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U.S. Nuclear Regulatory Commission  
Washington, DC 20555

June 18, 2009

*Comments on the  
April 17<sup>th</sup> Briefing and  
SRM on Disposal of  
Low-Level Radioactive  
Waste. The Class B and  
C disposal problem.*

Dear Commissioners,

Many thanks for holding your briefing on disposal of low-level radioactive waste (LLRW) (April 17, 2009). The current national LLRW disposal system needs substantial improvement to assure access to disposal for all non-DOE LLRW. The briefing served to illustrate these problems as well as providing an opportunity to present solutions.

We have reviewed the Commission's Staff Requirements Memorandum (SRM) dated May 1, 2009. We agree with the Commission's emphasis on disposal of sources in instructing its staff to work with the CRSO, CORAR, and others on compilation of a list of research impacted or stopped because of lack of disposal options for sources. To this we would suggest adding disposal of biological wastes which, like sources, are not accepted for disposal at the EnergySolutions Class A disposal facility at Clive, Utah. We are disappointed that the SRM makes no specific mention of the lack of disposal options for 34 states for Class B and C wastes.

How serious is the Class B, C disposal problem? Following is a quantitative estimate of the problem using information available in the Department of Energy's Manifest Information Management System (MIMS) <http://mims.apps.em.doe.gov> for 2005, 2006 and 2007 to define the waste stream. These are the last three calendar years prior to the current restrictions on disposal of Class B and C waste at Barnwell that began on July 1, 2008.

For each sample year, we examined two MIMS "Waste Classification and Generator" tables: one for LLW from all states disposed at all disposal

sites and one for LLW from the 34 states now without disposal access for B and C wastes disposed at all disposal sites.

For each of the three years, we made calculations based on the MIMS disposal information to see what percentage of the total waste stream is due to Class B and C waste from the 34 states, i.e., what percentage of the waste stream, measured by activity (curies) cannot presently be disposed of. We made similar calculations for wastes from non-utility generators.

### **Quantification of the lack of access to disposal facilities for LLRW Classes B and C from 34 States.**

How much Class B and C LLRW (measured by activity) cannot be disposed of under the current system? To answer this question, we looked at disposal data for 2005, 2006, and 2007, the last three full calendar year before access to Barnwell was restricted on July 1, 2008.

The enclosed tables (two for each of the three years) present disposal data from the Department of Energy's Manifest Information Management System (MIMS). The data are categorized by total volume (ft<sup>3</sup>), total activity (curies), and volume and activity by waste Class and generator type. One table is for disposal from all states at all disposal facilities in a given year. The second table is for disposal from the 34 states now without access to disposal facilities for Class B and C wastes. (Since waste generators in Texas and Vermont will likely soon have access to the planned WCS disposal facility in Andrews County, Texas, they are not included in the states without access to disposal facilities for Class B and C wastes in the second table.)

Some results: In 2005, 2006, and 2007 Class B and C wastes from the 34 states now without access accounted for 85.6%, 89.3%, and 93.3 % of all activity from all states at all disposal facilities. Put another way, if disposal for these years is typical, the current disposal system can dispose of only 7 to 15 percent of the LLRW radioactivity that requires disposal.

**Non-Utility Waste.** Looking at the data in the MIMS tables, some will argue that most of the Class B and C wastes are from utilities and that utilities can store these wastes on-site with less difficulty than other generator classes. (Not always the case.) Considering then only non-utility wastes, we compare the activity in non-utility Class B and C wastes for the 34 states without disposal access for these wastes with the activity in all non-utility wastes from all states (Classes A, B, and C). The resulting ratios for 2005, 2006, and 2007 are 72.5%, 22.5%, and 41.9% respectively. While there is considerable year-to-year variation in this ratio, the problem with disposal of the more hazardous categories (Classes B

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\* The "34 States" include the Appalachian, Central, Central Midwest, Midwest, Southeast, and Southwestern Compacts, and Unaffiliated States. ("Unaffiliated States" include 8 states that are not a member of any compact, Army Out U.S., Dist. of Columbia, and Puerto Rico.)

and C) of non-utility LLRW from states without access to disposal for these wastes is clearly substantial and argues for serious modification of the current LLRW disposal system.

Alan Pasternak  
Technical Director  
Cal Rad Forum

Encl.: MIMS tables, 2005, 2006, 2007

Cc: NRC Staff  
Cal Rad Forum Board of Directors



# Manifest Information Management System

## Waste Classification and Generator Class

2005  
34 sites

### Search Criteria:

Compacts: Appalachian, Central, Central Midwest, Midwest, Southeast, Southwestern, Unaffiliated  
 Disposal Site: All disposal sites  
 Waste Type: LLW only  
 Date Range: January 1, 2005 through December 31, 2005

Click your browser's 'Back' button to generate the same report using different criteria.

Prior to 1997 for Barnwell and 1996 for Richland, shipments were categorized as either 'brokered' or 'direct'. After these dates the 'brokered' and 'direct' categories are not necessary. For details on the effect this has on the data, please call Doug Tonkay at 301-903-7212.

Disposal Site	Year Received	Generator Class	Total Volume (ft3)	Total Activity (curies)	Class A Volume (ft3)	Class A Activity (curies)	Class B Volume (ft3)	Class B Activity (curies)	Class C Volume (ft3)	Class C Activity (curies)	Brokered Volume (ft3)
Barnwell	2005	Academic	55.54	16.36	4.17	0.00	0.00	0.00	51.37	16.36	0.00
Barnwell	2005	Government	5,474.60	66.40	5,396.87	49.27	38.20	13.42	39.53	3.72	0.00
Barnwell	2005	Industry	880.11	23,995.31	230.24	3.00	275.04	23,089.53	374.83	902.77	0.00
Barnwell	2005	Medical	58.51	5.89	16.74	0.03	17.00	0.05	24.77	5.80	0.00
Barnwell	2005	Utility	24,458.96	431,096.35	11,847.93	3,620.21	7,080.84	12,390.52	5,530.19	415,085.62	0.00
Clive	2005	Academic	1,402.55	0.02	1,402.55	0.02					0.00
Clive	2005	Government	250,400.66	27.83	250,400.66	27.83					0.00
Clive	2005	Industry	1,020,000.40	590.33	1,020,000.40	590.33					0.00
Clive	2005	Utility	2,081,316.53	415.94	2,081,316.53	415.94					0.00
<b>Total:</b>			<b>3,384,047.86</b>	<b>456,214.42</b>	<b>3,370,616.09</b>	<b>4,706.63</b>	<b>7,411.08</b>	<b>35,493.52</b>	<b>6,020.69</b>	<b>416,014.26</b>	<b>0.00</b>

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# Manifest Information Management System

## Waste Classification and Generator Class

2005  
All States

### Search Criteria:

States: All states  
 Disposal Site: All disposal sites  
 Waste Type: LLW only  
 Date Range: January 1, 2005 through December 31, 2005

Click your browser's 'Back' button to generate the same report using different criteria.

Prior to 1997 for Barnwell and 1996 for Richland, shipments were categorized as either 'brokered' or 'direct'. After these dates the 'brokered' and 'direct' categories are not necessary. For details on the effect this has on the data, please call Doug Tonkay at 301-903-7212.

Disposal Site	Year Received	Generator Class	Total Volume (ft3)	Total Activity (curies)	Class A Volume (ft3)	Class A Activity (curies)	Class B Volume (ft3)	Class B Activity (curies)	Class C Volume (ft3)	Class C Activity (curies)	Brokered Volume (ft3)
Barnwell	2005	Academic	80.37	37.63	11.57	0.26	4.10	14.68	64.70	22.68	0.00
Barnwell	2005	Government	6,515.74	76.91	6,430.95	59.12	38.20	13.42	46.59	4.36	0.00
Barnwell	2005	Industry	1,679.06	24,056.32	980.05	3.04	277.08	23,089.73	421.93	963.55	0.00
Barnwell	2005	Medical	61.23	6.18	17.42	0.03	17.00	0.05	26.81	6.10	0.00
Barnwell	2005	Utility	34,677.59	493,516.09	17,671.22	4,091.82	9,030.93	13,487.06	7,975.44	475,937.21	0.00
Clive	2005	Academic	1,402.55	0.02	1,402.55	0.02					0.00
Clive	2005	Government	321,622.06	843.57	321,622.06	843.57					0.00
Clive	2005	Industry	1,246,307.98	1,974.26	1,246,307.98	1,974.26					0.00
Clive	2005	Utility	2,371,442.73	444.53	2,371,442.73	444.53					0.00
Richland	2005	Academic	1,059.35	4.42	1,057.50	4.38			1.85	0.05	0.00
Richland	2005	Government	11,925.26	132.67	11,784.44	38.31			140.82	94.37	0.00
Richland	2005	Industry	6,025.45	5,996.65	5,920.71	1.24	97.50	5,990.00	7.24	5.41	0.00
Richland	2005	Medical	149.96	0.77	148.08	0.42			1.88	0.35	0.00

Richland	2005	Undefined	28.03	0.52	24.92	0.01			3.11	0.51	0.00
Richland	2005	Utility	10,838.34	(111.61)	10,787.14	85.56			51.20	26.04	0.00
<b>Total:</b>			<b>4,013,815.70</b>	<b>527,202.16</b>	<b>3,995,609.32</b>	<b>7,546.57</b>	<b>9,464.81</b>	<b>42,594.95</b>	<b>8,741.57</b>	<b>477,060.64</b>	<b>0.00</b>

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34 Fed. B+C activity = 38,409.82 + 416,014.26 = 454,424.08

34 Fed. Utility activity = 10,838.34 - 111.61 = 10,726.73

34 Fed. B+C activity = 451,697.32 - 10,726.73 = 440,970.59

20 Fed. Utility activity = 5,000.00 - 111.61 = 4,888.39

72.56



# Manifest Information Management System

## Waste Classification and Generator Class

2006  
31 July

### Search Criteria:

Compacts: Appalachian, Central, Central Midwest, Midwest, Southeast, Southwestern, Unaffiliated  
 Disposal Site: All disposal sites  
 Waste Type: LLW only  
 Date Range: January 1, 2006 through December 31, 2006

Click your browser's 'Back' button to generate the same report using different criteria.

Prior to 1997 for Barnwell and 1996 for Richland, shipments were categorized as either 'brokered' or 'direct'. After these dates the 'brokered' and 'direct' categories are not necessary. For details on the effect this has on the data, please call Doug Tonkay at 301-903-7212.

Disposal Site	Year Received	Generator Class	Total Volume (ft3)	Total Activity (curies)	Class A Volume (ft3)	Class A Activity (curies)	Class B Volume (ft3)	Class B Activity (curies)	Class C Volume (ft3)	Class C Activity (curies)	Brokered Volume (ft3)
Barnwell	2006	Academic	197.70	956.87	8.78	0.01	18.70	155.11	170.22	801.75	0.00
Barnwell	2006	Government	6,145.02	204.00	6,011.51	134.31	61.20	45.44	72.31	24.25	0.00
Barnwell	2006	Industry	778.52	1,464.88	476.84	0.61	69.13	67.44	232.55	1,396.82	0.00
Barnwell	2006	Medical	15.07	4.96	0.14	0.00	0.68	0.00	14.25	4.96	0.00
Barnwell	2006	Utility	20,440.20	293,659.97	5,615.39	2,395.56	8,068.32	8,730.79	6,756.49	282,533.62	0.00
Clive	2006	Government	141,840.70	51.91	141,840.70	51.91					0.00
Clive	2006	Industry	1,693,127.43	698.84	1,693,127.43	698.84					0.00
Clive	2006	Medical	17,680.00	0.26	17,680.00	0.26					0.00
Clive	2006	Undefined	24,054.64	3,477.66	24,054.64	3,477.66					0.00
Clive	2006	Utility	1,251,999.61	134.05	1,251,999.61	134.05					0.00
<b>Total:</b>			<b>3,156,278.89</b>	<b>300,653.39</b>	<b>3,140,815.04</b>	<b>6,893.21</b>	<b>8,218.03</b>	<b>8,998.78</b>	<b>7,245.82</b>	<b>284,761.40</b>	<b>0.00</b>

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# Manifest Information Management System

## Waste Classification and Generator Class

2006  
All States

### Search Criteria:

States: All states  
 Disposal Site: All disposal sites  
 Waste Type: LLW only  
 Date Range: January 1, 2006 through December 31, 2006

Click your browser's 'Back' button to generate the same report using different criteria.

Prior to 1997 for Barnwell and 1996 for Richland, shipments were categorized as either 'brokered' or 'direct'. After these dates the 'brokered' and 'direct' categories are not necessary. For details on the effect this has on the data, please call Doug Tonkay at 301-903-7212.

Disposal Site	Year Received	Generator Class	Total Volume (ft3)	Total Activity (curies)	Class A Volume (ft3)	Class A Activity (curies)	Class B Volume (ft3)	Class B Activity (curies)	Class C Volume (ft3)	Class C Activity (curies)	Brokered Volume (ft3)
Barnwell	2006	Academic	235.71	957.40	44.83	0.01	18.70	155.11	172.18	802.28	0.00
Barnwell	2006	Government	8,037.30	218.30	7,896.91	136.50	61.20	45.44	79.19	36.35	0.00
Barnwell	2006	Industry	1,360.76	5,286.66	1,037.64	0.67	89.53	3,887.44	233.59	1,398.54	0.00
Barnwell	2006	Medical	16.07	5.43	0.14	0.00	0.68	0.00	15.25	5.43	0.00
Barnwell	2006	Utility	28,479.39	316,023.39	8,902.76	2,547.04	9,567.03	9,794.15	10,009.60	303,682.20	0.00
Clive	2006	Government	225,209.58	123.85	225,209.58	123.85					0.00
Clive	2006	Industry	1,899,596.21	775.68	1,899,596.21	775.68					0.00
Clive	2006	Medical	17,680.00	0.26	17,680.00	0.26					0.00
Clive	2006	Undefined	24,637.60	3,496.38	24,637.60	3,496.38					0.00
Clive	2006	Utility	1,816,676.81	174.26	1,816,676.81	174.26					0.00
Richland	2006	Academic	2,354.02	16.28	2,348.79	15.98	5.23	0.30			0.00
Richland	2006	Government	5,712.70	176.41	5,580.30	39.53			132.40	136.88	0.00
Richland	2006	Industry	4,816.07	26.82	4,812.32	25.84	3.75	0.98			0.00

Richland	2006	Medical	133.91	1.75	127.89	0.09	6.02	1.66			0.00
Richland	2006	Utility	11,847.60	1,565.25	11,847.60	1,565.25					11,847.60
<b>Total:</b>			<b>4,046,793.73</b>	<b>328,848.13</b>	<b>4,026,399.38</b>	<b>8,901.36</b>	<b>9,752.14</b>	<b>13,885.09</b>	<b>10,642.21</b>	<b>306,061.68</b>	<b>11,847.60</b>

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all Utility and Activity = 8,901.36 + 284,751.40 = 293,652.76 } 2.25 %  
 all State, all Activity = 328,848.13

34 States, B+C Activity minus Utility, B+C Act = 273,760.12 - 8730.79 = 265,029.33  
 all State, all activity = Utility Activity 328,848.13 - 415,023.39 = 174.26 = 1,565.25 = 11,025.23 }  
 = 2.25 %



# Manifest Information Management System

## Waste Classification and Generator Class

2007  
34 2/26

### Search Criteria:

Compacts: Appalachian, Central, Central Midwest, Midwest, Southeast, Southwestern, Unaffiliated

Disposal Site: All disposal sites

Waste Type: LLW only

Date Range: January 1, 2007 through December 31, 2007

Click your browser's 'Back' button to generate the same report using different criteria.

Prior to 1997 for Barnwell and 1996 for Richland, shipments were categorized as either 'brokered' or 'direct'. After these dates the 'brokered' and 'direct' categories are not necessary. For details on the effect this has on the data, please call Doug Tonkay at 301-903-7212.

Disposal Site	Year Received	Generator Class	Total Volume (ft3)	Total Activity (curies)	Class A Volume (ft3)	Class A Activity (curies)	Class B Volume (ft3)	Class B Activity (curies)	Class C Volume (ft3)	Class C Activity (curies)	Brokered Volume (ft3)
Barnwell	2007	Academic	28.30	2.15	1.36	0.00	0.00	0.00	26.94	2.15	0.00
Barnwell	2007	Government	4,722.53	138.44	4,613.25	88.38	87.80	40.67	21.48	9.39	0.00
Barnwell	2007	Industry	506.53	12,147.22	37.17	0.86	178.12	10,632.72	291.24	1,513.64	0.00
Barnwell	2007	Medical	41.77	33.73	0.00	0.00	7.50	23.50	34.27	10.23	0.00
Barnwell	2007	Utility	25,294.78	1,028,993.14	4,052.27	1,642.57	9,078.29	11,453.85	12,164.22	1,015,896.72	0.00
Clive	2007	Academic	54,524.63	0.83	54,524.63	0.83					0.00
Clive	2007	Government	192,423.40	334.29	192,423.40	334.29					0.00
Clive	2007	Industry	972,455.51	1,153.67	972,455.51	1,153.67					0.00
Clive	2007	Medical	29,236.00	0.18	29,236.00	0.18					0.00
Clive	2007	Undefined	27,753.53	2,121.74	27,753.53	2,121.74					0.00
Clive	2007	Utility	973,918.75	100.04	973,918.75	100.04					0.00
<b>Total:</b>			<b>2,280,905.73</b>	<b>1,045,025.42</b>	<b>2,259,015.87</b>	<b>5,442.56</b>	<b>9,351.71</b>	<b>22,150.73</b>	<b>12,538.15</b>	<b>1,017,432.13</b>	<b>0.00</b>

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# Manifest Information Management System

## Waste Classification and Generator Class

### Search Criteria:

States: All states  
 Disposal Site: All disposal sites  
 Waste Type: LLW only  
 Date Range: January 1, 2007 through December 31, 2007

Click your browser's 'Back' button to generate the same report using different criteria.

Prior to 1997 for Barnwell and 1996 for Richland, shipments were categorized as either 'brokered' or 'direct'. After these dates the 'brokered' and 'direct' categories are not necessary. For details on the effect this has on the data, please call Doug Tonkay at 301-903-7212.

Disposal Site	Year Received	Generator Class	Total Volume (ft3)	Total Activity (curies)	Class A Volume (ft3)	Class A Activity (curies)	Class B Volume (ft3)	Class B Activity (curies)	Class C Volume (ft3)	Class C Activity (curies)	Brokered Volume (ft3)
Barnwell	2007	Academic	122.59	4.17	92.26	0.05	0.00	0.00	30.33	4.12	0.00
Barnwell	2007	Government	6,543.43	192.54	6,431.28	142.36	87.80	40.67	24.35	9.50	0.00
Barnwell	2007	Industry	881.72	13,140.29	371.62	0.89	208.72	11,602.92	301.38	1,536.48	0.00
Barnwell	2007	Medical	59.68	38.08	0.00	0.00	7.50	23.50	52.18	14.58	0.00
Barnwell	2007	Utility	30,459.87	1,082,839.20	5,228.48	1,659.17	11,241.76	13,048.08	13,989.63	1,068,131.95	0.00
Clive	2007	Academic	54,524.63	0.83	54,524.63	0.83					0.00
Clive	2007	Government	219,606.80	334.41	219,606.80	334.41					0.00
Clive	2007	Industry	1,163,404.96	1,194.97	1,163,404.96	1,194.97					0.00
Clive	2007	Medical	29,236.00	0.18	29,236.00	0.18					0.00
Clive	2007	Undefined	28,274.35	2,151.64	28,274.35	2,151.64					0.00
Clive	2007	Utility	997,338.49	218.73	997,338.49	218.73					0.00
Richland	2007	Academic	645.98	34.21	645.98	34.21					0.00
Richland	2007	Government	11,861.21	90.41	11,851.88	89.69	5.58	0.41	3.75	0.31	0.00

Richland	2007	Industry	9,445.14	12,004.21	9,256.71	6.39	165.93	11,982.77	22.50	15.05	0.00
Richland	2007	Medical	126.47	-1.41	121.73	0.12	0.99	0.24	3.75	1.05	0.00
Richland	2007	Undefined	36.38	0.55	36.38	0.55					0.00
Richland	2007	Utility	74,563.40	1,575.03	74,431.00	1,531.52	132.40	43.52			0.00
<b>Total:</b>			<b>2,627,131.10</b>	<b>1,113,820.85</b>	<b>2,600,852.55</b>	<b>7,365.69</b>	<b>11,850.68</b>	<b>36,742.11</b>	<b>14,427.87</b>	<b>1,069,713.04</b>	<b>0.00</b>

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34 states, BIC Activity = 22,150.79 + 1,017,432.13 = 1,039,582.86 } = 95.3%

All states, all activity = 1,113,820.85

24 states BIC Activity minus utility BIC Activity = 1,039,582.86 - 1,142.85 = 1,015,440.01

all states, all activity - utility activity = 1,113,820.85 - 1,082,839.20 - 218.73 - 1,575.03 = 24,187.89

= 41.9%