446		4.800	17.679		26.925
Tl-204	3.8 y				0.010		0.010
U-235	7 E8 y			6.330			6.330
U-238	4.5 E9 y	31.990	0.074	5.480	145.479		183.023
Zn-65	243.8 d	0.330		209.800	37.700	5,174,502.941	5,174,750.771
Zr-95	64 d					6,325.596	6,325.596
Others[5]					1.000		1.000
Total		**495,464.702**	**1,288.054**	**73,010.153**	**102,725.105**	**2,022,419,523.463**	**2,023,092,011.477**

[1] Some generator facilities have reported radionuclides with half-lives of less than 90 days in LLRW shipped for disposal. In the majority of these cases, the shorter-lived radionuclides reported cannot be separated readily from longer-lived radionuclides in the waste.

[2] To obtain activity in curies, divide the number of MBq by 37,000.

[3] **Source:** Chart of the Nuclides, General Electric Company under the direction of Naval Reactors, U.S. DOE; 15th edition, revised to 1996. **NB**: y=years, m=months, d=days.

[4] Where scientific notation is used, multiply the number by 10 to the specified power. Example: For Ra-226, 1.6 E3 = 1.6×10^3 = 1.6x10x10x10 = 1.6x1,000 = 1,600. For this table, the whole number to which 10 is raised is equal to the number of places the decimal is moved to the right.

[5] In certain cases, LLRW generators are permitted by manifest regulations to report a single activity for a group of radionuclides without assigning a value to each; those data are reported here.

Table 1-9: Waste Shipped from Various States for Disposal in 1998[1]

State	Cubic Meters of Waste[2]	State	Cubic Meters of Waste
Tennessee	12,188.7	Nebraska	81.8
Unknown[3]	4,401.3	Colorado	51.4
Massachusetts	4,375.7	Hawaii	50.8
Ohio	3,665.3	Louisana	49.1
Oregon	2,596.8	Wisconsin	43.6
Michigan	2,320.9	Minnesota	38.9
Illinois	1,820.4	Iowa	29.1
Pennsylvania	1,196.9	Kansas	28.4
Florida	1,108.9	Oklahoma	22.3
Washington	862.7	Mississippi	21.8
Virginia	693.2	New Mexico	11.2
Utah	481.7	Arkansas	10.2
Missouri	473.2	New Hampshire	7.4
Texas	432.8	District of Columbia	6.9
South Carolina	396.8	Delaware	4.9
California	391.3	Indiana	2.4
New York[4]	**387.4**	Alaska	2.3
Arizona	329.0	Rhode Island	1.8
Georgia	290.5	Nevada	1.6
New Jersey	253.4	North Dakota	1.4
Connecticut	242.5	West Virginia	1.3
North Carolina	218.5	Vermont	0.7
Maryland	213.1	Montana	0.3
Alabama	212.1	Wyoming	0.2
Maine	118.5	Idaho	0.2
Kentucky	84.3	South Dakota	0.1
		Total	**40,226.0**

[1] This information is obtained from the U.S. DOE Manifest Information Management System (MIMS) database, as of April 30, 1999. The data represent LLRW shipped to the Richland, Washington; Clive, Utah (Envirocare); and Barnwell, South Carolina, disposal facilities. Envirocare's disposal data do not see through waste processors. Envirocare assigns waste received from waste processors to the State in which the waste processor is located, **not** the State in which the waste was generated. To the reader, this means that the state reflected in MIMS, for waste received at Envirocare, may not be the state in which the waste was generated.

[2] To obtain volume in cubic feet, multiply the number of cubic meters by 35.31.

[3] Waste reported to the MIMS database by Envirocare that was not assigned a state of origin.

[4] These data indicate a higher 1998 disposal volume for New York State than the rest of the report. This difference may be caused, in part, by the inclusion of LLRW from Cintichem that was reported as disposed of in 1997. Cintichem, a former radiopharmaceutical production facility, completed decommissioning in 1997. In 1998, Cintichem's NRC license was terminated and the facility closed.

Section 2

LOW-LEVEL RADIOACTIVE WASTE IN STORAGE (as of December 31, 1998)

This section provides information on LLRW being stored by generators.

Many generators store LLRW to allow its radioactivity to diminish to levels that permit disposal as non-radioactive waste (*i.e.*, **storage for decay**). In general, the cognizant regulatory agencies allow storage for decay only where the waste contains radionuclides with half-lives less than 90 days. LLRW in storage for decay is normally held for 10 half-lives, or until radioactivity has diminished to a level where it is indistinguishable from background radiation. Most generators hold LLRW in storage for decay at their own facilities, although approved off-site facilities may be used.

Generators regularly store waste pending transfer to a licensed LLRW disposal facility (*i.e.*, **storage pending disposal**). Storage pending disposal can occur for extended periods, as when the Barnwell LLRW disposal facility closed to generators in New York from June 30, 1994, until June 30, 1995. Such storage may also occur when the LLRW has a particular characteristic that makes it unacceptable at the available disposal facilities (*e.g.*, contains chemically hazardous components). For those cases where access to licensed disposal facilities is not available, most generators will store LLRW at their own facilities, although approved off-site storage facilities may be used. In addition, most generators routinely store LLRW at their facilities for short periods as a normal part of operation or staging while accumulating a sufficient quantity for transfer to a treatment or disposal facility.

Volume is presented in cubic meters and activity is presented in gigabecquerels (GBq) or megabecquerels (MBq). These units have been adopted to be consistent with NRC uniform national LLRW manifest requirements. The Conversions for Units table on the inside back cover and footnotes to the relevant tables provide information for converting the data to the previously used units of cubic feet and curies.

Individual entries in the following tables have been rounded using standard procedures. Because the totals shown represent the sum of the rounded entries, they may vary slightly from one table to another and may not always equal 100%. Waste volumes have been rounded to the nearest 10th of a cubic meter. In most cases, activity has been rounded to the nearest 10,000th of a GBq. Percentages have been rounded to the nearest 10th of a percent in the tables and figures.

Table 2-1: Generators Reporting and Storing Waste Pending Disposal[1]

Generator Type	Number Reporting	Number Storing
MEDICAL		
Government	21	1
Private	210	4
College	20	6
Other	5	0
Total Medical	**256**	**11**
INDUSTRIAL		
Manufacturing	10	5
Research & Development	17	7
Other	2	2
Total Industrial	**29**	**14**
ACADEMIC (non-medical)		
College or University	32	12
Other	3	2
Total Academic	**35**	**14**
GOVERNMENT (non-medical)		
New York State	2	1
Other	6	1
Total Government	**8**	**2**
TOTAL NON-POWER PLANT	**328**	**41**
NUCLEAR POWER PLANT	**6**	**4**
TOTAL	**334**	**45**

[1] Includes LLRW in storage at generator sites or an approved off-site location pending transfer to a licensed LLRW facility, as of December 31, 1998. Does not include LLRW held in storage for decay.

Unless otherwise noted, all data were derived from low-level radioactive waste generator reports received by NYSERDA as of May 4, 1999.

Table 2-2: Volume and Activity of Waste Stored Pending Disposal[1]

Generator Type	Volume (m^3)[2]	% of Total	Activity (GBq)[2]	% of Total
MEDICAL				
Government	0.4		3.7000	
Private	17.6		2.1995	
College	25.5		20.0413	
Total Medical	**43.5**	**11.8**	**25.9408**	**0.1**
INDUSTRIAL				
Manufacturing	11.8		181.9919	
Research & Development	3.7		6.2892	
Other	0.1		0.0009	
Total Industrial	**15.6**	**4.2**	**188.2820**	**0.6**
ACADEMIC (non-medical)				
College or University	23.1		515.5016	
Other	1.2		0.6010	
Total Academic	**24.3**	**6.6**	**516.1026**	**1.6**
GOVERNMENT (non-medical)				
New York State	45.6		456.9676	
Other	0.9		0.1295	
Total Government	**46.5**	**12.6**	**457.0971**	**1.4**
TOTAL NON-POWER PLANT	**129.9**	**35.2**	**1,187.4225**	**3.7**
NUCLEAR POWER PLANT	**240.0**	**64.8**	**30,522.6816**	**96.3**
TOTAL	**369.9**	**100.0**	**31,710.1041**	**100.0**
	(13,061 ft^3)		**(857 curies)**	

[1] Includes LLRW in storage at generator sites or an approved off-site location pending transfer to a licensed LLRW facility, as of December 31, 1998. Does not include LLRW held in storage for decay.

[2] To obtain volume in cubic feet, multiply the number of cubic meters by 35.31. To obtain activity in curies, divide the number of gigabecquerels (GBq) by 37.

Unless otherwise noted, all data were derived from low-level radioactive waste generator reports received by NYSERDA as of May 4, 1999.

Table 2-3: Waste in Storage Pending Disposal, by Class[1] and Generator Type[2]

Generator Type	Class A		Class B		Class C	
	Volume (m^3)[3]	Activity (GBq)[3]	Volume (m^3)[3]	Activity (GBq)[3]	Volume (m^3)[3]	Activity (GBq)[3]
MEDICAL	43.5	25.9109	0.0	0.0000	0.0	0.0000
INDUSTRIAL	15.6	188.2820	0.0	0.0000	0.0	0.0000
ACADEMIC	24.0	506.7591	0.2	9.2500	0.1	0.0185
GOVERNMENT	46.5	457.0971	0.0	0.0000	0.0	0.0000
NUCLEAR POWER PLANT	234.3	29,835.7865	5.7	687.0000	0.0	0.0000
TOTAL	**363.9**	**31,013.8356**	**5.9**	**696.2500**	**0.1**	**0.0185**
	(12,849 ft^3)	**(838 curies)**	**(208 ft^3)**	**(19 curies)**	**(3.5 ft^3)**	**(* curies)**

[1] Classes A, B, and C are waste-classification categories established by the U.S. Nuclear Regulatory Commission in Title 10 of the Code of Federal Regulations, Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste," and adopted by the New York State Department of Environmental Conservation in 6 NYCRR Part 382, "Regulations for Low-Level Radioactive Waste Disposal Facilities."

[2] Refers to LLRW in storage at generator sites or an approved off-site location pending transfer to a licensed LLRW facility, as of December 31, 1998. Does not include LLRW held in storage for decay.

[3] To obtain volume in cubic feet, multiply the number of cubic meters by 35.31. To obtain activity in curies, divide the number of gigabecquerels (GBq) by 37.

* Less than 0.1 curies.

Unless otherwise noted, all data were derived from low-level radioactive waste generator reports received by NYSERDA as of May 4, 1999.

Table 2-4: Number of Facilities Reporting Various Waste Types in Storage Pending Disposal

Waste Type[1]	Medical	Industrial	Academic	Government	Nuclear Power Plants	Total
Aqueous Liquids	4	4	3	0	0	11
Biological Material (excluding carcasses)	0	0	1	0	0	1
Charcoal	0	1	0	0	2	3
Compacted Trash	4	2	5	0	0	11
Glassware/Labware	1	0	1	0	0	2
Ion Exchange Media	0	0	0	0	1	1
Mechanical Filter	0	1	0	0	1	2
Non-compacted Trash	0	1	0	0	0	1
Organic Liquids (excluding oil)	0	0	1	0	0	1
Sealed Source/Device	2	4	1	0	0	7
Soil	0	1	1	1	0	3
Other[2]	0	0	0	1	0	1

[1] Waste types listed are as defined by the U.S. Nuclear Regulatory Commission Uniform Manifest.

[2] In certain cases, generators reported storage of waste that did not fit into any of the categories listed. Those data are reported here.

Unless otherwise noted, all data were derived from low-level radioactive waste generator reports received by NYSERDA as of May 4, 1999.

Table 2-5: Waste in Storage[1] Pending Disposal, by County of Origin[2]

County	Number of Generators Reporting	Number of Generators Storing LLRW[3]	Volume (m^3)[4]	% of Total	Activity (GBq)[4]	% of Total
Albany	11	2	1.1	0.3	0.5245	*
Allegany	0	0	0.0	0.0	0.0000	0.0
Bronx	12	1	0.2	*	0.7400	0.0
Broome	6	2	0.3	0.1	5.0794	*
Cattaraugus	1	1	45.6	12.3	456.9676	1.4
Cayuga	1	0	0.0	0.0	0.0000	0.0
Chautauqua	2	0	0.0	0.0	0.0000	0.0
Chemung	4	1	0.2	*	0.0037	*
Chenango	0	0	0.0	0.0	0.0000	0.0
Clinton	4	1	*	*	0.9262	*
Columbia	0	0	0.0	0.0	0.0000	0.0
Cortland	1	0	0.0	0.0	0.0000	0.0
Delaware	2	0	0.0	0.0	0.0000	0.0
Dutchess	8	1	2.1	0.6	1.8500	*
Erie	20	3	5.1	1.4	0.1886	*
Essex	3	1	0.2	*	0.1180	*
Franklin	2	0	0.0	0.0	0.0000	0.0
Fulton	0	0	0.0	0.0	0.0000	0.0
Genesee	1	0	0.0	0.0	0.0000	0.0
Greene	0	0	0.0	0.0	0.0000	0.0
Hamilton	0	0	0.0	0.0	0.0000	0.0
Herkimer	1	0	0.0	0.0	0.0000	0.0
Jefferson	3	0	0.0	0.0	0.0000	0.0
Kings	18	0	0.0	0.0	0.0000	0.0
Lewis	0	0	0.0	0.0	0.0000	0.0
Livingston	1	0	0.0	0.0	0.0000	0.0
Madison	2	0	0.0	0.0	0.0000	0.0
Monroe	12	2	5.4	1.5	5.3649	*
Montgomery	2	0	0.0	0.0	0.0000	0.0
Nassau	34	4	2.3	0.6	1.6472	*
New York	32	7	34.8	9.4	515.8859	1.6
Niagara	2	0	0.0	0.0	0.0000	0.0
Oneida	4	1	0.8	0.2	9.4123	*
Onondaga	11	0	0.0	0.0	0.0000	0.0

Unless otherwise noted, all data were derived from low-level radioactive waste generator reports received by NYSERDA as of May 4, 1999.

Table 2-5: Waste in Storage[1] Pending Disposal, by County of Origin[2] (continued)

County	Number of Generators Reporting	Number of Generators Storing LLRW[3]	Volume (m^3)[4]	% of Total	Activity (GBq)[4]	% of Total
Ontario	3	0	0.0	0.0	0.0000	0.0
Orange	8	0	0.0	0.0	0.0000	0.0
Orleans	1	0	0.0	0.0	0.0000	0.0
Oswego	3	3	235.6	63.7	30,520.9516	96.3
Otsego	3	0	0.0	0.0	0.0000	0.0
Putnam	2	1	0.3	0.1	0.1191	*
Queens	13	1	0.8	0.2	0.3090	*
Rensselaer	4	3	16.2	4.4	4.3207	*
Richmond	5	1	0.4	0.1	0.0600	*
Rockland	8	2	4.0	1.1	176.9743	0.6
St. Lawrence	3	1	0.1	*	0.2080	*
Saratoga	3	0	0.0	0.0	0.0000	0.0
Schenectady	4	1	0.2	*	2.3852	*
Schoharie	0	0	0.0	0.0	0.0000	0.0
Schuyler	0	0	0.0	0.0	0.0000	0.0
Seneca	1	0	0.0	0.0	0.0000	0.0
Steuben	2	0	0.0	0.0	0.0000	0.0
Suffolk	33	1	1.7	0.5	2.0000	*
Sullivan	0	0	0.0	0.0	0.0000	0.0
Tioga	0	0	0.0	0.0	0.0000	0.0
Tompkins	3	1	0.3	0.1	0.3288	*
Ulster	6	0	0.0	0.0	0.0000	0.0
Warren	1	0	0.0	0.0	0.0000	0.0
Washington	0	0	0.0	0.0	0.0000	0.0
Wayne	2	1	4.4	1.2	1.7300	*
Westchester	26	2	7.8	2.1	2.0091	*
Wyoming	0	0	0.0	0.0	0.0000	0.0
Yates	0	0	0.0	0.0	0.0000	0.0
TOTALS	**334**	**45**	**369.9**	**99.9**	**31,710.1041**	**99.9**
			(13,061 ft^3)		**(857 curies)**	

[1] Includes LLRW in storage at generator sites or an approved off-site location pending transfer to a licensed LLRW facility, as of December 31, 1998. Does not include LLRW held in storage for decay.
[2] Section 4 of this report identifies the individual facilities reporting LLRW in storage pending disposal.
[3] Refers to the number of generators who reported LLRW in storage pending disposal as of December 31, 1998.
[4] To obtain volume in cubic feet, multiply the number of cubic meters by 35.31. To obtain activity in curies, divide the number of gigabecquerels (GBq) by 37.
* Less than 0.1 cubic meter or 0.1%.

Unless otherwise noted, all data were derived from low-level radioactive waste generator reports received by NYSERDA as of May 4, 1999.

Table 2-6: Radionuclide Content[1] of Waste in Storage Pending Disposal (in MBq)[2]

Radionuclide	Half-Life[3,4]	Academic	Government	Industrial	Medical	Nuclear Power Plants	Total
Ag-110m	21.8 y					18,224.220	18,224.220
Al-26	7.1 E5 y				18.520		18.520
Am-241	432.7 y		*	3,515.000	4,000.000		7,515.000
Am-242	1141y					50.890	50.890
Ba-133	10.5 y	0.111			0.037		0.148
C-14	5730 y	651.500	7,510.000	1,251.440	5,876.610	56,670.050	71,959.600
Ca-45	162.7 d	0.002			18.520		18.522
Cd-109	462.0 d		*				*
Ce-141	32.5 d					0.343	0.343
Ce-144	284.6 d					73,579.920	73,579.920
Cf-252	2.65 y			0.111	0.054		0.165
Cm-242	162.8 d					12.310	12.310
Cm-243	29.1 y					34.710	34.710
Cm-243/244	29.1 y					0.171	0.171
Cm-244	18.1 y				25.890		25.890
Co-57	271.8 d		*	158.920		196.500	355.420
Co-58	70.9 d			0.250		12,904.930	12,905.180
Co-60	5.2 y	1,098.043	*	4.098		9,974,496.983	9,975,599.124
Cr-51	27.7 d		*	481.250	410.700	22,528.102	23,420.052
Cs-134	2.0 y					40,100.000	40,100.000
Cs-137	30.2 y	500,000.576	252.000	0.370	*	807,563.863	1,307,816.809
Fe-55	2.7 y					2,697,497.890	2,697,497.890
Fe-59	44.5 d					10,033.710	10,033.710
Gd-153	241.6 d	0.037			18.520		18.557
H-3	12.3 y	14,335.620	449,000.000	179,941.420	9,689.830	9,553.210	662,520.080
I-125	59.4 d			84.370	395.900		480.270
I-129	1.6 E7 y	0.004				20.830	20.834
Kr-85	10.8y			370.000			370.000
Mn-54	312.2 d	0.074		0.250		977,764.220	977,764.544
Na-22	2.6 y	0.388					0.388
Nb-94	2.0 E4 y				18.520	2,708.000	2,726.520

Unless otherwise noted, all data were derived from low-level radioactive waste generator reports received by NYSERDA as of May 4, 1999.

Nb-95	35.0 d					12.800	12.800
Ni-59	7.6 E4 y					60,766.900	60,766.900
Ni-63	100 y	0.190		481.000		524,528.320	525,009.510
P-32	14.3 d			22.220	477.300		499.520
P-33	25.3 d			752.950			752.950
Pb-210	22.6 y	0.087		0.004	0.186		0.277
Po-210	138.4 d		*				*
Pu-238	87.7 y			1,110.000		29.760	1,139.760
Pu-239	2.4 E4 y					18.270	18.270
Pu-241	14.4 y					19,760.294	19,760.294
Ra-226	1.6 E3 y	0.070		0.796	112.000		112.866
S-35	87.2 d			88.800	244.200		333.000
Sb-125	2.8 y					77.850	77.850
Sm-121	1.1 d				18.520		18.520
Sn-113	115.1 d		*	*	37.040		37.040
Sr-85	64.8 d				18.520		18.520
Sr-89	50.5 d					38.080	38.080
Sr-90	29.1 y	0.052	107.000		4,597.000	3,284.393	7,988.445
Tc-99	2.1 E5 y		98.600			4,293.700	4,392.300
Tc-99m	6.0 h			18.500			18.500
Th-232	1.4 E10 y	0.037					0.037
Tl-204	3.8 y	0.037					0.037
U-238	4.5 E9 y	13.680	129.500		0.001		143.181
Zn-65	243.8 d			0.256		15,205,828.000	15,205,828.256
Zr-95	64 d					67.470	67.470
Total		**516,100.508**	**457,097.100**	**188,282.005**	**25,977.868**	**30,522,646.689**	**31,710,104.170**

[1] Some generator facilities have reported radionuclides with half-lives of less than 90 days in LLRW held for storage pending disposal. In the majority of these cases, the shorter-lived radionuclides reported cannot be separated readily from longer-lived radionuclides in the waste. Does not include LLRW in storage for decay.

[2] To obtain activity in curies, divide the number of MBq by 37,000.

[3] **Source:** Chart of the Nuclides, General Electric Company under the direction of Naval Reactors, U.S. DOE; 15th edition, revised to 1996. **NB**: y=years, d =days, h=hours.

[4] Where scientific notation is used, multiply the number by 10 to the specified power. Example: For Ra-226, 1.6 E3 = 1.6×10^3 = 1.6x10x10x10 = 1.6x1,000 = 1,600. For this table, the whole number to which 10 is raised is equal to the number of places the decimal is moved to the right.

Unless otherwise noted, all data were derived from low-level radioactive waste generator reports received by NYSERDA as of May 4, 1999.

Table 2-7: Waste Reported in Storage for Decay[1], by Generator Type

Generator Type	Number of Generators Reporting	Number of Generators Reporting Storage for Decay[2]	Number of Generators Reporting Only Storage for Decay	Estimated Maximum Volume in Storage for Decay at Any Time (m^3)[3]
MEDICAL	256	249	220	1,286
INDUSTRIAL	29	13	7	170
ACADEMIC	35	33	17	359
GOVERNMENT	8	3	2	51
NUCLEAR POWER PLANT	6	0	0	0
TOTAL	334	298	246	1,866
				(65,888 ft^3)

[1] Storage for decay means holding the LLRW until the level of radioactivity has diminished to the point where it can be disposed of as non-radioactive waste. Normally, such LLRW is held for 10 half-lives, or until the radioactivity has diminished to a level that is undetectable above background radiation.

Typical radionuclides held for decay, with their respective half-lives, include: Iodine-123 (13.1 hours), Iodine-125 (59.7 days), Iodine-131 (8.04 days), Technetium-99m (6.02 hours), Phosphorous-32 (14.3 days), Gallium-67 (3.26 days), and Sulfur-35 (89.9 days).

[2] Some generators who store for decay also may have transferred other LLRW to one of the licensed LLRW disposal facilities or may be storing LLRW pending disposal.

[3] To obtain volume in cubic feet, multiply the number of cubic meters by 35.31.

Unless otherwise noted, all data were derived from low-level radioactive waste generator reports received by NYSERDA as of May 4, 1999.

Table 2-8: Treatments[1] Reported for Waste in Storage Pending Disposal, by Generator Type

Generator Type	Number of Generators Storing LLRW[2]	Number of Storing Generators Reporting Waste Treatment and Predominant Treatments
MEDICAL	11	On Site: 3 • Compaction • Solidification • Size Reduction Off Site: None Reported
INDUSTRIAL	14	On Site: 3 • Compaction • Size Reduction Off Site: 1 • Supercompaction
ACADEMIC	14	On Site: 1 • Compaction Off Site: 1 • Supercompaction
GOVERNMENT	2	On Site: None Reported Off Site: None Reported
NUCLEAR POWER PLANT	4	On Site: None Reported Off Site: None Reported

[1] Treatment refers to processing LLRW to reduce its volume or activity, or change its chemical or physical form, prior to transfer to a disposal facility. Some generators reported using both on-site and off-site waste treatment facilities.

[2] Refers to the number of generators who reported storing LLRW pending disposal at their facility or an approved off-site location as of December 31, 1998.

Unless otherwise noted, all data were derived from low-level radioactive waste generator reports received by NYSERDA as of May 4, 1999.

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Section 3

HISTORIC DATA AND PROJECTIONS FOR LOW-LEVEL RADIOACTIVE WASTE GENERATION IN NEW YORK STATE

This section provides historic data on volume and activity of LLRW shipped for disposal, based on generator data reported to NYSERDA for calendar years 1990 through 1998.

This section also provides a summary, based on information supplied in the 1998 generator reports, of generator projections of the volume and activity of LLRW that will require disposal in a licensed LLRW facility for the years 1999 to 2003.

Volume is presented in cubic meters and activity is presented in GBq. These units have been adopted to be consistent with NRC uniform national LLRW manifest requirements. The Conversions for Units table on the inside back cover and footnotes to the relevant tables provide information for converting the data to the previously used units of cubic feet and curies. Volume projections have been rounded to the nearest 10th of a cubic meter, and activity projections to the nearest GBq.

Unless otherwise noted, all data were derived from low-level radioactive waste generator reports received by NYSERDA as of May 4, 1999.

Table 3-1: Historic Overview of Waste Disposal, by Volume[1] (in m^3)[2]

Generator Type	1990	1991	1992	1993	1994	1995	1996	1997	1998
CINTICHEM, INC.[3]	125	270	736	468	2,539	4,855	1,005	1,146	0
TOTAL NON-POWER PLANT	684	812	1,297	1,165	2,767	4,915	2,074	1,295	81
NUCLEAR POWER PLANT	1,822	1,441	2,315	1,048	804	667	273	428	273
TOTAL	**2,125**	**3,127**	**2,345**	**1,969**	**3,434**	**5,188**	**2,502**	**1,503**	**354**

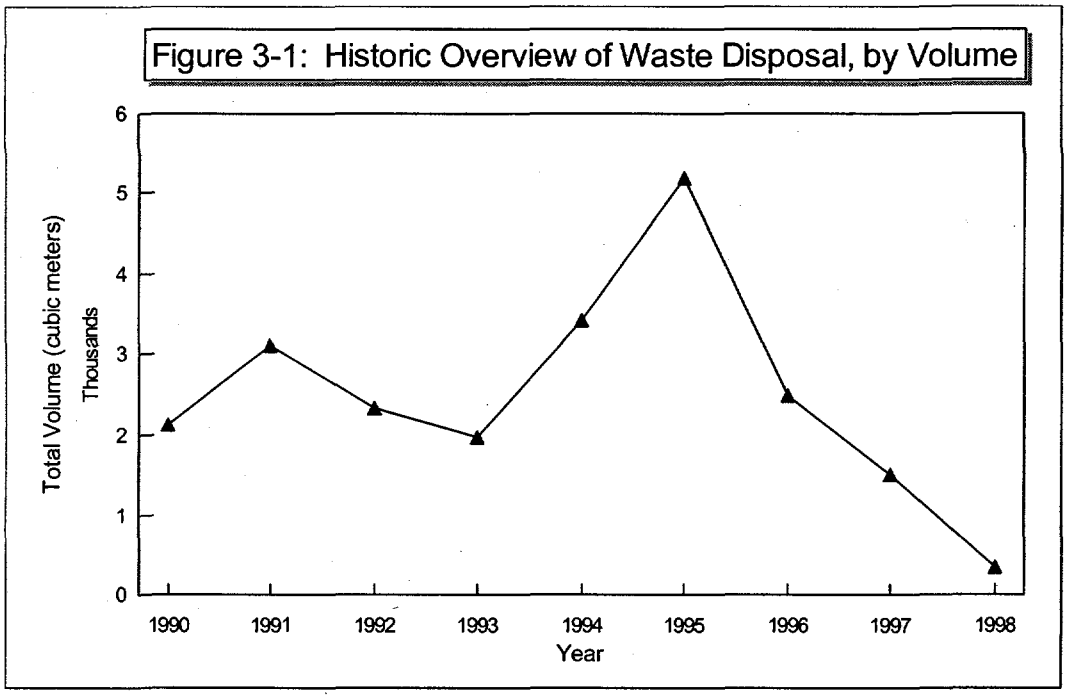
Table 3-2: Historic Overview of Waste Disposal, by Activity[1] (in GBq)[2]

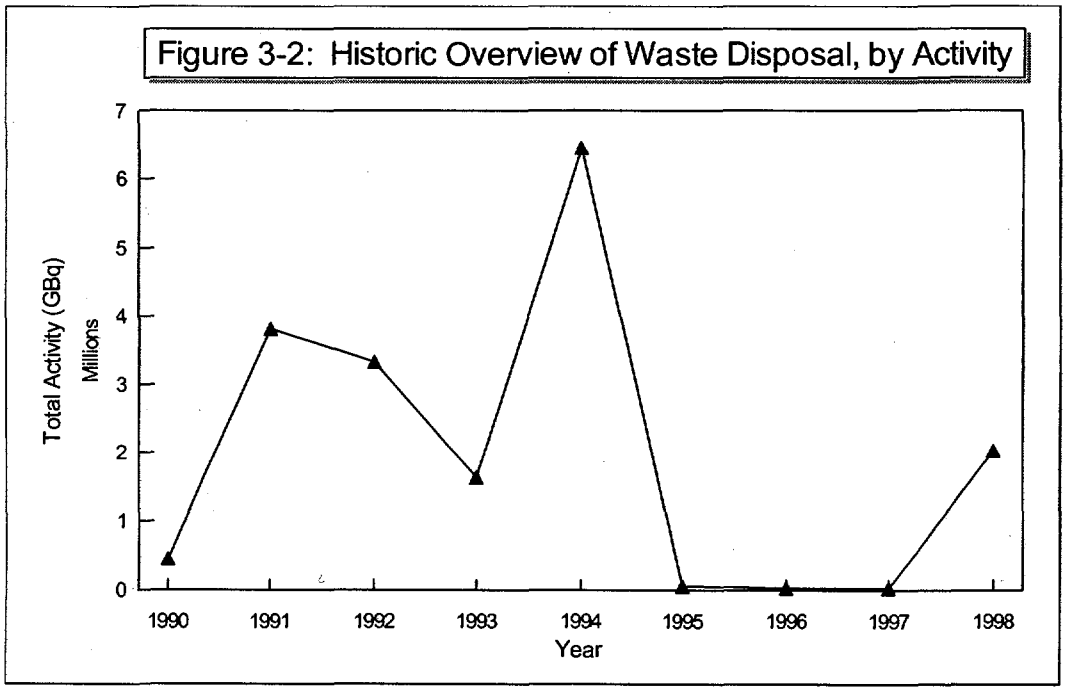
Generator Type	1990	1991	1992	1993	1994	1995	1996	1997	1998
CINTICHEM, INC.[3]	269,434	30,229	21,756	21,127	1,443	37	51	2	0
TOTAL NON-POWER PLANT	273,023	37,077	32,338	157,472	15,392	481	22,330	748	233
NUCLEAR POWER PLANT	190,883	3,782,103	3,310,723	1,483,515	6,444,142	72,187	28,392	27,584	2,022,859
TOTAL	**463,906**	**3,816,180**	**3,343,061**	**1,640,987**	**6,459,534**	**72,668**	**50,722**	**28,332**	**2,023,092**

[1] Data are based on reports that must be filed annually with NYSERDA.

[2] To obtain volume in cubic feet, multiply the number of cubic meters by 35.31. To obtain activity in curies, divide the number of gigabecquerels (GBq) by 37.

[3] Cintichem, once a major supplier of radiopharmaceuticals, completed the decommissioning of its former radionuclide-production facility in 1997 and terminated its radioactive materials license in 1998. Cintichem data also are included in the total for all non-power plant sources. It is identified separately because of its significant contribution to the total State waste stream.





Unless otherwise noted, all data were derived from low-level radioactive waste generator reports received by NYSERDA as of May 4, 1999.

Unless otherwise noted, all data were derived from low-level radioactive waste generator reports received by NYSERDA as of May 4, 1999.

Table 3-3: Generators' Five-Year Projections of Waste[1], by Volume (in m^3)[2]

Generator Type	1999	2000	2001	2002	2003
MEDICAL	131.5	69.0	71.7	73.7	75.8
INDUSTRIAL	86.5	81.7	81.5	76.4	76.4
ACADEMIC	17.9	18.0	18.2	18.7	19.2
GOVERNMENT	4.7	3.4	3.5	3.9	3.5
TOTAL NON-POWER PLANT	**240.6**	**172.1**	**174.9**	**172.7**	**174.9**
NUCLEAR POWER PLANT	347.9	336.5	285.6	312.1	276.5
TOTAL	**588.5**	**508.6**	**460.5**	**484.8**	**451.4**

Table 3-4: Generators' Five-Year Projections of Waste[1], by Activity (in GBq)[2]

Generator Type	1999	2000	2001	2002	2003
MEDICAL	57.5	37.7	40.9	44.4	48.5
INDUSTRIAL	783.5	114.0	119.6	108.8	145.7
ACADEMIC	622.7	122.7	32.9	30.1	28.3
GOVERNMENT	8.0	5.2	5.2	6.0	5.2
TOTAL NON-POWER PLANT	**1,471.7**	**279.6**	**198.6**	**189.3**	**227.7**
NUCLEAR POWER PLANT	67,380.0	40,310.0	28,044.0	41,270.0	38,770.0
TOTAL	**68,851.7**	**40,589.6**	**28,242.6**	**41,459.3**	**38,997.7**

[1] Refers to LLRW projected by generators to require disposal in a licensed LLRW facility.

[2] To obtain volume in cubic feet, multiply the number of cubic meters by 35.31. To obtain activity in curies, divide the number of gigabecquerels (GBq) by 37.

Section 4

GENERATORS FILING REPORTS

This section identifies those facilities that filed LLRW reports with NYSERDA for calendar year 1998 in accordance with the New York State LLRW Management Act (Ch. 673, L. 1986) and NYSERDA regulations (21 NYCRR Part 502).

Table 4a lists the total volume and activity of LLRW reported by generators as having been shipped to LLRW disposal facilities in 1998 and the total volume and activity of LLRW reported by each generator as being held in storage pending disposal as of December 31, 1998.

Table 4b lists the generators reporting LLRW held only in storage for decay during 1998.

Generator estimates of total storage capacity and the time that LLRW can continue to be produced and stored on site, absent access to disposal facilities, also are included. The table indicates where storage capacity includes both storage pending transfer to a LLRW disposal facility and storage for decay. The absence of data indicates that the generator reported no information in the particular category.

Volume is presented in cubic meters and activity is presented in gigabecquerels (GBq). These units have been adopted to be consistent with new NRC uniform national LLRW manifest requirements. The Conversions for Units table on the inside back cover and footnotes to the relevant tables provide information for converting the data to the previously used units of cubic feet and curies.

The individual entries in this section have been rounded using standard procedures. Waste volumes have been rounded to the nearest 10th of a cubic meter. Activity has been rounded to the nearest 10,000th of a gigabecquerel. An asterisk (*) indicates an activity of less than a 10,000th of a GBq or a volume of less than a 10th of a cubic meter.

Table 4-a: Generators Reporting Disposal or Storage of Waste Pending Disposal

Unless otherwise noted, all data were derived from low-level radioactive waste generator reports received by NYSERDA as of May 4, 1999.

County	Facility & Location	Volume Disposed of (m^3)	Activity Disposed of (GBq)	Volume Stored (m^3)	Activity Stored (GBq)	Storage Capacity (m^3)†	Storage Time (months)
Albany	Albany Medical Center	2.94	1.3962			210-b	72
	New York State Department of Health, Wadsworth Center, Albany	0.64	0.7187			80-b	30
	University at Albany, State University of New York	0.63	0.5440	0.21	0.3950	2.7-b	55
	Watervliet Arsenal, Watervliet			0.85	0.1295	31.5	60
Bronx	Albert Einstein College of Medicine	0.12	3.3894			16-b	24
	Fordham University			0.20	0.7400	1000-b	60
	Lincoln Hospital Medical and Mental Health Center	0.03	3.700			10-b	12
Broome	IBM Corporation, Endicott			0.02	4.9954	*	60+
	SUNY-Binghamton	*	0.0224	0.25	0.0840	1.9-b	>100
Cattaraugus	New York State Energy Research and Development Authority, West Valley	0.03	0.0128	45.62	456.9676	52.6	134
Chemung	Imaging & Sensing Technology Corporation, Elmira	0.37	0.0857	0.21	0.0037	17	120
Clinton	SUNY-Plattsburgh			0.01	0.9262	14.2-b	200
	William H. Miner Agricultural Research Institute, Chazy	0.20	2.8120			252.3-b	60+
	Wyeth-Ayerst Research, Chazy	0.02	0.3700			2.5-b	60
Dutchess	Rockefeller University Field Research Center, Millbrook			2.08	1.8500	2.6-b	≥36
	Texaco Fuels and Lubricants Technology, Glenheim	0.01	0.0029				
Erie	Bristol-Myers Squibb, Westwood Squibb, Buffalo	0.84	5.1142	0.21	0.1883	12.6-b	60
	Praxair, Inc., Tonawanda			0.03	0.0002		
	SUNY-Buffalo	7.77	7.5388	4.88	0.0002	300	24
Essex	International Paper, Ticonderoga	0.01	0.0021				
	Upstate Biotechnology, Inc., Lake Placid			0.24	0.1180	22.8-b	180
Kings	Brookdale University Hospital	2.00	0.0929				

† The letter "b" following an entry in the Storage Capacity column indicates storage capacity that includes both storage pending disposal in a licensed LLRW disposal facility and storage for decay. Entries without a "b" indicate capacity for storage pending disposal in a licensed LLRW disposal facility.

* Less than 0.1 cubic meter or 0.0001 GBq.

County	Facility & Location	Volume Disposed of (m^3)	Activity Disposed of (GBq)	Volume Stored (m^3)	Activity Stored (GBq)	Storage Capacity (m^3)†	Storage Time (months)
Kings	New York Harbor Health Care System	0.53	0.0130			249-b	69
Monroe	Astra-Arcus USA, Rochester	0.16	0.4476			146.4-b	60
	Eastman Kodak Company[1]						
	SUNY College at Brockport			0.42	0.1480	0.8-b	24
	University of Rochester	8.00	41.9856	5.00	5.2169	486-b	24
Nassau	Cold Spring Harbor Laboratory	0.56	0.1110	0.56	0.1110	90-b	120
	North Shore University Hospital, Manhasset	0.54	0.5772			18.2-b	36
	Northrup Grumman Corporation, Bethpage			0.04	0.4811	560	12
	New York College of Osteopathic Medicine of NYIT, Old Westbury			0.04	0.0326	1.3-b	60
	OSI Pharmaceuticals, Inc., Uniondale	1.68	1.4040	1.68	1.0225	3.9-b	12
	Winthrop University Hospital, Mineola	2.20	0.1113			179-b	120
New York	Bell Atlantic[2]			0.05	0.0008		
	City College NY- CUNY	0.08	0.0148			40-b	48
	Columbia Presbyterian Medical Center	14.23	14.8107	0.88	1.4800	56-b	6
	Columbia University	0.64	48.0045	13.10	501.1000	100-b	80
	Haskins Laboratories of Pace University	*	0.0383			15.3-b	120
	Hunter College - CUNY	0.39	0.4586				6
	Memorial Sloan-Kettering Cancer Center	5.62	4.8600	16.80	1.8981	560-b	6
	Mt. Sinai Medical Center	1.05	0.6114			28-b	18
	New York City Department of Health Bureau of Laboratories			0.42	3.7000	63-b	26

[1] Eastman Kodak reported normal accumulation of waste pending sufficient volume for disposal.

[2] The New York Office submits a single report reflecting the activities and volumes from all Bell Atlantic facilities in the State.

† The letter "b" following an entry in the Storage Capacity column indicates storage capacity that includes both storage pending disposal in a licensed LLRW disposal facility and storage for decay. Entries without a "b" indicate capacity for storage pending disposal in a licensed LLRW disposal facility.

* Less than 0.1 cubic meter or 0.0001 GBq.

Unless otherwise noted, all data were derived from low-level radioactive waste generator reports received by NYSERDA as of May 4, 1999.

Unless otherwise noted, all data were derived from low-level radioactive waste generator reports received by NYSERDA as of May 4, 1999.

County	Facility & Location	Volume Disposed of (m^3)	Activity Disposed of (GBq)	Volume Stored (m^3)	Activity Stored (GBq)	Storage Capacity (m^3)†	Storage Time (months)
New York	New York Hospital Cornell Medical Center	2.34	1.5307			7.7-b	6
	New York University - Lanza Laboratories	0.04	0.0300				
	New York University Medical Center/ Bellevue Hospital	0.06	0.1200				
	Public Health Research Institute			0.63	0.4900	8-b	200
	Rockefeller University	1.27	3.6980	2.90	7.2170	58-b	≥ 60
Niagara	Niagara University	0.21	*				
Oneida	Hamilton College, Clinton			0.75	9.4123	34-b	500
Onondaga	Bristol-Myers Squibb, East Syracuse	0.21	0.1495			10.7-b	50
	SUNY Health Science Center, Syracuse	0.42	6.5453			135-b	60
	Syracuse University					18-b	> 240
Oswego	James A. FitzPatrick Nuclear Power Plant, Lycoming	92.22	9500.1127	38.38	1743.8610	1204	63
	Nine Mile Point Nuclear Station, Unit 1, Scriba	55.53	1893710.1290	68.31	5243.0869	4360	236
	Nine Mile Point Nuclear Station, Unit 2, Scriba	16.93	7309.2845	128.87	23534.0037	4360	180
Putnam	Orentreich Foundation, Cold Spring-on-Hudson			0.26	0.1191	27.5-b	24
Queens	Long Island Jewish Medical Center, New Hyde Park	0.21	1.6939			14-b	120
	Queens College - CUNY, Flushing			0.81	0.3091	57.1-b	36
Rensselaer	Coromed, Inc., Troy			0.16	0.1224	11.2-b	12
	Rensselaer Polytechnic Institute, Troy			15.00	4.0948	1000-b	60
	Virogenetics Corporation, Troy	2.10	0.2634	1.00	0.1036	13.6-b	60
Richmond (Staten Island)	New York State Institute for Basic Research in Developmental Disabilities					1.3	12
	St. Vincent's Medical Center			0.42	0.0600	2.5-b	60
Rockland	Champion International Corporation, West Nyack						
	ICN East, Inc., Diagnostics Division, Orangeburg	0.08	0.9139	3.51	0.2433	72.8-b	60

† The letter "b" following an entry in the Storage Capacity column indicates storage capacity that includes both storage pending disposal in a licensed LLRW disposal facility and storage for decay. Entries without a "b" indicate capacity for storage pending disposal in a licensed LLRW disposal facility.

* Less than 0.1 cubic meter or 0.0001 GBq.

County	Facility & Location	Volume Disposed of (m^3)	Activity Disposed of (GBq)	Volume Stored (m^3)	Activity Stored (GBq)	Storage Capacity (m^3)†	Storage Time (months)
Rockland	Nathan Kline Institute, Orangeburg	0.06	0.3740			45-b	84
	Self-Powered Lighting, West Nyack			0.53	176.7310	4.2	60
	Wyeth Ayerst Research, Pearl River	0.94	55.1840			340-b	24
Schenectady	General Electric Corporate R&D, Niskayuna	1.06	1.0981	0.21	2.3852	5	36
Seneca	Seneca Army Depot, Romulus	2.90	0.0016			680	24
St. Lawrence	Clarkson University, Potsdam			0.10	0.2080	10-b	120
Suffolk	SUNY-Stony Brook	3.55	1.8305	1.68	2.0000	63-b	48
Tompkins	Cornell University, Environmental Health & Safety, Ithaca	0.74	3.9351			41-b	28
	Ithaca College			0.30	0.3288	12-b	120
Ulster	New York City DEP - Ben Nesin Laboratory, Shokan						12
Wayne	R.E. Ginna Nuclear Power Plant, Ontario	15.62	7319.1620	4.42	1.7300	560	60
Westchester	American Health Foundation Naylor Dana Institute, Valhalla	5.88	15.0810			5.2-b	< 6
	Consolidated Edison Co. of New York, Inc., Indian Point #2, Buchanan	58.18	97480.391			6000	60
	Immunotherapy, Inc., Tarrytown			0.29	1.9906	0.5-b	14
	Medi-Ray, Tuckahoe	7.50	0.0185	7.50	0.0185	120-b	60
	New York Hospital/Cornell Medical Center, White Plains	0.42	0.0037			16.5-b	120
	New York City DEP - Kensico Laboratory, Valhalla	0.02	0.5550				12
	New York Power Authority, Indian Point #3, Buchanan	34.43	7540.3976			1699	360
	Regeneron Pharmaceuticals, Inc., Tarrytown	0.05	0.2590			29.9-b	70
	The W.M. Burke Medical Research Institute, White Plains					42-b	120

† The letter "b" following an entry in the Storage Capacity column indicates storage capacity that includes both storage pending disposal in a licensed LLRW disposal facility and storage for decay. Entries without a "b" indicate capacity for storage pending disposal in a licensed LLRW disposal facility.

* Less than 0.1 cubic meter or 0.0001 GBq.

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Table 4-b: Generators Reporting Only Storage for Decay

Albany
Capital Cardiology Associates, P.C., Albany
Capital District Endocrine Associates, Delmar
Capital Region Cardiology Associates, Albany
Empire Isotopes, LLC, Albany
Siena College, Loudonville
St. Peter's Hospital, Albany
Syncor International Corporation, Albany

Bronx
Jacobi Medical Center
Laboratory for Plant Morphogenesis
Lehman College, CUNY
Montefiore Medical Center
Our Lady of Mercy Medical Center
Saint Barnabas Hospital
Syncor Internation Corporation
University Diagnostic Medical Imaging
Westchester Square Medical Center

Broome
Oakdale Medical Center, Johnson City
Our Lady of Lourdes Memorial Hospital, Binghamton
United Health Services Hospitals - Binghamton General Hospital
United Health Services Hospitals - Wilson Medical Center, Johnson City

Cayuga
Wells College, Aurora

Chatauqua
Lake Shore Health Care Center, Irving
SUNY-Fredonia

Chemung
Arnot Ogden Medical Center, Elmira
Guthrie Clinic, Big Flats Office, Horseheads
St. Joseph's Hospital, Elmira

Clinton
CVPH Medical Center, Plattsburgh

Cortland
Commons Cardiac Evaluation Centre, Cortland

Delaware
Delaware Valley Hospital, Walton
The Hospital, Sydney

Dutchess
Bard College, Annandale on Hudson
Clinical Endocrine Laboratory, Poughkeepsie
DRA Imaging, Poughkeepsie
Hudson Valley Heart Center, Poughkeepsie
St. Francis' Hospital, Poughkeepsie
V.A. Hudson Valley Health Care Systems, Castle Point

Erie
Buffalo Cardiology and Pulmonary Associates
Buffalo General Hospital
Buffalo Medical Group, P.C.
Buffalo Medical Group, P.C., Williamsville
Cardiology Group of Western New York, Williamsville
Central Radiopharmaceutical Services, Buffalo
Erie County Medical Center, Buffalo
Kenmore Mercy Hospital, Kenmore
Life Technologies, Grand Island
Mercy Hospital, Buffalo
Millard Fillmore Hospital, Buffalo
Millard Fillmore Hospitals, Williamsville
Millard Fillmore Suburban Hospital, Williamsville
Roswell Park Cancer Institute Corporation, Buffalo
Sheehan Memorial Hospital, Buffalo
Sisters of Charity Hospital, Buffalo
Syncor International Corporation, Cheektowaga

Essex
Adirondack Biomedical Research Institute, Lake Placid

Franklin
Adirondack Medical Center, Saranac Lake
Trudeau Institute, Inc., Saranac Lake

Genesee
Genesee Memorial Hospital, Batavia

Herkimer
Little Falls Hospital

Jefferson
James E. Willis, M.D., P.C., Watertown
Mirza M. Ashraf, M.D., Carthage
Samaritan Medical Center, Watertown

Kings (Brooklyn)
Bay Imaging
Brooklyn Medical Imaging Center

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Brooklyn Nuclear Services
Cardio Lab, Inc.
Brooklyn College - CUNY
Diagnostic Cardiology Associates, P.C.
Family Health Care and Cardiac Center
Long Island College Hospital
Lutheran Medical Center
Mark Novick, M.D.
Med Spect Nuclear Imaging, P.C.
New York Methodist Hospital
The Brooklyn Hospital Center
Universal Diagnostic Laboratories, Inc.
U.S. FDA - Northeast Regional Laboratory
Wyckoff Heights Medical Center

Livingston
Nicholas Noyes Memorial Hospital, Dansville

Madison
Colgate University, Hamilton
Oneida Healthcare Center, Oneida

Monroe
Lakeside Memorial Hospital, Brockport
Monroe County Medical Examiner, Rochester
Park Ridge Hospital, Rochester
Rochester Cardiopulmonary Group, P.C.
Rochester General Hospital
St. Mary's Hospital, Rochester
Syncor International Corporation, Rochester
Wyeth Lederle Vaccines and Pediatrics, West Henrietta

Montgomery
Amsterdam Memorial Hospital
St. Mary's Hospital, Amsterdam

Nassau
Advanced Medical Imaging of Long Island, Great Neck
Bethpage Medical Laboratory
Cardiovascular Diagnostic Services, Plainview
Cardiovascular Medical Associates, Garden City
Day-Op Center of Long Island, P.C., Mineola
Endocrine and Diabetes Associates of Long Island, Rockville Centre
Franklin Hospital Medical Center, Valley Stream
Grappell and Walker, M.D., P.C., Plainview
Great Neck Imaging
Heart Diagnostic Imaging, Great Neck
Hempstead General Hospital
Howard Heimowitz, M.D., Syosset
Long Beach Medical Center
Long Island Cardiovascular Imaging Consultants, P.C., Great Neck
Mallinckrodt, Inc., Hicksville
Manhasset Diagnostic Imaging
Mercy Medical Center, Rockville Centre
Nassau Cardiac Imaging, Valley Stream
Nassau County Medical Examiner's Office, East Meadow
Nassau Radiologic Group, P.C., Garden City
Nassau Radiological Group, Manhasset
North Shore Cardiac Imaging, P.C., New Hyde Park
North Shore University Hospital at Glen Cove
Nycomed Amersham, Port Washington
South Shore Diagnostic Heart Center, Massapequa
South Shore Heart Associates, P.C., Rockville Centre
SUNY College at Old Westbury
Weber and Bloom, P. C., Smithtown

New York
Advanced Fertility Services, P.C.
Bendiner and Schlesinger, Inc.
Beth Israel Medical Center
Dr. Grunter and Dr. Stoll, M.D., P.C.
Dr. Jacob Lichy and Dr. Thomas Kolb
East Side Physicians, P.C.
Gramercy Cardiac Diagnostic Services
Harlem Hospital Center
Lenox Hill Hospital
Lenox Hill Radiology and Medical Imaging Associates
Metropolitan Hospital Center
New York Blood Center
New York University
Orentreich Medical Group, LLP (Lab)
Park Avenue Radiologists, P.C.
St. Luke's Roosevelt Hospital Center
St. Luke's Roosevelt Hospital
West End MRI Medical Associates, P.C.

Niagara
Mount St. Mary's Hospital, Lewiston

Oneida
Faxton Hospital, Utica
St. Elizabeth Hospital, Utica
St. Luke's Memorial Hospital, Utica

Onondaga
Community General Hospital, Syracuse
Crouse Hospital, Syracuse
CV Group, LLC, Fayetteville
CV Group, LLC - North Medical Cardiovascular
Heart Care Center, Liverpool

Unless otherwise noted, all data were derived from low-level radioactive waste generator reports received by NYSERDA as of May 4, 1999.

Onondaga Hill Cardiovascular Group, Liverpool
St. Joseph's Hospital Health Center, Syracuse
Syncor International Corporation, Syracuse

Ontario
Clifton Springs Hospital and Clinic
F.F. Thompson Hospital, Canandaigua
Geneva General Hospital

Orange
Hudson Valley Heart Center, New Windsor
Mid-Hudson Cardiology, P.C., New Windsor
Nuclear Imaging Systems, Inc., Newburgh
St. Anthony's Hospital, Warwick
St. Luke's Hospital, Newburgh
Syncor International Corporation, Newburgh
The Cornwall Hospital
Wallkill Radiology Associates, P.C., Middletown

Orleans
Medina Memorial Hospital

Otsego
A.O. Fox Hospital, Oneonta
Bassett Healthcare, Cooperstown
Hartwick College, Oneonta

Putnam
New England Equine Practice, P.C., Brewster

Queens
Elmhurst Hospital Center (City Hospital)
EMA Medical Laboratory, Inc., Ridgewood
Gramercy Cardiac Diagnostic Services, Forest Hills
Hillcrest Radiology Associates, P.C., Jamaica
North Shore University Hospital at Forest Hills
Parkway Hospital, Forest Hills
Peninsula Hospital Center, Far Rockaway
Richmond Hill Nuclear Imaging
Vascular Diagnostic Associates, P.C., Flushing
Western Queens Community Hospital, Long Island City
York College - CUNY, Jamaica

Rensselaer
Regeneron Pharmaceuticals, Inc., Rensselaer

Richmond (Staten Island)
Doctors' Hospital of Staten Island
Regional Radiology
Young F. Eng, M.D.

Rockland
Dr. Noah Weg and Associates, Suffern
Helen Hayes Hospital, West Haverstraw
Mid-Rockland Imaging Associates, New City

Saratoga
Saratoga Cardiology Associates, P.C., Saratoga Springs
Saratoga Hospital, Saratoga Springs
Skidmore College, Saratoga Springs

Schenectady
Cardiology Associates of Schenectady
Ellis Hospital, Schenectady
St. Clare's Hospital, Schenectady

St. Lawrence
Cardiac Fitness, Inc. at E.J. Noble of Gouveneur
St. Lawrence University, Canton

Steuben
Corning Hospital
St. James Mercy Hospital, Hornell

Suffolk
Amityville Heart Center
Amplicon Corporation, East Setauket
BAB Radiological, Bay Shore
Brookhaven Memorial Medical Center
Central Suffolk Hospital, Riverhead
Department of Veterans' Affairs Medical Center, Northport
East End Cardiology, P.C., Riverhead
Eastern Long Island Hosptial, Greenport
Eastern Suffolk Cardiology, Riverhead
Gary E. Veit, M.D., Bay Shore
Good Samaritan Hosptial, West Islip
Huntington Hospital
Huntington Medical Group, P.C.
Island Cardiovascular II, Port Jefferson
John Ruisi, M.D., Amityville
Long Island Medical Diagnostic Imaging, East Islip
Neometrics, Inc., East Northport
North Fork Radiology, Riverhead
North Shore Hematology and Oncology Associates, East Setauket
North Suffolk Cardiology Associates, Stony Brook
South Bay Cardiovascular Associates, Bay Shore
South Shore Cardiologists, West Islip
Southampton Hospital
Southside Hospital, Bay Shore
St. John's Episcopal Hospital, Smithtown
Stony Brook Medical Imaging, P.C.
Suffolk Heart Group, P.C., Bay Shore
Sunrise Medical Laboratories, Hauppauge
Suffolk Nuclear Imaging, East Patchogue

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The Huntington Heart Center
United Biomedical, Inc., Hauppauge
UTC International, Farmingdale

Tompkins
Cayuga Medical Center at Ithaca

Ulster
Benedictine Hospital, Kingston
Ellenville Community Hospital
Kingston Diagnostic Center
SUNY - New Paltz
The Kingston Hospital

Warren
Glens Falls Hospital

Wayne
ViaHealth of Wayne - Newark Campus

Westchester
Cardiology Consultants of Westchester, Hawthorne
DOCS Physicians Affiliated with Beth Israel Hospital, Yonkers
Emisphere Technologies, Inc., Tarrytown
Hudson Valley Heart Center, Cortlandt Manor
Mount Vernon Hospital
Northern Westchester Hospital, Mt. Kisco
Phelps Memorial Hospital, North Tarrytown
Polymedco, Inc., Cortlandt Manor
Progenics Pharmaceuticals, Inc., Tarrytown
Rye Radiology, Ryebrook
Sohn, M.D. Laboratory, Larchmont
Sound Shore Medical Center of Westchester, New Rochelle
St. Agnes Hospital, White Plains
Westchester County Department of Laboratories and Research, Valhalla
Westchester Heart Specialists, New Rochelle
Westchester Medical Center, Valhalla
White Plains Hospital Center

Unless otherwise noted, all data were derived from low-level radioactive waste generator reports received by NYSERDA as of May 4, 1999.

CONVERSIONS FOR UNITS

The standardized measurement units used in science and technology today are known as the metric system. These metric or SI system (Système International d'Unités) units have been incorporated in the NRC's Uniform Waste Manifest. This manifest has been adopted by the licensed LLRW disposal facility in Barnwell, South Carolina. Use of the NRC Uniform Waste Manifest became mandatory on March 1, 1998.

Volume and activity are presented in cubic meters and gigabecquerels (GBq) or megabecquerels (Mbq). These units have been adopted for this report to be consistent with the uniform national LLRW manifest requirements. Some conversions for SI units to the previously used units of cubic feet and curies are in the following tables.

CONVERSIONS FOR UNITS

Quantity	SI Unit	Previously Used Unit	Value of Conventional Unit in SI Units	Conversion Factors
Activity	Gigabecquerel (GBq) Megabecquerel (MBq)	Curie (Ci)	1 Ci = 37 GBq 1 Ci = 37,000 MBq	Ci x 37 = GBq Ci x 37,000 = MBq GBq ÷ 37 = Ci MBq ÷ 37,000 = Ci
Volume	cubic meters (m^3)	cubic feet (ft^3)	1 ft^3 = 0.028 m^3	ft^3 x 0.028 = m^3 m^3 x 35.31 = ft^3

Activity Conversions

mCi	MBq	GBq
500	18,500	18.500
200	7,400	7.400
100	3,700	3.700
50	1,850	1.850
20	740	0.740
10	370	0.370
5	185	0.185
2	74	0.074
1	37	0.037

Volume Conversions

ft^3	m^3
11.9 (89 gal. drum)	0.33
11.1 (83 gal. drum)	0.31
7.5 (55 gal. drum)	0.21
4.01 (30 gal. drum)	0.11
0.67 (5 gal. pail)	0.019