



Texas Radiation Advisory Board

Michael Ford, C.H.P.
Chair

1100 W. 49th Street
Austin, Texas 78756-3189
512/834-6688

Executive Committee
Jimmy Barker, P.E.
Michael Ford, C.H.P.
W. Kim Howard, M.D.
Elaine Wells, M.S.

February 24, 2003

The Honorable Robert Duncan
P.O. Box 12068
Capitol Station
Austin, Texas 78711

Dear Senator Duncan:

I am pleased to provide information on volumes of low-level radioactive waste (LLW) as requested by your staff. As you know, the TRAB's statutory duties are to provide advice on radiation policies. TRAB passed a resolution on 20 July 2002 regarding the need for a LLW site in Texas (attached); however, the board has not considered or voted upon the data estimates for expected volumes of waste about which your office has inquired. Therefore, the following is a summary of the TRAB recommendations regarding LLW and my own opinions.

The information I am providing is based on my personal research and professional expertise. I am a Certified Health Physicist with 18 years experience in academic, commercial, and governmental sectors.

I was asked to supply data on estimates of the expected volume of DOE radioactive waste, and I have summarized this information below along with my personal comments. Dr. Ian Hamilton of Texas A&M University (and TRAB member) was consulted on this investigation for his significant expertise in the area of radioactive waste management. Data upon which the summaries are based have been provided as attachments to this letter.

- As stated in the TRAB resolution, a viable LLW management facility is crucial to the state of Texas and especially to the Texas-Maine-Vermont LLW Compact. Alternatives for the disposal of LLW in the United States are limited today and will become considerably more restrictive in the very near future due to the impending closure of the Barnwell facility to out-of-compact waste. Also, in order to ensure that a waste facility may be constructed to accommodate a wide range of environmental protection requirements, Assured Isolation should be considered as part of the waste management solution for Texas.

February 24, 2003

- As we find our world significantly changed since the events of 9/11, the TRAB has stressed the vital importance of properly protecting and securing radioactive materials. The need for these appropriate protections extends to LLW.
- The 1999 evaluation of Drs. Klein and Peddicord regarding the anticipated volume of Compact waste is still valid today – 2 to 3 million cubic feet. (ref. letter, Klein and Peddicord to Rep. Junell, 3 March 1999) However, over the life of the facility, improvements in waste minimization may bring that estimate down.
- The most recent estimates for DOE LLW are found in “*Summary Data on the Radioactive Waste, Spent Nuclear Fuel, and Contaminated Media Managed by the U.S. Department of Energy*,” April 2001, published by the Department of Energy’s Office of Environmental Management (DOE/EM, ref: <http://cid.em.doe.gov/>). *The estimates cover the years 2000 to 2070.*
 - Chapter 7 of this document discusses LLW and reports the total volume of waste slated for disposal as approximately 20 million cubic feet (or about 1.9 million cubic meters).
 - Chapter 8 of this document discusses *mixed* LLW (MLLW, a combination of hazardous and radioactive wastes) and reports the total volume of that waste category slated for disposal as approximately 1.9 million cubic feet (or about 178,000 cubic meters)
 - The total volume of MLLW designated for disposal represents about 9% of the total LLW volume – not a substantial amount.
 - The other LLW and MLLW activity categories are identified as “Inventory (Storage),” “New Generation,” “Treatment,” and “Receipts” and in total represent a significantly larger volume than that designated solely for “disposal.” Therefore, it may be appropriate to assume that the “disposal” activity estimates may grow over time.
- In comparison, the proposed disposal capacity value of 11 million cubic yards (99 million cubic feet) for DOE waste at a Texas LLW facility represents about a 400% surplus capacity beyond the projected DOE complex-wide waste volumes described in the DOE/EM report. It further represents 3200% greater capacity than the projected Texas-Maine-Vermont Compact LLW volume.

Page 3

February 24, 2003

- In my personal opinion, such disparities in disposal capacities may create the impression that this facility is *primarily* a DOE LLW facility that also has provisions for Compact LLW.

I hope that my research will be useful to you. If you have other questions or need further assistance, please contact me. (Telephone: 806/477-5727)

Sincerely,
Original signed by:

Michael Ford, C.H.P.
Chair

Attachments

Attachments

Texas Radiation Advisory Board Recommendation 20 July 2002

and

EXCERPTS FROM

“Summary Data on the Radioactive Waste, Spent Nuclear Fuel, and Contaminated Media Managed by the U.S. Department of Energy”

April 2001

Published by the Department of Energy, Office of Environmental Management
<http://cid.em.doe.gov/>

Texas Radiation Advisory Board

RESOLUTION

Whereas, the use of radioactive isotopes in energy production, biomedical research and medical procedures such as cancer diagnosis and treatment benefit all Texans; and

Whereas, these beneficial medical applications produce low-level radioactive waste that must be disposed of safely; and,

Whereas, the low-level radioactive waste disposal facility in Barnwell, South Carolina is scheduled to permanently restrict out of state compact waste on or before the year 2008, impacting Texas waste generators that use the site;

Whereas, on-site storage of radioactive waste simply defers the problem, creates multiple storage sites, and keeps by-product material scattered throughout the state, thereby making the citizens more vulnerable to terrorists' threats and natural disasters;

Whereas, the State of Texas is legally bound to fulfill its contractual obligations to the other members of the Texas/Maine/Vermont compact and provide a disposal facility for low-level radioactive waste generated in those states;

Whereas, a Texas facility is still needed in order to comply with federal law;

Now therefore, be it resolved that:

The Texas Radiation Advisory Board strongly supports the need for a safe disposal facility for low-level radioactive waste and urges, upon careful review, that the Texas legislature pass legislation that will allow for the creation of a facility that will lead to the isolation and disposal of low-level radioactive waste.

Passed and Adopted on this 20th day of July, 2002

Texas Radiation Advisory Board
1100 W. 49th St.
Austin, TX 78756
834-6688 X 2064

Table 7-3
Summary of Total Projected LLW Volumes by Inventory and Management
Activities: FY 2000 - FY 2070
(Includes all physical forms except waste water)

In cubic meters

	FY 2000 ^a	FY 2001 ^a	FY 2002 ^a	FY 2003 ^a	FY 2004 ^a	FY 2005 ^a
Inventory (Storage)	118,194	109,284	100,454	81,711	63,273	49,698
New Generation	28,197	27,039	25,972	22,032	34,304	34,239
Treatment	12,183	13,259	12,602	14,555	15,272	15,825
Receipts	26,231	30,035	50,211	75,336	82,107	70,535
Disposal	38,045	40,785	59,415	79,028	71,437	59,593

	FY 2006 ^a	FY 2007 ^a	FY 2008 ^a	FY 2009 ^a	FY 2010 ^a	FY 2011-2015
Inventory (Storage)	37,413	31,055	24,936	22,941	19,711	6,880
New Generation	34,345	34,253	38,529	38,101	35,961	172,145
Treatment	15,044	14,482	13,110	10,203	11,861	54,207
Receipts	84,618	47,026	46,778	34,477	31,689	131,921
Disposal	75,335	34,916	41,050	29,829	39,858	325,241

	FY 2016-2020	FY 2021-2025	FY 2026-2030	FY 2031-2035	FY 2036-2040	FY 2041-2045
Inventory (Storage)	7,671	8,446	7,023	7,598	8,188	8,781
New Generation	89,747	82,012	76,351	69,738	67,808	67,571
Treatment	54,626	78,292	75,882	71,205	43,277	43,084
Receipts	81,426	71,405	69,158	66,889	70,630	67,255
Disposal	302,726	185,214	109,634	62,254	53,271	49,942

	FY 2046-2050	FY 2051-2055	FY 2056-2060	FY 2061-2065	FY 2066-2070	Non-Annualized ^b
Inventory (Storage)	7,241	7,836	8,431	9,026	9,561	9,561
New Generation	65,364	63,636	63,634	63,671	63,665	33
Treatment	40,063	38,748	38,690	38,720	38,741	-
Receipts	66,923	58,084	56,463	56,467	56,504	47
Disposal	52,080	44,498	42,935	42,939	42,974	47

Notes:

- Hyphens indicate volumes of zero.

^a These data reflect the annual volume projected by sites for FY 2000 - FY 2010. All data (other than inventory data) reported for the post-FY 2010 time periods reflect the total volume projected for the specific five-year time periods. The post-FY 2010 inventory data reflect the total volume projected for the end of each five-year time period.

^b Non-annualized volumes refer to those volumes of LLW for which the DOE could not specify when the management activity would occur.

Table 8-3
Summary of Total Projected MLLW Volumes by Inventory and Management Activity:
FY 2000 - FY 2070
 (Includes all physical forms except waste water)

In cubic meters

	FY 2000 ^a	FY 2001 ^a	FY 2002 ^a	FY 2003 ^a	FY 2004 ^a	FY 2005 ^a	FY 2006 ^a	FY 2007 ^a
Inventory (Storage)	38,848	33,956	25,256	18,672	14,629	10,215	7,570	7,129
New Generation	5,424	1,774	1,864	2,125	2,314	2,164	1,633	1,859
Treatment	6,615	6,752	6,584	5,153	2,407	2,952	1,621	1,401
Receipts	12,332	8,213	10,474	8,191	7,788	11,461	26,063	1,297
Disposal	11,230	7,387	10,579	8,532	8,440	12,587	27,144	2,472
	FY 2008 ^a	FY 2009 ^a	FY 2010 ^a	FY 2011-2015	FY 2016-2020	FY 2021-2025	FY 2026-2030	FY 2031-2035
Inventory (Storage)	6,772	6,130	5,991	3,412	2,225	1,944	1,545	810
New Generation	1,641	1,710	2,009	9,100	16,494	16,258	11,667	4,268
Treatment	1,723	1,284	1,693	6,483	6,641	4,736	4,286	2,506
Receipts	1,078	1,390	1,024	4,917	4,833	4,550	4,306	4,048
Disposal	2,150	2,531	2,867	12,417	17,560	16,204	11,666	4,338
	FY 2036-2040	FY 2041-2045	FY 2046-2050	FY 2051-2055	FY 2056-2060	FY 2061-2065	FY 2066-2070	Non-Annualized ^b
Inventory (Storage)	797	797	794	791	791	791	791	791
New Generation	2,930	2,917	2,870	2,859	2,859	2,859	2,859	-
Treatment	473	474	457	454	454	454	454	-
Receipts	2,861	2,857	2,857	2,853	2,850	2,850	2,851	2,125
Disposal	2,868	2,851	2,808	2,796	2,793	2,793	2,794	2,123

Notes:

- Hyphens indicate volumes of zero.
- Due to data rounding, the totals in this table may not equal the exact sum of the site-specific data.

^a These data reflect the annual volume projected by sites for FY 2000 - FY 2010. All data (other than inventory data) reported for the post-FY 2010 time periods reflect the total volume projected for the specific five-year time periods. The post-FY 2010 inventory data reflect the total volume projected for the end of each five-year time period.

^b Non-annualized volumes refer to those volumes of MLLW for which the DOE could not specify when the management activity would occur.