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National Priority Chemicals Trends Report (2005-2007)

Section 4 Trends Analyses for Specific Priority Chemicals (2005-2007): Hexachloro-1,3-butadiene (HCBd)

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Hexachloro-1,3-butadiene (HCBD)

Chemical Information

Alternate Names: HCBD, 1,3-hexachlorobutadiene, perchlorobutadiene

General Uses: HCBD is used to make rubber and lubricants, and in solvents, gyroscopes, heat transfer liquid, and hydraulic liquid.

How Much Hexachloro-1,3-butadiene Was Generated?

For 2007, only five facilities reported approximately 10.3 million pounds of HCBD being generated; three facilities reported approximately 99 percent of the national total quantity of this PC (please refer to Exhibit 3.4 to see the number of facilities that reported this PC within various quantity ranges). Compared to the total quantities of HCBD reported for 2005 and 2006, the quantity increased by approximately 192,000 pounds and increased by approximately 358,000 pounds, respectively (Exhibit 4.16).

Exhibit 4.16. National Generation of Hexachloro-1,3-butadiene (2005–2007)

TRI Reporting Year	2005	2006	2007
Total Quantity of Hexachloro-1,3-butadiene (pounds)	10,120,647	9,954,510	10,312,897
Number of TRI Facilities Reporting Hexachloro-1,3-butadiene	6	6	5

Where Was Hexachloro-1,3-butadiene Generated?

For 2007, five facilities in two states, Louisiana and Texas (both in EPA Region 6), reported 100 percent of the HCBD generated (Exhibit 4.17). From 2005 to 2007, three of the facilities, located in Louisiana, reported 99 percent of the total quantity of HCBD generated. The facility in Ascension County attributed significant annual fluctuations in the quantity of HCBD, including a decrease of approximately 530,000 pounds for 2006 and an increase of approximately 730,000 pounds for 2007, due to analytical variability and production activity. The facility in Calcasieu County noted that annual fluctuations likely resulted from a combination of changes in facility production and the quantity of wastes (containing HCBD) from off-site sources incinerated at this facility.

Exhibit 4.17. Quantity of Hexachloro-1,3-butadiene, by County (2007)

EPA Region	State	County	Quantity (pounds) of HCBD			Percent of Total Quantity (2007)
			2005	2006	2007	
6	LA	Ascension	4,035,132	3,505,325	4,235,601	41.1%
6	LA	Calcasieu	3,380,388	3,502,329	3,100,329	30.1%
6	LA	Iberville	2,649,992	2,895,404	2,972,771	28.8%
6	TX	Brazoria	1,600	6,555	4,196	<0.1%
Total			10,120,647	9,954,510	10,312,897	100.0%

Which Industries Generated Hexachloro-1,3-butadiene?

For 2007, five facilities in three NAICS codes reported generating HCBD (Exhibit 4.18). Facilities in NAICS code 325181 (Alkalies and Chlorine Manufacturing) accounted for approximately 71 percent of the national total quantity of HCBD generated for 2007.

Exhibit 4.18. Industry Sectors Quantities of Hexachloro-1,3-butadiene (2005–2007)

Primary NAICS Code	NAICS Code Description	Facilities Reporting (2007)	Quantity (pounds) of HCBD			Percent of Total Quantity (2007)
			2005	2006	2007	
325181	Alkalies and Chlorine Manufacturing	3	7,417,120	7,014,209	7,340,126	71.2%
325199	All Other Basic Organic Chemical Manufacturing	1	2,605,986	2,873,394	2,951,761	28.6%
325211	Plastics Material and Resin Manufacturing	1	44,006	22,010	21,010	0.2%
325188	All Other Basic Inorganic Chemical Manufacturing	0	53,535	44,897	0	0.0%
Total		5	10,120,647	9,954,510	10,312,897	100.0%

How Did Facilities Manage Hexachloro-1,3-butadiene?

Exhibit 4.19 shows how facilities, by industry, managed HCBD in 2007.

Disposal: Facilities disposed of less than 0.1 percent of the HCBD generated.

Energy Recovery: Facilities used energy recovery for less than 0.1 percent of the HCBD generated.

Treatment: Facilities in all three industries treated, mostly on site, virtually all the HCBD generated.

In 2007, facilities also recycled approximately 240,000 pounds of HCBD. See Exhibit C.3 in Appendix C for additional information about the recycling of HCBD. Facilities also released 391 pounds of HCBD as air emissions in 2007. See Appendix D for additional information about releases of HCBD.

Exhibit 4.19. Management Methods for Hexachloro-1,3-butadiene in Industry Sectors (2007)

Primary NAICS Code	NAICS Code Description	Total PC Quantity Reported	Quantity (pounds) of Hexachloro-1,3-butadiene					
			Disposal		Energy Recovery		Treatment	
			On-site	Off-site	On-site	Off-site	On-site	Off-site
325181	Alkalies and Chlorine Manufacturing	7,340,126	2	10	0	19	7,315,015	25,080
325199	All Other Basic Organic Chemical Manufacturing	2,951,761	0	0	0	0	2,948,515	3,246
325211	Plastics Material and Resin Manufacturing	21,010	0	0	0	0	21,000	10
Total		10,312,897	2	10	0	19	10,284,530	28,336

Data Derived From Hazardous Waste Biennial Reports for Hexachloro-1,3-butadiene

In this section, we present data about HCBD contained in hazardous wastes, derived from information submitted by facilities in Biennial Reports under RCRA. We derived these data by applying a methodology to estimate the quantity of HCBD contained in BR waste streams. The estimates of HCBD contained in hazardous wastes supplement the data reported to TRI, providing a broader perspective regarding the industries that generate and manage wastes that contain HCBD. Based on applying our methodology to the 2007 BR data, we estimate that 55 facilities in 28 NAICS codes reported hazardous wastes, virtually all non-wastewater, containing approximately 1.6 million pounds of HCBD. Facilities in two industries: NAICS code 325199 (All Other Basic Organic Chemical Manufacturing) and NAICS code 325181 (Alkalies and Chlorine Manufacturing) accounted for 99.5 percent of the total estimated quantity of HCBD in the hazardous waste streams (Exhibit 4.20).

Exhibit 4.20. Estimated Quantity of Hexachloro-1,3-butadiene in Primary Generation Hazardous Waste, by NAICS Code (2007)

Primary NAICS Code	NAICS Code Description	Number of Facilities	Quantity (pounds) of HCBD			Percent of Total Quantity
			Wastewaters	Non-Wastewaters	Total Quantity	
325199	All Other Basic Organic Chemical Manufacturing	6	0	1,295,020	1,295,020	79.3%
325181	Alkalies and Chlorine Manufacturing	8	<1	330,245	330,245	20.2%
Total		14	<1	1,625,265	1,625,265	99.5%

In 2007, facilities generated hazardous waste containing HCBD in 43 counties within 25 states. Facilities in Louisiana and Texas (EPA Region 6) generated an estimated 98 percent of the HCBD contained in hazardous wastes (Exhibit 4.21).

Exhibit 4.21. States and Counties in Which Facilities Generated 98 Percent of Hexachloro-1,3-butadiene Contained in Primary Generation Hazardous Waste (2007)

EPA Region	State	County	Estimated Quantity of HCBD Contained in Hazardous Wastes (pounds)	Percent of Total Quantity of HCBD Contained in Hazardous Wastes
6	TX	Brazoria	703,266	43.1%
6	LA	Iberville	483,536	29.6%
6	LA	Ascension	317,896	19.5%
6	TX	San Patricio	92,703	5.7%
Total			1,597,402	97.8%

Exhibit 4.22 shows how facilities reported managing hazardous wastes that contain HCBD. For example, facilities used on-site energy recovery for hazardous wastes containing an estimated 477,165 pounds of HCBD and incinerated an estimated 682,140 pounds of HCBD. See Appendix E for a full list of the BR management codes and their descriptions.

Exhibit 4.22. Methods Used to Manage Hazardous Wastes Containing Hexachloro-1,3-butadiene (2007)

Management Method Group	Management Method Code Description	Quantity of HCBD Managed (2007)	Percent of Total Estimated Quantity of HCBD
Reclamation and Recovery	Energy recovery at this site	477,165	29.0%
	Other recovery or reclamation for reuse	385,147	23.4%
	Fuel blending prior to energy recovery at another site	2,119	0.1%
Reclamation and Recovery Total		862,312	52.4%
Destruction or Treatment Prior to Disposal at Another Site	Incineration	682,140	41.5%
	Other treatment	<1	<0.1%
Destruction or Treatment Prior to Disposal at Another Site Total		682,140	41.5%
Disposal	Landfill or surface impoundment that will be closed as landfill	86,773	5.3%
	Disposal Total		86,773
Transfer Off Site	Storage, bulking, and/or transfer off site	12,133	0.7%
	Transfer Off Site Total		12,133
NA	NA		
NA Total		<1	<0.1%
Grand Total		1,645,478	100.0%