

US EPA ARCHIVE DOCUMENT



United States
Environmental Protection
Agency

EPA530-R-10-011
October 2010

National Priority Chemicals Trends Report (2005-2007)

Section 3 Summary Trends Analysis for Priority Chemicals (2005-2007)

Program Implementation and Information Division
Office of Resource Conservation and Recovery
U.S. Environmental Protection Agency

Contact Information:

Bill Kline, Senior Data Analyst
Information Collection & Analysis Branch
(540) 341-3631
kline.bill@epa.gov

Tammie Owen, Data Analyst
Information Collection & Analysis Branch
(703) 308-4044
owen.tammie@epa.gov

Dwane Young, Chief
Information Collection & Analysis Branch
(703) 347-8578
Young.dwane@epa.gov

SECTION 3

SUMMARY TRENDS ANALYSIS FOR PRIORITY CHEMICALS (2005–2007)

Introduction

The primary focus of this Report is to support EPA's NPEP program by identifying the non-recycled quantities of PCs contained in wastes that are managed by disposal, energy recovery, or treatment and thus potentially might offer waste minimization opportunities. A discussion of recycled quantities of PCs is presented in Appendix C.

Section 3 provides an overview of the national, EPA region, state, county, and industry sector quantities of these non-recycled PCs⁹ reported to the TRI for the 2005–2007 reporting years. The data focuses on the generation and management trends for these PCs.

The quantities of PCs generated each year are influenced by numerous factors, including:

- pollution prevention (e.g., waste minimization) measures
- changes in production levels
- process changes
- closure of facilities
- cleanup of spills/releases
- maintenance activities (e.g., cleanout of tanks and piping).

Based on our discussions with a number of facilities, we provide some basis or reasons for significant increases or decreases in the quantities of PCs that they report to TRI.

We also provide data at the end of this section about the estimated quantity of PCs contained in RCRA hazardous wastes, derived from the BR data for 2007. These data supplement the TRI data to provide a more complete picture of the universe of wastes containing PCs.

How Much Priority Chemicals Were Generated?

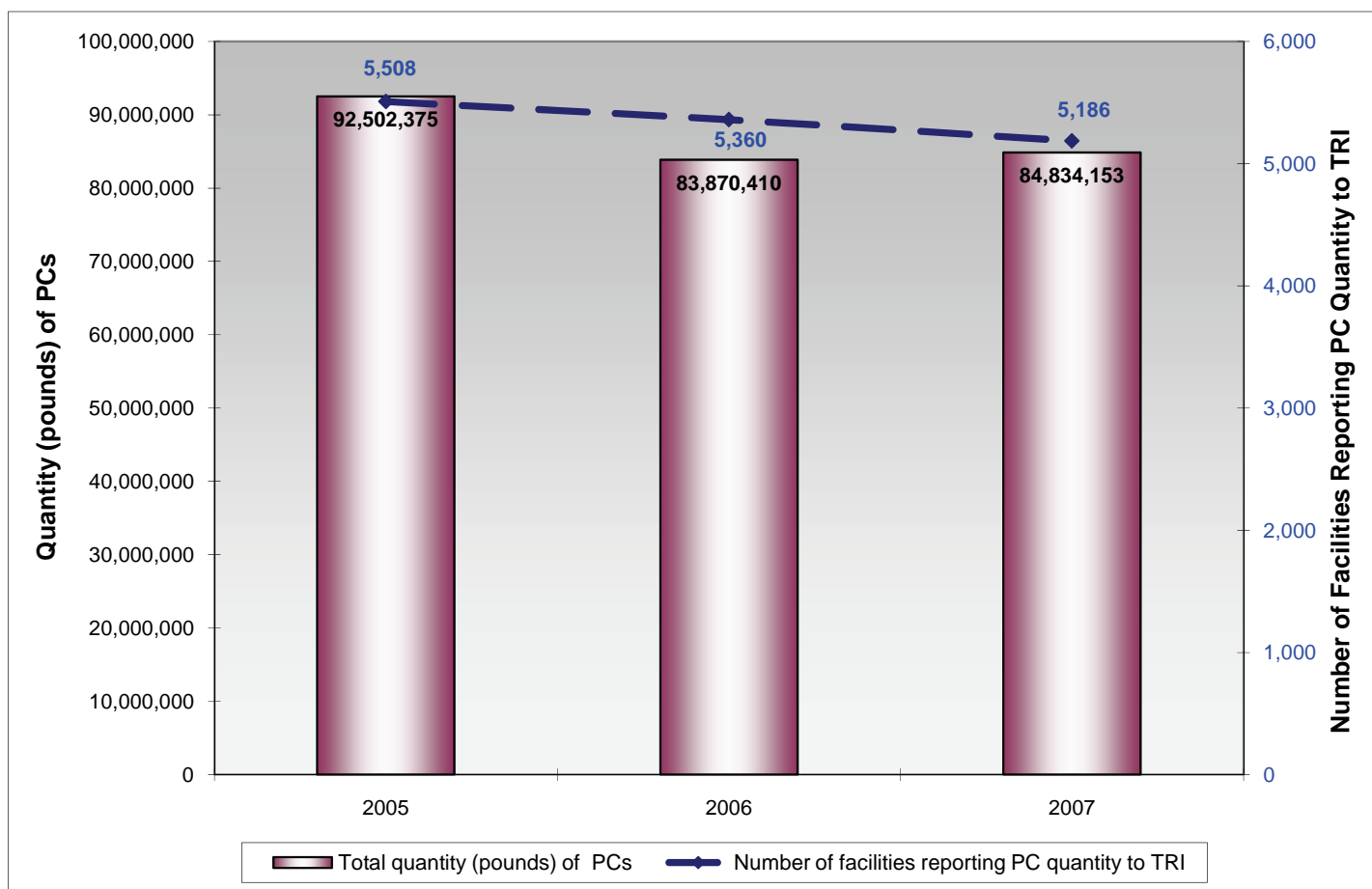
For 2007, approximately 5,200 facilities reported more than 84 million pounds of PCs. As noted in Section 1, these facilities and quantity of PCs are a subset of the total universe of PCs reported to TRI for which we focus on the quantities of PCs most amenable to waste minimization (i.e., the PC quantities reported to TRI as land disposal, treatment, and energy recovery). Compared to the quantities reported in 2005 and 2006, this represents a decrease of almost 7.7 million pounds (- 8.3 percent) and an increase of almost 1 million pounds (+ 1.1 percent), respectively. From 2005 to 2007, the number of reporting facilities steadily decreased (Exhibits 3.1 and 3.2).

Exhibit 3.1. Total Quantity and Number of Facilities for the Priority Chemicals (2005–2007)

TRI Reporting Year	2005	2006	2007
Total Quantity of PCs (pounds)	92,502,375	83,870,410	84,834,153
Number of TRI Facilities Reporting PC Quantity	5,508	5,360	5,186

⁹ The current list of PCs consists of 31 chemicals of which 24 are reportable to TRI. For TRI reporting years 2005 to 2007, four of the PCs: 2,4,5-trichlorophenol, heptachlor, lindane, and methoxychlor had no reported quantity.

Exhibit 3.2. Total Quantity (pounds) and Number of Facilities Reporting Priority Chemicals (2005–2007)



Since 2005, six of the PCs (lead and lead compounds, naphthalene, hexachlor-1,3-butadiene, polycyclic aromatic compounds (PACs), hexachlorobenzene, and hexachloroethane) accounted for at least 90 percent of the national total quantity of PCs (Exhibit 3.3).

The reported quantity of some PCs varied significantly from 2005 to 2007. We believe much of these year-to-year changes resulted from quantities of several PCs reported by a relatively small number of facilities, for example:

- Lead and lead compounds decreased by approximately 2.1 million pounds from 2006 to 2007. Several facilities reported large decreases in quantities of lead and lead compounds, including:
 - A U.S. Army installation located in Missouri reported a decrease of approximately 800,000 pounds for 2007. The lead quantity comes only from munitions fired on firing ranges; the facility attributed the decrease to differences in the number of soldiers undergoing training on the firing ranges and variations in training requirements;
 - A U.S. DOE facility located in Idaho showed a decrease of approximately 443,000 pounds. Much of this lead is commingled with other wastes that contain transuranic radioactive contamination and was classified as TRI code M10 (storage only) and was sent to the Waste Isolation Pilot Plant in New Mexico for storage, pending disposal at some point in the future. Quantities of chemicals classified as M10 are excluded by the methodology EPA uses to calculate PC quantities;
 - A copper rolling, drawing, and extruding facility in Tennessee reported a decrease of approximately 414,000 pounds by changing to lead-free compounds in 2006; and
 - A small arms ammunition manufacturing facility located in Arkansas reported a decrease of approximately 400,000 pounds in 2007. This facility, a partner in EPA's NPEP program, has committed to reduce the quantity of lead shipped off site for landfill disposal by sending the lead to a smelter for lead recovery instead of sending it to a secure hazardous waste landfill for disposal. The facility also improved its internal lead waste tracking, lead recycling and recovery.
- Naphthalene decreased by approximately 3.1 million pounds from 2005 to 2006 and then decreased by approximately another 2.1 million pounds from 2006 to 2007. Several facilities reported large decreases in quantities of naphthalene, including:
 - A petroleum refining facility in Texas reported a decrease of approximately 2.6 million pounds for 2005-2006 by recycling dewatered wastewater sludge, containing naphthalene, rather than land disposing it;

- o A cyclic crudes and intermediates facility in Texas reported decreases of approximately 517,000 pounds and 1.2 million pounds for 2006 and 2007, respectively. The facility attributes these decreases to substituting with a cleaner feedstock; however, they also completed tank and pipe cleaning since they have changed feedstock;
- o A cyclic crudes and intermediates facility in Michigan completed its shutdown activities in 2005, resulting in a decrease of approximately 758,000 pounds for 2006;
- o A cyclic crudes and intermediates facility in Alabama reported a decrease of approximately 497,000 pounds for 2006. This facility was shutdown in 2008 after undergoing several years of cleanup and cleanout of tanks in preparation of demolition of the facility; and
- o A petroleum refining facility in Indiana reported a decrease of approximately 435,000 pounds for 2006 after developing a more accurate method for measuring inlet and discharge concentrations data for its wastewater treatment plant.
- PACs decreased by approximately 1.1 million pounds from 2005 to 2006 and then increased by approximately 2.2 million pounds in 2007. For 2006, a carbon and graphite product manufacturing facility in North Carolina reported a decrease of approximately 690,000 pounds due to a change in composition of the coal tar pitch used as feedstock. Also, a basic chemical manufacturing facility in Ohio reported a decrease of approximately 360,000 pounds due to improved data regarding the composition and combustion of fuel oil. For 2007, a carbon black manufacturing facility in Texas brought online a cogenerating power facility, reporting approximately 3.3 million pounds of PACs for 2007. However, this increase was somewhat offset when a carbon and graphite product manufacturing facility in Tennessee reported a decrease of approximately 721,000 pounds of PACs due to decreased production.
- Pendimethalin decreased by approximately 267,000 pounds (47.8 percent) in 2006. A pesticides and agricultural chemicals facility in Missouri re-evaluated how it estimated the quantity of pendimethalin treated, resulting in a decreased quantity compared to the quantity reported for 2005.

Exhibit 3.3. Total Quantity by Priority Chemical (2005–2007)

Priority Chemical	Number of Facilities That Reported This PC in 2007	Quantity (pounds)			Percent of National Total PC Quantity (2007)	Change in Quantity (2005–2007)
		2005	2006	2007		
Lead and lead compounds	4,413	36,789,827	36,538,601	34,467,769	40.6%	-2,322,058
Naphthalene	644	17,232,309	14,143,706	12,071,587	14.2%	-5,160,721
Hexachloro-1,3-butadiene	5	10,120,647	9,954,510	10,312,897	12.2%	192,250
Polycyclic aromatic compounds	709	9,076,991	7,967,837	10,211,230	12.0%	1,134,239
Hexachlorobenzene	25	6,685,476	4,549,984	6,524,018	7.7%	-161,458
Hexachloroethane	9	6,095,933	4,166,250	5,487,132	6.5%	-608,801
Phenanthrene	67	1,430,252	1,726,564	1,365,563	1.6%	-64,689
1,2,4-Trichlorobenzene	10	1,269,422	1,372,426	1,342,738	1.6%	73,316
Benzo(g,h,i)perylene	447	688,490	785,274	853,113	1.0%	164,623
Cadmium and cadmium compounds	53	611,375	867,700	815,688	1.0%	204,314
Pentachlorobenzene	6	545,884	550,242	599,016	0.7%	53,132
Pendimethalin	8	558,624	291,521	202,417	0.2%	-356,207
Quintozene	4	303,237	248,538	193,410	0.2%	-109,827
Anthracene	43	601,973	379,752	154,336	0.2%	-447,637
Polychlorinated biphenyls (PCBs)	37	143,479	108,559	90,203	0.1%	-53,276
Mercury and mercury compounds	594	80,719	74,194	72,244	0.1%	-8,475
Trifluralin	10	46,600	37,200	26,072	<0.1%	-20,528
Dibenzofuran	13	139,463	89,871	22,308	<0.1%	-117,155
Pentachlorophenol	19	77,281	14,814	21,960	<0.1%	-55,322
Dioxin and dioxin-like compounds*	363	482	496	450	<0.1%	-32
2,4,5-Trichlorophenol	0	3,800	2,255	0	0.0%	-3,800
Heptachlor	0	109	69	0	0.0%	-109
Lindane	0	0	0	0	0.0%	0
Methoxychlor	0	0	45	0	0.0%	0
Total		92,502,375	83,870,410	84,834,153	100.0%	-7,668,222

* Facilities report dioxin and dioxin-like compounds to TRI in grams, with a reporting threshold of 0.1 grams. For the purposes of this table, we converted the quantity reported as grams to pounds.

Only a relatively small number of facilities reported the majority of PC quantities. In Exhibit 3.4, the highlighted areas indicate the number of facilities that accounted for at least 80 percent of the total quantity of each PC. For example:

- Of the 4,413 facilities that reported lead and lead compounds for 2007, 65 facilities accounted for approximately 75 percent of the total quantity.
- Of the 644 facilities that reported naphthalene, 24 facilities accounted for approximately 64 percent of the total quantity.
- Of the 709 facilities that reported polycyclic aromatic compounds, 12 facilities accounted for approximately 88 percent of the total quantity.

Exhibit 3.4. Number of Facilities That Reported Each Priority Chemical by Quantity Range (2007)

Distribution of Priority Chemical Quantity													
Name of Priority Chemical (Number of Facilities, Total PC Quantity)	up to 10 pounds		11–100 pounds		101–1,000 pounds		1,001–10,000 pounds		10,001–100,000 pounds		100,001–1 million pounds		> 1 million pounds
	Number of Facilities	Percent of Total Quantity for this PC	Number of Facilities	Percent of Total Quantity for this PC	Number of Facilities	Percent of Total Quantity for this PC	Number of Facilities	Percent of Total Quantity for this PC	Number of Facilities	Percent of Total Quantity for this PC	Number of Facilities	Percent of Total Quantity for this PC	Number of Facilities
1,2,4-Trichlorobenzene (10 facilities; 1,342,738 pounds)	1	<0.1%	0	0.0%	1	0.1%	4	1.3%	3	9.4%	1	89.3%	0
Anthracene (43 facilities; 154,336 pounds)	9	<0.1%	11	0.3%	13	2.8%	7	17.3%	3	79.6%	0	0.0%	0
Benzo(g,h,i)perylene (447 facilities; 853,113 pounds)	289	0.1%	90	0.4%	49	1.7%	11	4.2%	8	30.3%	2	63.4%	0
Cadmium and cadmium compounds (53 facilities; 815,688 pounds)	11	<0.1%	7	<0.1%	14	0.8%	11	6.6%	8	24.1%	2	68.4%	0
Dibenzofuran (13 facilities; 22,308 pounds)	1	<0.1%	2	0.4%	5	8.0%	5	91.5%	0	0.0%	0	0.0%	0
Dioxin and dioxin-Like compounds (363 facilities; 450 pounds)*	355	10.2%	6	35.0%	2	54.8%	0	0.0%	0	0.0%	0	0.0%	0
Hexachloro-1,3-butadiene (5 facilities; 10,312,897 pounds)	0	0.0%	0	0.0%	0	0.0%	1	<0.1%	1	0.2%	0	0.0%	3
Hexachlorobenzene (25 facilities; 6,524,018 pounds)	3	<0.1%	3	<0.1%	3	<0.1%	9	0.5%	2	0.9%	4	20.0%	1
Hexachloroethane (9 facilities; 5,487,132 pounds)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	3	2.0%	4	20.5%	2
Lead and lead compounds (4,413 facilities; 34,467,769 pounds)	1,609	<0.1%	992	0.1%	996	1.1%	552	5.6%	199	18.2%	60	50.3%	5
Mercury and mercury compounds (594 facilities; 72,244 pounds)	359	1.2%	171	7.4%	53	18.2%	10	40.6%	1	32.7%	0	0.0%	0
Naphthalene (644 facilities; 12,071,587 pounds)	122	<0.1%	101	<0.1%	135	0.5%	146	4.6%	116	31.7%	23	49.6%	1

Exhibit 3.4. Number of Facilities That Reported Each Priority Chemical by Quantity Range (2007) (Continued)

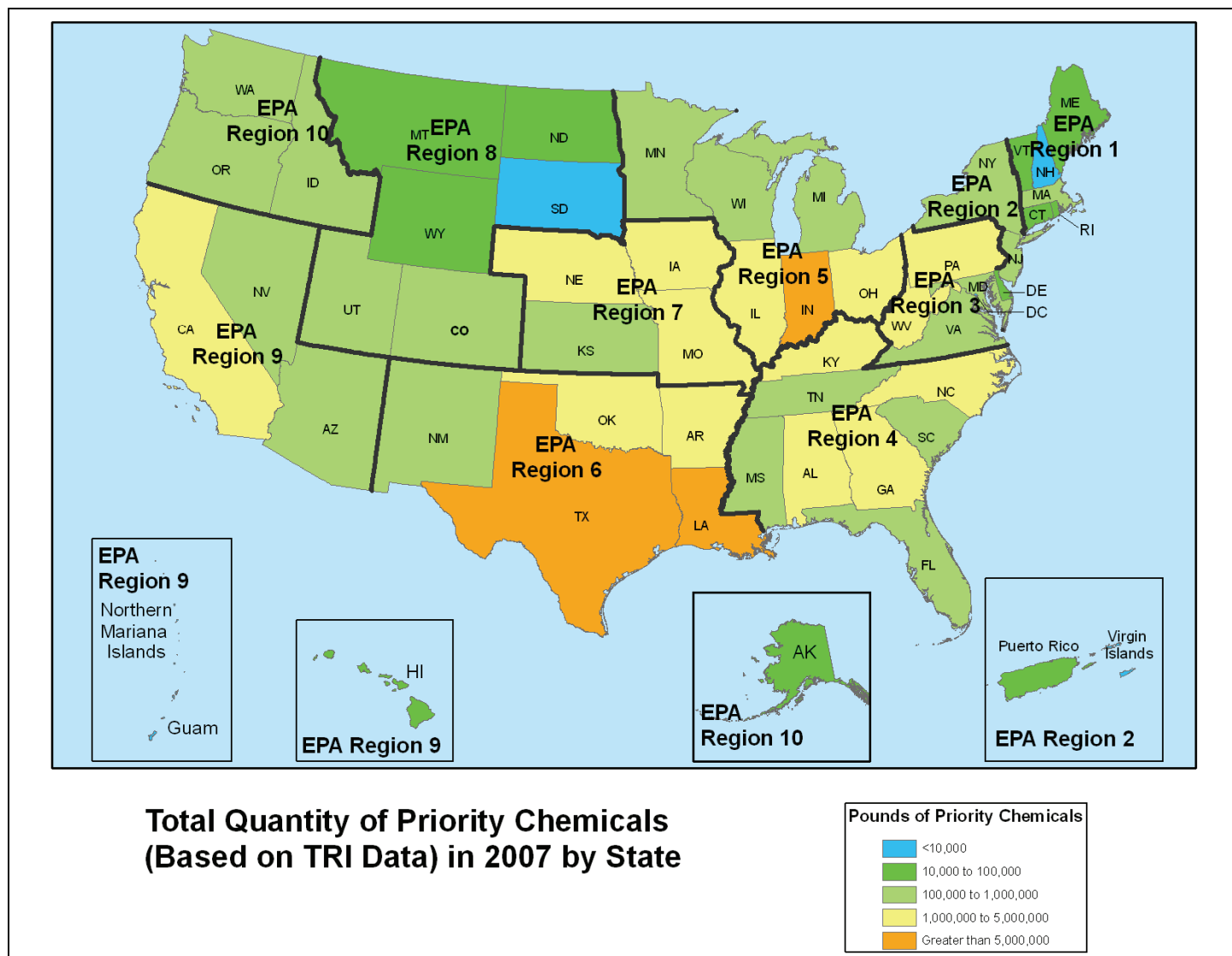
Distribution of Priority Chemical Quantity												
Name of Priority Chemical (Number of Facilities, Total PC Quantity)	up to 10 pounds		11–100 pounds		101–1,000 pounds		1,001–10,000 pounds		10,001–100,000 pounds		100,001–1 million pounds	
	Number of Facilities	Percent of Total Quantity for this PC	Number of Facilities	Percent of Total Quantity for this PC	Number of Facilities	Percent of Total Quantity for this PC	Number of Facilities	Percent of Total Quantity for this PC	Number of Facilities	Percent of Total Quantity for this PC	Number of Facilities	Percent of Total Quantity for this PC
Pendimethalin (8 facilities; 202,417 pounds)	0	0.0%	0	0.0%	3	0.7%	2	2.7%	2	40.2%	1	56.4%
Pentachlorobenzene 6 facilities; 599,016 pounds)	0	0.0%	0	0.0%	1	<0.1%	2	0.9%	1	10.5%	2	88.6%
Pentachlorophenol (19 facilities; 21,960 pounds)	0	0.0%	4	0.7%	10	22.5%	5	76.8%	0	0.0%	0	0.0%
Phenanthrene (67 facilities; 1,365,563 pounds)	8	<0.1%	11	<0.1%	24	0.8%	15	3.7%	8	22.2%	1	73.2%
Polychlorinated biphenyls (37 facilities; 90,203 pounds)	6	<0.1%	15	0.7%	8	2.8%	7	30.7%	1	65.8%	0	0.0%
Polycyclic aromatic compounds (709 facilities; 10,211,230 pounds)	247	<0.1%	202	0.1%	140	0.5%	81	2.9%	26	9.1%	10	30.5%
Quintozene (4 facilities; 193,410 pounds)	0	0.0%	0	0.0%	1	0.3%	2	1.9%	1	97.8%	0	0.0%
Trifluralin (10 facilities; 26,072 pounds)	1	<0.1%	3	0.7%	1	0.6%	4	46.0%	1	52.7%	0	0.0%
Shading indicates ranges in which facilities accounted for at least 85 percent of the total quantity for the PC.												

* Facilities report dioxin and dioxin-like compounds to TRI in grams, with a reporting threshold of 0.1 grams. For the purposes of this table, we converted the quantity reported as grams to pounds.

Where Were Priority Chemicals Generated?

Exhibit 3.5 shows, by state, the distribution of the quantity of PCs generated in 2007. Facilities in Louisiana generated approximately 27 million pounds or 32 percent of the total quantity of PCs.

Exhibit 3.5. Distribution of Priority Chemicals, by State (2007)



Facilities in five states (Louisiana, Texas, Indiana, Alabama, and Kentucky) accounted for approximately 60 percent of the total quantity of PCs generated (Exhibit 3.6).

Exhibit 3.6. Priority Chemical Quantity, by State (2005–2007)

EPA Region	State	Number of Facilities Reporting PCs (2007)	Quantity (pounds)			Change in Quantity (2005–2007)	Percent of National Total PC Quantity (2007)
			2005	2006	2007		
6	LA	106	23,533,763	22,445,969	26,929,792	3,396,029	31.7%
6	TX	337	14,289,758	8,471,394	9,085,171	-5,204,587	10.7%
5	IN	218	6,805,500	6,515,041	6,308,586	-496,914	7.4%
4	AL	168	5,138,087	4,792,222	4,552,303	-585,785	5.4%
4	KY	109	3,745,177	4,905,154	4,264,471	519,294	5.0%

Exhibit 3.6. Priority Chemical Quantity, by State (2005–2007) (Continued)

EPA Region	State	Number of Facilities Reporting PCs (2007)	Quantity (pounds)			Change in Quantity (2005–2007)	Percent of National Total PC Quantity (2007)
			2005	2006	2007		
3	PA	292	3,111,666	3,475,990	3,747,441	635,775	4.4%
9	CA	324	3,177,318	3,015,735	2,981,331	-195,987	3.5%
7	MO	120	2,498,492	2,943,787	2,228,949	-269,544	2.6%
5	OH	368	5,442,260	2,344,227	1,939,761	-3,502,499	2.3%
5	IL	272	1,578,112	1,833,009	1,911,834	333,722	2.3%
6	AR	75	1,970,628	2,666,894	1,742,328	-228,300	2.1%
6	OK	66	518,703	1,204,630	1,580,905	1,062,202	1.9%
3	WV	43	1,485,338	1,562,726	1,504,458	19,119	1.8%
7	NE	50	1,020,278	1,510,606	1,445,447	425,168	1.7%
7	IA	82	1,211,618	1,297,883	1,340,097	128,479	1.6%
4	GA	151	565,056	633,228	1,279,273	714,217	1.5%
4	NC	137	1,953,298	1,507,681	1,201,824	-751,475	1.4%
3	VA	113	802,497	1,130,313	938,904	136,407	1.1%
4	SC	106	1,092,069	966,220	926,531	-165,538	1.1%
4	TN	134	2,675,944	2,041,592	864,115	-1,811,829	1.0%
8	UT	54	984,378	803,461	845,488	-138,890	1.0%
10	WA	109	832,829	715,599	709,800	-123,029	0.8%
5	MI	180	2,132,174	824,224	708,705	-1,423,470	0.8%
2	NJ	97	805,020	710,866	648,212	-156,807	0.8%
10	OR	87	579,233	587,627	618,204	38,971	0.7%
4	MS	79	504,390	619,169	548,292	43,902	0.6%
10	ID	45	611,074	954,430	529,646	-81,428	0.6%
4	FL	108	641,515	555,874	519,478	-122,037	0.6%
5	WI	203	475,210	539,848	453,067	-22,143	0.5%
5	MN	104	362,092	346,262	420,444	58,352	0.5%
2	NY	168	477,786	381,455	360,875	-116,912	0.4%
3	MD	34	266,804	156,302	306,412	39,607	0.4%
6	NM	23	211,500	240,754	248,063	36,564	0.3%
7	KS	72	181,955	181,530	173,207	-8,748	0.2%
1	MA	121	132,148	144,065	165,987	33,839	0.2%
9	NV	23	62,987	130,668	131,576	68,589	0.2%
8	CO	41	94,242	74,963	120,213	25,970	0.1%
9	AZ	55	89,711	137,896	107,475	17,764	0.1%
1	CT	73	132,490	114,136	80,744	-51,746	0.1%
9	HI	13	41,539	105,226	80,553	39,014	0.1%
10	AK	13	50,963	35,570	50,223	-740	0.1%
1	ME	38	24,244	40,955	45,636	21,392	0.1%
2	PR	18	30,700	35,516	43,443	12,743	0.1%
8	WY	15	33,738	24,528	31,866	-1,872	<0.1%
8	MT	15	10,853	15,383	26,408	15,554	<0.1%
3	DE	14	10,481	15,728	24,240	13,759	<0.1%
1	VT	13	12,471	8,124	16,738	4,267	<0.1%
1	RI	28	8,275	12,185	15,106	6,832	<0.1%
8	ND	9	4,470	27,116	10,986	6,516	<0.1%
1	NH	41	70,247	61,008	9,227	-61,021	<0.1%
8	SD	16	1,432	1,987	7,231	5,798	<0.1%
9	GU	2	987	766	1,580	593	<0.1%
2	VI	1	7,170	2,033	825	-6,345	<0.1%
3	DC	1	1,703	858	435	-1,268	<0.1%
9	MP	2	0	0	250	250	<0.1%
Total		5,186	92,502,375	83,870,410	84,834,153	-7,668,222	100.0%

For 2007, facilities in each of 13 counties (located in eight states) accounted for at least 1 million pounds of PCs and represented approximately 55 percent of the total quantity of PCs generated (Exhibit 3.7).

Exhibit 3.7. Priority Chemical Quantity, by County, for Facilities Reporting 80 Percent of the Total Quantity (2007)

EPA Region	State	County	Number of Facilities Reporting PCs (2007)	Quantity (pounds)			Change in Quantity (2005–2007)	Percent of Total PC Quantity (2007)
				2005	2006	2007		
6	LA	Iberville	6	10,040,735	9,872,308	12,910,950	2,870,215	15.2%
6	LA	Calcasieu	12	6,085,800	6,466,822	6,898,836	813,036	8.1%
6	LA	Ascension	5	5,794,545	4,756,953	5,918,049	123,504	7.0%
6	TX	Orange	6	16,350	29,358	3,341,944	3,325,594	3.9%
4	KY	Hancock	5	2,508,135	3,362,961	3,320,032	811,897	3.9%
9	CA	Los Angeles	104	2,333,612	2,319,087	2,382,728	49,116	2.8%
4	AL	Pike	2	2,107,678	2,274,578	2,356,626	248,948	2.8%
5	IN	Marion	24	2,345,829	2,136,231	2,137,523	-208,305	2.5%
6	TX	Jefferson	15	4,607,869	1,940,598	1,815,150	-2,792,720	2.1%
3	PA	Berks	13	1,451,716	1,506,633	1,796,115	344,399	2.1%
7	MO	Iron	1	1,691,895	1,499,007	1,776,655	84,760	2.1%
6	TX	Brazoria	9	3,204,727	1,285,187	1,077,056	-2,127,671	1.3%
6	TX	Harris	70	3,312,505	2,993,731	1,049,177	-2,263,328	1.2%
7	IA	Muscatine	3	873,033	979,404	968,333	95,300	1.1%
3	WV	Kanawha	5	706,036	933,610	958,736	252,700	1.1%
5	IN	Whitley	4	726,986	925,574	922,717	195,731	1.1%
4	AL	Mobile	10	1,033,235	1,085,872	872,461	-160,774	1.0%
7	NE	Jefferson	1	690,644	923,845	834,399	143,755	1.0%
5	IL	Madison	15	494,387	567,540	777,160	282,774	0.9%
4	AL	Jefferson	24	1,453,853	935,962	719,740	-734,112	0.8%
6	OK	Mayes	5	2,364	623,443	692,178	689,815	0.8%
3	PA	Allegheny	23	546,203	463,086	668,930	122,727	0.8%
10	OR	Yamhill	6	457,324	517,411	596,573	139,249	0.7%
6	LA	East Baton Rouge	9	653,361	603,959	595,993	-57,368	0.7%
5	IN	Delaware	5	640,347	525,974	583,653	-56,694	0.7%
7	NE	Stanton	1	301,767	564,467	583,236	281,469	0.7%
4	KY	Fulton	2	524,952	543,739	567,783	42,831	0.7%
8	UT	Box Elder	2	731,467	511,349	537,495	-193,971	0.6%
4	GA	Lowndes	4	4,634	18,493	525,125	520,491	0.6%
5	IN	Lake	21	656,949	519,555	523,542	-133,407	0.6%
3	PA	Beaver	11	360,170	645,992	515,513	155,343	0.6%
3	WV	Brooke	6	730,488	568,359	502,194	-228,295	0.6%
6	AR	Franklin	1	371,159	462,841	459,506	88,347	0.5%
5	MI	Wayne	29	1,741,479	440,468	451,271	-1,290,208	0.5%
5	IN	Hancock	2	85,735	705,388	445,100	359,365	0.5%
5	OH	Stark	13	443,734	454,329	421,548	-22,186	0.5%
6	AR	Mississippi	2	291,886	435,690	417,098	125,211	0.5%
5	IL	Cook	112	326,316	305,676	408,865	82,549	0.5%
10	ID	Caribou	3	110,437	381,804	386,287	275,850	0.5%
2	NJ	Middlesex	24	403,552	312,374	379,477	-24,075	0.4%
6	OK	Custer	1	0	0	343,480	343,480	0.4%
4	NC	Hertford	1	344,755	457,556	340,634	-4,121	0.4%
4	SC	Berkeley	5	328,947	230,664	338,852	9,905	0.4%
4	MS	Hinds	5	276,323	334,881	336,014	59,691	0.4%
4	AL	Tuscaloosa	9	236,367	234,878	332,524	96,157	0.4%
6	AR	Pope	2	628,392	870,098	325,799	-302,593	0.4%

**Exhibit 3.7. Priority Chemical Quantity, by County, for Facilities Reporting 80 Percent of the Total Quantity (2007)
(Continued)**

EPA Region	State	County	Number of Facilities Reporting PCs (2007)	Quantity (pounds)			Change in Quantity (2005–2007)	Percent of Total PC Quantity (2007)
				2005	2006	2007		
6	AR	Lonoke	1	493,770	718,093	318,730	-175,040	0.4%
3	VA	Roanoke (city)	1	349,325	362,430	316,994	-32,331	0.4%
5	IN	Hendricks	3	186,759	288,781	309,172	122,413	0.4%
4	NC	Burke	1	1,013,052	365,239	295,863	-717,189	0.3%
5	MN	Dakota	4	271,520	262,033	295,280	23,761	0.3%
10	WA	Spokane	12	343,102	344,225	289,538	-53,564	0.3%
5	IL	Peoria	5	238,388	283,587	288,035	49,647	0.3%
5	IN	De Kalb	8	267,297	305,037	287,980	20,683	0.3%
6	TX	Collin	7	241,722	332,175	258,454	16,732	0.3%
Total			680	66,083,608	61,789,331	67,773,104	1,689,496	79.9%

Facilities in several of the counties reported a significant portion of two or more of the PCs generated in 2007 (Exhibit 3.8), including:

Ascension County in Louisiana:

- 41.1 percent of the hexachloro-1,3-butadiene
- 24.2 percent of the hexachloroethane

Calcasieu County in Louisiana:

- 30.1 percent of the hexachloro-1,3-butadiene
- 89.3 percent of the 1,2,4-trichlorobenzene
- 49.2 percent of the pentachlorobenzene

Hancock County in Kentucky:

- 25.2 percent of the polycyclic aromatic compounds
- 38.4 percent of the benzo(g,h,i)perylene

Iberville County in Louisiana:

- 78.8 percent of the hexachlorobenzene
- 73.2 percent of the phenanthrene
- 53.3 percent of the hexachloroethane
- 39.8 percent of the pentachlorobenzene
- 32.7 percent of the mercury and mercury compounds
- 28.8 percent of the hexachloro-1,3-butadiene
- 24.9 percent of the dioxin and dioxin-like compounds

Exhibit 3.8. Counties in Which Facilities Reported the Majority of the Total Quantity of Individual Priority Chemicals (2007)

Priority Chemical	EPA Region	State	County	Quantity (pounds)			Percent of National Total Quantity of this PC (2007)
				2005	2006	2007	
1,2,4-Trichlorobenzene	6	LA	Calcasieu	1,199,452	1,300,732	1,199,721	89.3%
Anthracene	4	AL	Jefferson	128,243	85,122	95,660	62.0%
Benzo(g,h,i)Perylene	4	KY	Hancock	137,849	260,240	327,537	38.4%
	4	KY	Fulton	197,280	203,997	213,022	25.0%
Cadmium and cadmium compounds	10	ID	Caribou	68,005	306,044	322,494	39.5%
	6	OK	Washington	287,766	293,666	235,437	28.9%
Dibenzofuran	5	IL	Cook	6,217	4,947	8,909	39.9%
	3	WV	Brooke	5,710	9,852	4,968	22.3%
Dioxin and dioxin-like compounds*	6	TX	Harris	37	93	175	38.8%
	6	LA	Iberville	226	185	112	24.9%
Hexachloro-1,3-butadiene	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%
Hexachlorobenzene	6	LA	Iberville	4,379,798	3,335,848	5,138,321	78.8%
Hexachloroethane	6	LA	Iberville	2,682,667	2,026,399	2,925,491	53.3%
	6	LA	Ascension	1,436,915	1,126,704	1,325,253	24.2%
Lead and lead compounds	4	AL	Pike	2,068,070	2,235,064	2,314,349	6.7%
	9	CA	Los Angeles	2,015,396	2,058,796	2,147,115	6.2%
	5	IN	Marion	2,108,246	1,961,280	2,030,439	5.9%
	3	PA	Berks	1,451,712	1,506,630	1,796,112	5.2%
	7	MO	Iron	1,691,895	1,499,007	1,776,655	5.2%
	7	IA	Muscatine	865,639	974,784	967,865	2.8%
	5	IN	Whitley	726,986	925,574	922,717	2.7%
	4	AL	Mobile	1,020,760	1,079,100	812,733	2.4%
	7	NE	Jefferson	668,244	893,845	808,399	2.3%
	5	IL	Madison	262,147	334,884	604,985	1.8%
	5	IN	Delaware	640,337	525,720	583,648	1.7%
	7	NE	Stanton	301,660	564,381	583,147	1.7%
	10	OR	Yamhill	456,972	517,176	538,700	1.6%
	8	UT	Box Elder	731,310	511,213	537,222	1.6%
	4	GA	Lowndes	4,365	18,223	524,849	1.5%
	3	PA	Beaver	359,698	640,200	510,066	1.5%
Mercury and mercury compounds	6	LA	Iberville	632	9,259	23,647	32.7%
	1	VT	Rutland	5,510	4,886	7,056	9.8%
	6	LA	St Landry	11	0	5,219	7.2%
	1	CT	New Haven	123	21,536	3,825	5.3%
	3	DE	New Castle	932	3,710	3,823	5.3%
Naphthalene	6	TX	Jefferson	4,545,791	1,864,797	1,726,465	14.3%
	3	WV	Kanawha	703,295	932,598	957,373	7.9%
	6	LA	Calcasieu	359,426	492,707	884,075	7.3%
	6	LA	Iberville	100,099	527,748	586,770	4.9%
	5	IN	Hancock	85,682	705,338	445,098	3.7%
	4	KY	Hancock	163,970	444,903	422,318	3.5%
	3	PA	Allegheny	403,823	422,033	413,822	3.4%
	6	TX	Harris	2,339,697	1,694,220	376,144	3.1%
	3	WV	Brooke	345,363	353,410	346,986	2.9%
Pendimethalin	7	MO	Marion	391,287	138,326	114,201	56.4%

Exhibit 3.8. Counties in Which Facilities Reported the Majority of the Total Quantity of Individual Priority Chemicals (2007) (Continued)

Priority Chemical	EPA Region	State	County	Quantity (pounds)			Percent of National Total Quantity of this PC (2007)
				2005	2006	2007	
Pentachlorobenzene	6	LA	Calcasieu	305,962	328,698	294,537	49.2%
	6	LA	Iberville	203,316	154,514	238,151	39.8%
Pentachlorophenol	4	MS	Grenada	29,324	3,708	9,600	43.7%
	4	SC	Florence	3,112	3,592	2,433	11.1%
Phenanthrene	6	LA	Iberville	0	910,207	1,000,249	73.2%
Polychlorinated biphenyls	4	TN	Maury	45,843	66,343	59,327	65.8%
Polycyclic aromatic compounds	6	TX	Orange	638	0	3,252,768	31.9%
	4	KY	Hancock	1,171,896	2,129,500	2,569,900	25.2%
Quintozene	9	CA	Los Angeles	297,549	244,406	189,215	97.8%
Trifluralin	7	IA	Polk	19,545	16,871	13,743	52.7%
Total				47,491,941	46,576,074	53,511,548	NA

* Facilities report dioxin and dioxin-like compounds to TRI in grams, with a reporting threshold of 0.1 grams. For the purposes of this table, we converted the quantity reported as grams to pounds.

Which Industries Generated the Greatest Quantities of Priority Chemicals?

For 2007, facilities in 341 different NAICS codes reported generating PCs with approximately 90 percent of the facilities in 18 of the NAICS codes. Facilities in four industries accounted for approximately 50 percent of the total quantity of the PCs generated in 2007 (Exhibit 3.9):

- NAICS code 325181 (Alkalies and Chlorine Manufacturing): 14.5 percent
- NAICS code 331492 (Secondary Smelting, Refining, and Alloying of Nonferrous Metal Except Copper and Aluminum): 14.3 percent
- NAICS code 331111 (Iron and Steel Mills): 11.7 percent
- NAICS code 325199 (All Other Basic Organic Chemical Manufacturing): 9.2 percent

Exhibit 3.9. Priority Chemical Quantity, by Industry (2007)

NAICS Code	NAICS Code Description	Quantity (pounds)			Percent of National Total PC Quantity (2007)
		2005	2006	2007	
325181	Alkalies and Chlorine Manufacturing	13,038,368	11,412,703	12,318,274	14.5%
331492	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	11,027,809	11,410,674	12,113,121	14.3%
331111	Iron and Steel Mills	9,270,225	10,251,710	9,917,169	11.7%
325199	All Other Basic Organic Chemical Manufacturing	6,730,385	6,427,403	7,780,463	9.2%
325211	Plastics Material and Resin Manufacturing	5,634,590	3,990,925	5,614,944	6.6%
928110	National Security	2,731,706	4,457,354	4,049,641	4.8%
324110	Petroleum Refineries	6,146,304	2,960,747	3,918,427	4.6%
325182	Carbon Black Manufacturing	28,339	6,568	3,323,412	3.9%
331312	Primary Aluminum Production	2,756,294	3,233,397	3,306,113	3.9%
325110	Petrochemical Manufacturing	2,828,812	3,484,977	2,923,418	3.4%
332812	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	2,198,727	3,000,504	2,697,152	3.2%
335991	Carbon and Graphite Product Manufacturing	4,651,306	3,291,125	1,893,151	2.2%
325188	All Other Basic Inorganic Chemical Manufacturing	1,655,987	1,926,909	1,516,467	1.8%
325320	Pesticide and Other Agricultural Chemical Manufacturing	1,541,579	1,377,219	1,344,657	1.6%
331511	Iron Foundries	1,626,415	1,617,817	1,153,689	1.4%
325998	All Other Miscellaneous Chemical Product and Preparation Manufacturing	694,526	958,435	1,043,651	1.2%

Exhibit 3.9. Priority Chemical Quantity, by Industry (2007) (Continued)

NAICS Code	NAICS Code Description	Quantity (pounds)			Percent of National Total PC Quantity (2007)
		2005	2006	2007	
325192	Cyclic Crude and Intermediate Manufacturing	3,916,502	2,597,531	790,623	0.9%
332992	Small Arms Ammunition Manufacturing	565,013	790,921	673,598	0.8%
Total		77,042,886	73,196,919	76,377,971	90.0%

For many of the PCs, facilities in only a relatively small number of industries reported most of the total quantity of PCs generated. Exhibit 3.10 shows the industries in which facilities accounted for much of the total quantity of each PC generated for 2007.

Exhibit 3.10. Key Industries Reporting Priority Chemicals (2007)

Primary NAICS Code	NAICS Code Description	Quantity (pounds) Reported By This Industry (2007)	Percent of Total Quantity (2007)
1,2,4-Trichlorobenzene: 1,372,738 total pounds reported by facilities in 6 industries			
325181	Alkalies and Chlorine Manufacturing	1,225,921	91.3%
Anthracene: 154,336 total pounds reported by facilities in 11 industries			
325192	Cyclic Crude and Intermediate Manufacturing	106,416	69.0%
325110	Petrochemical Manufacturing	19,334	12.5%
Benzo(g,h,i)perylene: 853,113 total pounds reported by facilities in 48 industries			
331312	Primary Aluminum Production	343,270	40.2%
335991	Carbon and Graphite Product Manufacturing	303,785	35.6%
325998	All Other Miscellaneous Chemical Product and Preparation Manufacturing	76,898	9.0%
Cadmium and cadmium compounds: 815,688 total pounds reported by facilities in 23 industries			
325188	All Other Basic Inorganic Chemical Manufacturing	348,628	42.7%
331492	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	287,378	35.2%
331111	Iron and Steel Mills	91,423	11.2%
Dibenzofuran: 22,308 total pounds reported by facilities in 10 industries			
325192	Cyclic Crude and Intermediate Manufacturing	10,992	49.3%
325110	Petrochemical Manufacturing	6,483	29.1%
324199	All Other Petroleum and Coal Products Manufacturing	2,946	13.2%
Dioxin and dioxin-like compounds: 450 total pounds* reported by facilities in 42 industries			
325199	All Other Basic Organic Chemical Manufacturing	228	50.6%
325211	Plastics Material and Resin Manufacturing	112	24.9%
325181	Alkalies and Chlorine Manufacturing	61	13.5%
Hexachloro-1,3-butadiene: 10,312,897 total pounds reported by facilities in 3 industries			
325181	Alkalies and Chlorine Manufacturing	7,340,126	71.2%
325199	All Other Basic Organic Chemical Manufacturing	2,951,761	28.6%
Hexachlorobenzene: 6,524,018 total pounds reported by facilities in 11 industries			
325211	Plastics Material and Resin Manufacturing	5,138,293	78.8%
325181	Alkalies and Chlorine Manufacturing	1,169,311	17.9%
Hexachloroethane: 5,487,132 total pounds reported by facilities in 4 industries			
325199	All Other Basic Organic Chemical Manufacturing	3,302,622	60.2%
325181	Alkalies and Chlorine Manufacturing	2,147,043	39.1%
Lead and lead compounds: 34,467,769 total pounds reported by facilities in 331 industries			
331492	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	11,824,698	34.3%
331111	Iron and Steel Mills	3,988,024	11.6%
928110	National Security	1,126,770	3.3%
331511	Iron Foundries	1,125,045	3.3%
325188	All Other Basic Inorganic Chemical Manufacturing	1,074,482	3.0%

Exhibit 3.10. Key Industries Reporting Priority Chemicals (2007) (Continued)

Primary NAICS Code	NAICS Code Description	Quantity (pounds) Reported By This Industry (2007)	Percent of Total Quantity (2007)
Mercury and mercury compounds: 72,244 total pounds reported by facilities in 90 industries			
325181	Alkalies and Chlorine Manufacturing	30,512	42.2%
335110	Electric Lamp Bulb and Part Manufacturing	7,697	10.7%
324110	Petroleum Refineries	7,241	10.0%
325312	Phosphatic Fertilizer Manufacturing	4,553	6.3%
331111	Iron and Steel Mills	4,230	5.9%
325199	All Other Basic Organic Chemical Manufacturing	3,789	5.2%
Naphthalene: 12,071,587 total pounds reported by facilities in 73 industries			
324110	Petroleum Refineries	3,156,283	26.1%
332812	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	2,634,147	21.8%
325110	Petrochemical Manufacturing	1,336,625	11.1%
325320	Pesticide and Other Agricultural Chemical Manufacturing	979,314	8.1%
325199	All Other Basic Organic Chemical Manufacturing	876,661	7.3%
325192	Cyclic Crude and Intermediate Manufacturing	456,861	3.8%
336413	Other Aircraft Parts and Auxiliary Equipment Manufacturing	284,399	2.4%
Pendimethalin: 202,417 total pounds reported by facilities in 3 industries			
325320	Pesticide and Other Agricultural Chemical Manufacturing	115,661	57.1%
111930	Sugarcane Farming	81,370	40.2%
Pentachlorobenzene: 599,016 total pounds reported by facilities in 4 industries			
325181	Alkalies and Chlorine Manufacturing	294,537	49.2%
325199	All Other Basic Organic Chemical Manufacturing	236,521	39.5%
Pentachlorophenol: 21,960 total pounds reported by facilities in 3 industries			
321114	Wood Preservation	21,790	99.2%
Phenanthrene: 1,365,563 total pounds reported by facilities in 15 industries			
325110	Petrochemical Manufacturing	1,132,793	83.0%
Polychlorinated biphenyls: 90,203 total pounds reported by facilities in 19 industries			
325199	All Other Basic Organic Chemical Manufacturing	66,419	73.6%
325181	Alkalies and Chlorine Manufacturing	13,710	15.2%
Polycyclic aromatic compounds: 10,211,230 total pounds reported by facilities in 75 industries			
325182	Carbon Black Manufacturing	3,257,834	31.9%
331312	Primary Aluminum Production	2,722,433	26.7%
335991	Carbon and Graphite Product Manufacturing	1,586,338	15.5%
325998	All Other Miscellaneous Chemical Product and Preparation Manufacturing	636,112	6.2%
Quintozene: 193,410 total pounds reported by facilities in 2 industries			
325320	Pesticide and Other Agricultural Chemical Manufacturing	191,039	98.8%
Trifluralin: 26,072 total pounds reported by facilities in 3 industries			
325320	Pesticide and Other Agricultural Chemical Manufacturing	25,918	99.4%

*Facilities report dioxin and dioxin-like compounds to TRI in grams, with a reporting threshold of 0.1 grams. For the purposes of this table, we converted the quantity reported as grams to pounds.

Exhibit 3.11 shows the quantity and percentage of individual PCs reported by facilities in the 11 industries that accounted for 80 percent of the total national quantity of PCs generated in 2007. Percentages are highlighted for those PCs for which the industry accounted for 10 percent or more of the total quantity of that PC in 2007.

Exhibit 3.11. Quantity of Priority Chemicals Reported by Key Industries (2007)

Priority Chemical	Quantity (pounds) of This PC Reported (2007)	Percent of Total Quantity of This PC (2007)
Alkalies and Chlorine Manufacturing (NAICS 325181): 12,318,274 total pounds reported by 17 facilities		
Hexachloro-1,3-butadiene	7,340,126	71.2%
Hexachloroethane	2,147,043	39.1%
1,2,4-Trichlorobenzene	1,225,921	91.3%
Hexachlorobenzene	1,169,311	11.3%
Pentachlorobenzene	294,537	49.2%
Naphthalene	93,867	0.8%
Mercury and mercury compounds	30,512	42.2%
Polychlorinated biphenyls (PCBs)	13,710	15.2%
Polycyclic aromatic compounds (PACs)	1,418	<0.1%
Lead and lead compounds	1,331	<0.1%
Phenanthrene	436	<0.1%
Dioxin and dioxin-like compounds*	61	13.5%
Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum) (NAICS 331492): 12,113,121 total pounds reported by 32 facilities		
Lead and lead compounds	11,824,698	34.3%
Cadmium and cadmium compounds	287,378	35.2%
Mercury and mercury compounds	1,045	1.4%
Dioxin and dioxin-like compounds*	0	<0.1%
Iron and Steel Mills (NAICS 331111): 9,917,169 total pounds reported by 93 facilities		
Lead and lead compounds	9,782,585	28.4%
Cadmium and cadmium compounds	91,423	11.2%
Naphthalene	29,862	0.1%
Polychlorinated biphenyls (PCBs)	5,435	<0.1%
Mercury and mercury compounds	4,230	5.9%
Polycyclic aromatic compounds	3,269	<0.1%
Phenanthrene	224	<0.1%
Anthracene	87	0.1%
Dibenzofuran	41	0.2%
Benzo(g,h,i)perylene	12	<0.1%
Dioxin and dioxin-like compounds*	0	<0.1%
All Other Basic Organic Chemical Manufacturing (NAICS 325199): 7,780,463 pounds reported by 63 facilities		
Hexachloroethane	3,302,622	60.2%
Hexachloro-1,3-butadiene	2,951,761	28.6%
Naphthalene	876,661	7.3%
Pentachlorobenzene	236,521	39.5%
Hexachlorobenzene	198,788	3.0%
Lead and lead compounds	69,342	0.2%
Polychlorinated biphenyls (PCBs)	66,419	73.6%
Cadmium and cadmium compounds	25,889	3.2%
1,2,4-Trichlorobenzene	18,550	1.4%
Anthracene	18,319	11.9%
Phenanthrene	8,855	0.6%
Mercury and mercury compounds	3,789	5.2%
Polycyclic aromatic compounds (PACs)	2,645	<0.1%
Dioxin and dioxin-like compounds*	228	50.6%
Benzo(g,h,i)perylene	54	<0.1%
Pentachlorophenol	21	0.1%

Exhibit 3.11. Quantity of Priority Chemicals Reported by Key Industries (2007) (Continued)

Priority Chemical	Quantity (pounds) of This PC Reported (2007)	Percent of Total Quantity of This PC (2007)
Plastics Material and Resin Manufacturing (NAICS 325211): 5,614,944 pounds reported by 59 facilities		
Hexachlorobenzene	5,138,293	78.8%
Naphthalene	177,730	1.5%
Polycyclic aromatic compounds (PACs)	142,418	1.4%
Pentachlorobenzene	64,717	10.8%
Lead and lead compounds	47,229	0.1%
Hexachloro-1,3-butadiene	21,010	0.2%
Hexachloroethane	19,516	0.4%
Benzo(g,h,i)perylene	2,214	0.3%
Polychlorinated biphenyls (PCBs)	1,159	1.3%
Mercury and mercury compounds	546	0.8%
Dioxin and dioxin-like compounds*	112	24.9%
National Security (NAICS 928110): 4,049,641 total pounds reported by 201 facilities		
Lead and lead compounds	3,988,024	11.6%
Naphthalene	60,387	0.5%
Mercury and mercury compounds	692	1.0%
Polychlorinated biphenyls (PCBs)	537	0.6%
Petroleum Refineries (NAICS 324110): 3,918,427 total pounds reported by 139 facilities		
Naphthalene	3,156,283	26.1%
Polycyclic aromatic compounds (PACs)	407,276	4.0%
Lead and lead compounds	242,033	0.7%
Phenanthrene	92,224	6.8%
Mercury and mercury compounds	7,241	10.0%
Benzo(g,h,i)perylene	5,544	0.6%
Hexachlorobenzene	5,001	0.1%
Anthracene	2,412	1.6%
Dibenzofuran	338	1.5%
Cadmium and cadmium compounds	76	<0.1%
Dioxin and dioxin-like compounds*	0	<0.1%
Carbon Black Manufacturing (NAICS 325182): 3,323,412 total pounds reported by 19 facilities		
Polycyclic aromatic compounds (PACs)	3,257,834	31.9%
Benzo(g,h,i)perylene	65,454	7.7%
Lead and lead compounds	110	<0.1%
Phenanthrene	6	<0.1%
Naphthalene	5	<0.1%
Mercury and mercury compounds	2	<0.1%
Primary Aluminum Production (NAICS 331312): 3,306, 113 total pounds reported by 13 facilities		
Polycyclic aromatic compounds (PACs)	2,722,433	26.7%
Benzo(g,h,i)perylene	343,270	40.2%
Naphthalene	154,873	1.3%
Lead and lead compounds	85,280	0.2%
Mercury and mercury compounds	250	0.3%
Dioxin and dioxin-like compounds*	7	1.5%

Exhibit 3.11. Quantity of Priority Chemicals Reported by Key Industries (2007) (Continued)

Priority Chemical	Quantity (pounds) of This PC Reported (2007)	Percent of Total Quantity of This PC (2007)
Petrochemical Manufacturing (NAICS 325110): 2,923,418 total pounds reported by 39 facilities		
Naphthalene	1,336,625	11.1%
Phenanthrene	1,132,793	83.0%
Polycyclic aromatic compounds (PACs)	362,301	3.5%
Benzo(g,h,i)perylene	36,767	4.3%
Lead and lead compounds	28,839	0.1%
Anthracene	19,334	12.5%
Dibenzofuran	6,483	29.1%
Mercury and mercury compounds	220	0.3%
Polychlorinated biphenyls (PCBs)	49	0.1%
Dioxin and dioxin-like compounds*	7	1.6%
Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers (NAICS 332812): 2,697,152 total pounds reported by 94 facilities		
Naphthalene	2,634,147	21.8%
Lead and lead compounds	63,004	0.2%

* Facilities report dioxin and dioxin-like compounds to TRI in grams, with a reporting threshold of 0.1 grams. For the purposes of this table, we converted the quantity reported as grams to pounds.

How Were Priority Chemicals Managed?

Some highlights concerning the overall methods that facilities used for the management of PCs (Exhibits 3.12 and 3.13):

Disposal

- In 2007, facilities used disposal for approximately 37.2 million pounds, or 44 percent, of non-recycled PCs; off-site disposal accounted for 74 percent of this quantity.
- Compared to the quantity of PCs disposed of in 2005, the quantity disposed of decreased by approximately 1.5 million pounds in 2006 and further decreased by approximately 1.7 million pounds in 2007. Off-site disposal decreased significantly in both 2006 and 2007, by 3.1 million pounds and 1.4 million pounds, respectively.
- The three metal PCs: cadmium, lead, and mercury (and their compounds) accounted for approximately 95 percent of the quantity disposed of. For non-metals, approximately 751,000 pounds of PACs and 718,000 pounds of naphthalene were land disposed in 2007, accounting for approximately 78 percent of the non-metal PC quantity disposed of.

Energy Recovery

- From 2005 to 2007, energy recovery accounted for an average of 11 million pounds or 13 percent of the non-recycled PC quantity generated, including approximately 10.5 million pounds or 12 percent in 2007. On-site energy recovery accounted for approximately 87 percent of the total energy recovery.
- Two PCs: naphthalene (40.2 percent) and PACs (37.9 percent) accounted for approximately 78 percent of the total quantity of PCs burned for energy recovery in 2007.

Treatment

- In 2007, facilities treated approximately 37.2 million pounds, or 44 percent, of the quantity of non-recycled PCs generated; on-site treatment accounted for approximately 97 percent of the total quantity treated.
- Compared to the quantity of PCs treated in 2005, the quantity treated decreased by approximately 6.5 million pounds in 2006, but increased by approximately 3.3 million pounds in 2007. Off-site treatment decreased by approximately 45 percent in 2007.
- Five PCs: hexachloro-1,3-butadiene (27.7 percent), naphthalene (19.2 percent), hexachlorobenzene (16.9 percent), PACs (14.8 percent), and hexachloroethane (14.0 percent) accounted for approximately 93 percent of the total quantity of PCs treated in 2007.

Exhibit 3.12. Trends in Management Methods* for Priority Chemicals (2005–2007)

Management Method	Quantity (pounds)		
	2005	2006	2007
On-site Disposal	8,236,852	9,800,629	9,507,979
Off-site Disposal	32,200,180	29,115,976	27,686,934
Total Disposal	40,437,033	38,916,605	37,194,912
On-site Energy Recovery	6,459,739	7,383,337	9,086,085
Off-site Energy Recovery	5,196,773	3,671,768	1,366,848
Total Energy Recovery	11,656,512	11,055,105	10,452,933
On-site Treatment	38,822,398	32,094,340	36,201,122
Off-site Treatment	1,586,432	1,804,360	985,185
Total Treatment	40,408,831	33,898,699	37,186,307
Total non-recycled PC Quantity	92,502,375	83,870,410	84,834,153

*In this Report, we focus on the non-recycled quantities of PCs (disposal, treatment, energy recovery) that offer the greatest opportunities for waste minimization. Although considerable quantities of some PCs are recycled, we discuss these quantities as well as other releases of PCs in Appendix C.

Exhibit 3.13. Management Methods for Priority Chemicals (2007)

Priority Chemical	Quantity (pounds)						
	Total PC Quantity	Disposal		Energy Recovery		Treatment	
		On-site	Off-site	On-site	Off-site	On-site	Off-site
Lead and lead compounds	34,467,769	8,869,125	25,550,352	0	20	96	48,176
Naphthalene	12,071,587	13,283	704,489	3,217,225	983,439	6,721,153	431,999
Hexachloro-1,3-butadiene	10,312,897	2	10	0	19	10,284,530	28,336
Polycyclic aromatic compounds (PACs)	10,211,230	127,495	623,484	3,874,220	83,079	5,423,977	78,975
Hexachlorobenzene	6,524,018	249	3,449	233,408	1,935	6,246,017	38,959
Hexachloroethane	5,487,132	74	0	279,739	17,186	4,999,666	190,468
Phenanthrene	1,365,563	2,311	134,799	1,002,410	37,315	163,156	25,571
1,2,4-Trichlorobenzene	1,342,738	3,700	3	107,930	18,038	1,199,724	13,343
Benzo(g,h,i)perylene	853,113	2,985	60,919	351,257	1,710	433,363	2,879
Cadmium and cadmium compounds	815,688	394,069	421,619	0	0	0	0
Pentachlorobenzene	599,016	11	0	3,240	0	594,572	1,193
Pendimethalin	202,417	81,371	1,181	0	0	100,140	19,725
Quintozene	193,410	0	2,357	0	189,215	0	1,838
Anthracene	154,336	398	104,992	16,656	20,004	10,102	2,184
Polychlorinated biphenyls (PCBs)	90,203	4,082	3,679	0	4	20,375	62,063
Mercury and mercury compounds	72,244	8,802	63,442	0	0	0	0
Trifluralin	26,072	8	177	0	0	1,900	23,986
Dibenzofuran	22,308	0	10,107	0	7,091	1,931	3,179
Pentachlorophenol	21,960	0	1,729	0	7,790	231	12,210
Dioxin and dioxin-like compounds*	450	13	144	0	3	190	100
Total	84,834,153	9,507,979	27,686,934	9,086,085	1,366,848	36,201,122	985,185

* Facilities report dioxin and dioxin-like compounds to TRI in grams, with a reporting threshold of 0.1 grams. For the purposes of this table, we converted the quantity reported as grams to pounds.

Some highlights concerning facilities in 18 NAICS codes with approximately 90 percent of the total quantity of non-recycled PC generated in 2007 (Exhibit 3.14):

Disposal

- In 2007, facilities in these 18 NAICS codes reported approximately 31.4 million pounds or 37 percent of the total national quantity of PCs managed using disposal.
- Facilities in six of the 18 NAICS codes used disposal to manage at least 90 percent of their non-recycled PCs:
 - Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)
 - Iron and Steel Mills
 - National Security
 - All Other Basic Inorganic Chemical Manufacturing
 - Iron Foundries
 - Small Arms Ammunition Manufacturing

Energy Recovery

- In 2007, facilities in these 18 NAICS codes reported approximately 9.3 million pounds or 11 percent of the total national quantity of PCs managed using energy recovery.
- Facilities in four of the 18 NAICS codes used energy recovery to manage at least 50 percent of their non-recycled PCs:
 - Carbon Black Manufacturing
 - Petrochemical Manufacturing
 - Pesticide and Agricultural Chemicals Manufacturing
 - All Other Miscellaneous Chemical Product and Preparation Manufacturing

Treatment

- In 2007, facilities in these 18 NAICS codes reported approximately 35.6 million pounds or 42 percent of the total national quantity of PCs managed using treatment.
- Facilities in six of the 18 NAICS codes used treatment to manage at least 80 percent of their non-recycled PCs:
 - Alkalies and Chlorine Manufacturing
 - All Other Basic Organic Chemical Manufacturing
 - Plastics Material and Resin Manufacturing
 - Petroleum Refineries
 - Primary Aluminum Production
 - Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers

Recycling and Releases to Air and Surface Water

The primary focus of this Report is to support EPA's NPEP program by identifying the quantities of PCs contained in wastes that are managed by disposal, energy recovery, or treatment and thus potentially might offer waste minimization opportunities. However, it is important to note that large quantities of some of the PCs were recycled (see Appendix C).

A more complete picture of the universe of PCs (as reported to TRI) also includes releases of PCs to the air and surface water. In Appendix D, we show the quantities of PCs that were reported as air emissions (stack and fugitive) and discharges to surface water.

Exhibit 3.14. Management Methods for Priority Chemicals, by NAICS Code, for Facilities Reporting 90 Percent of the Total PC Quantity (2007)

Primary NAICS Code	NAICS Code Description	Quantity (pounds)						
		Total PC Quantity	Disposal		Energy Recovery		Treatment	
			On-site	Off-site	On-site	Off-site	On-site	Off-site
325181	Alkalies and Chlorine Manufacturing	12,318,274	1,149	31,451	566,244	397	11,662,182	56,852
331492	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	12,113,121	3,094,088	9,019,033	0	0	0	0
331111	Iron and Steel Mills	9,917,169	537,969	9,347,734	6,200	6	24,899	361
325199	All Other Basic Organic Chemical Manufacturing	7,780,463	3,314	99,348	523,691	48,903	6,782,788	322,419
325211	Plastics Material and Resin Manufacturing	5,614,944	39,055	21,129	19,232	175,373	5,351,440	8,716
928110	National Security	4,049,641	3,809,699	179,842	0	58,129	741	1,230
324110	Petroleum Refineries	3,918,427	21,412	626,165	53,086	41,092	3,099,312	77,360
325182	Carbon Black Manufacturing	3,323,412	272	2,170	2,808,877	0	511,567	527
331312	Primary Aluminum Production	3,306,113	89,096	68,954	146,792	1,361	2,996,843	3,067
325110	Petrochemical Manufacturing	2,923,418	5,133	424,038	1,520,010	78,979	700,727	194,531
332812	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	2,697,152	253	63,029	334,929	65,621	2,229,094	4,226
335991	Carbon and Graphite Product Manufacturing	1,893,151	5,208	30,766	610,642	2	1,244,681	1,852
325188	All Other Basic Inorganic Chemical Manufacturing	1,516,467	409,874	1,064,719	35,865	1,674	0	4,335
325320	Pesticide and Other Agricultural Chemical Manufacturing	1,344,657	3,773	3,956	950,178	191,238	126,307	69,205
331511	Iron Foundries	1,153,689	233,793	912,066	0	0	7,825	5
325998	All Other Miscellaneous Chemical Product and Preparation Manufacturing	1,043,651	5,688	258,977	733,545	8,270	23,191	13,980
325192	Cyclic Crude and Intermediate Manufacturing	790,623	106	357,744	22	338,496	22,523	71,732
332992	Small Arms Ammunition Manufacturing	673,598	0	673,598	0	0	0	0
Total		76,377,971	8,259,882	23,184,719	8,309,313	1,009,542	34,784,119	830,397

* We present recycled quantities of the PCs to show these quantities relative to the quantities potentially still available for waste minimization.

How Much and Where Were Biennial Report Hazardous Wastes Containing Priority Chemicals Generated?

As discussed in Section 1, we use a methodology to estimate the quantity of PCs contained in BR waste streams that are reported under RCRA. The data derived from applying this methodology to the BR data supplement the data for the PCs reported to TRI and also provide a quantitative perspective, not otherwise available, for the PCs that are not reported to TRI. The focus of this methodology is primary generation activities that includes waste streams generated from a production process, service activity, or routine/periodic cleanup, where potential opportunities for direct waste minimization (e.g., source reduction, recycling) are the greatest. Based on applying this methodology to the 2007 BR data, we estimate that facilities reported hazardous wastes containing approximately 95 million pounds of PCs (Exhibit 3.15). Lead accounted for approximately 84 percent of the total quantity of PCs estimated to be contained in hazardous wastes. As noted in Section 1, we caution readers against making casual one-to-one comparisons between the TRI and BR data. The differences between these two reporting systems can cause significant variation in the number of reporting facilities and quantities of chemicals reported.

Exhibit 3.15. Estimated Quantities of Priority Chemicals Contained in Hazardous Wastes (2007)

Priority Chemical	Number of Reporting Facilities	Estimated Quantity (pounds) of Priority Chemical Contained in BR Wastes (2007)			Percent of Total Quantity
		Wastewaters	Non-Wastewaters	Total Quantity	
Lead	5,627	1,649,271	78,357,135	80,006,407	84.5%
Mercury	3,108	404,911	3,276,890	3,681,801	3.5%
Cadmium	4,379	3,525	2,148,138	2,151,663	2.3%
Hexachlorobutadiene	55	<1	1,633,334	1,633,308	1.8%
Hexachloroethane	51	<1	1,313,364	1,313,330	1.4%
Hexachlorobenzene	74	<1	1,282,864	1,282,834	1.4%
Naphthalene	346	2,044	975,974	978,018	1.1%
Phenanthrene	294	4,057	970,670	974,727	1.0%
Pentachlorobenzene	23	0	943,921	943,921	1.0%
Pyrene	272	14,296	353,917	368,212	0.4%
1,2,4-Trichlorobenzene	18	0	261,998	261,998	0.3%
Pentachlorophenol	142	28,400	179,725	208,125	0.2%
1,2,4,5-Tetrachlorobenzene	24	0	171,048	171,048	0.2%
Anthracene	214	2,822	152,928	155,750	0.2%
Benzo(a)anthracene*	254	316	148,845	149,161	0.2%
Benzo(a)pyrene*	264	220	119,725	119,945	0.1%
Fluorene	189	238	106,983	107,221	0.1%
Acenaphthene	211	1,922	90,362	92,284	0.1%
Indeno[1,2,3-cd]pyrene*	146	2	53,473	53,475	0.1%
7,12-Dimethylbenz(a)anthracene*	50	0	35,924	35,924	<0.1%
Acenaphthylene	9	0	34,921	34,921	<0.1%
Benzo(k)fluoranthene*	139	18	24,189	24,207	<0.1%
Benzo(b)fluoranthene*	146	18	24,179	24,197	<0.1%
Dibenzo(a,h)anthracene*	147	20	21,701	21,721	<0.1%
Benzo(g,h,i)perylene	100	2	5,187	5,189	<0.1%
3-Methylcholanthrene*	49	0	2,428	2,428	<0.1%
2,4,5-Trichlorophenol	123	6	40	46	<0.1%
Dibenzofuran	102	9	2	11	<0.1%
Hexachlorocyclohexane, gamma- (Lindane)	77	6	2	8	<0.1%
Methoxychlor	39	0	1	1	<0.1%
Dioxins/Furans	103	<1	<1	<1	<0.1%
Pentachloronitrobenzene (Quintozene)	18	<1	<1	<1	<0.1%
4-Bromophenyl phenyl ether	5	0	<1	<1	<0.1%
Polychlorinated biphenyls (PCBs)	1	0	<1	<1	<0.1%
Heptachlor/Heptachlor epoxide	22	<1	<1	<1	<0.1%
Endosulfan, alpha- and beta-	15	<1	<1	<1	<0.1%
Total		2,112,103	92,689,777	94,801,881	100.0%

*Included under the TRI category of polycyclic aromatic compounds (PACs).

Exhibit 3.16 shows the industries that reported BR wastes which we estimate contain at least 1 million pounds of PCs.

Exhibit 3.16. Industries with PC Quantities of Over 1 Million pounds of Priority Chemicals Contained in Hazardous Wastes (2007)

NAICS Code	NAICS Code Description	Number of Reporting Facilities	Estimated Quantity (pounds) of Priority Chemicals	Percent of Total Estimated Quantity of Priority Chemicals
331110	Iron and Steel Mills and Ferroalloy Manufacturing	114	67,414,415	71.1%
325199	All Other Basic Organic Chemical Manufacturing	154	5,780,255	6.1%
331210	Iron and Steel Pipe and Tube Manufacturing from Purchased Steel	38	4,750,190	5.0%
928110	National Security	251	1,989,963	2.1%
331492	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	33	1,462,102	1.5%
325181	Alkalies and Chlorine Manufacturing	19	1,418,906	1.5%
321114	Wood Preservation	57	1,141,633	1.2%
325131	Inorganic Dye and Pigment Manufacturing	11	1,004,189	1.1%
Total		677	84,961,652	89.6%

Exhibit 3.17 shows how facilities reported managing hazardous wastes that contain PCs. For example, facilities used metals recovery for hazardous wastes containing approximately 28 million pounds of PCs, and disposed in landfills or surface impoundments hazardous wastes containing approximately 23 million pounds of PCs. See Appendix E for a full list of the BR management codes and their descriptions.

Exhibit 3.17. Methods Used to Manage Hazardous Wastes Containing Priority Chemicals (2007)

Management Method Code Group	Management Method Code Description	Estimated Quantity of Priority Chemicals (2007)*	Percent of Total Quantity of PCs
Reclamation and Recovery	Metals recovery	28,158,187	29.7%
	Other recovery or reclamation for reuse	3,852,631	4.1%
	Energy recovery at this site	1,860,325	2.0%
	Fuel blending prior to energy recovery at another site	1,372,768	1.5%
	Solvents recovery	357,700	0.4%
Reclamation and Recovery Total		35,601,611	37.6%
Disposal	Landfill or surface impoundment that will be closed as landfill	23,335,673	24.7%
	Deepwell or underground injection	1,069,170	1.1%
	Land treatment or application	1,022,015	1.1%
	Discharge to sewer/POTW or NPDES	44,203	<0.1%
Disposal Total		25,471,060	26.9%
Destruction or Treatment Prior to Disposal at Another Site	Stabilization or chemical fixation prior to disposal at another site	15,361,652	16.2%
	Incineration	4,248,368	4.5%
	Other chemical precipitation with or without pre-treatment	792,153	0.8%
	Other treatment	531,723	0.6%
	Macro-encapsulation prior to disposal at another site	159,985	0.2%
	Sludge treatment and/or dewatering	88,385	0.1%
	Neutralization only	15,869	<0.1%
	Chemical oxidation	4,937	<0.1%
	Biological treatment with or without precipitation	4,264	<0.1%
	Chemical reduction with or without precipitation	3,032	<0.1%
	Phase separation	1,911	<0.1%
	Evaporation	867	<0.1%
	Adsorption	169	<0.1%
	Cyanide destruction with or without precipitation	143	<0.1%
	Settling or clarification	83	<0.1%
	Wet air oxidation	7	<0.1%
	Absorption	7	<0.1%
	Air or steam stripping	<1	<0.1%
Destruction or Treatment Prior to Disposal at Another Site Total		21,213,554	22.4%
Transfer Off Site	Storage, bulking, and/or transfer off site	7,834,541	8.3%
Transfer Off Site Total		7,834,541	8.3%
NA	NA	4,545,557	4.8%
NA Total		4,545,557	4.8%
Grand Total		94,666,324	100.0%

*These quantities are based on managed hazardous waste quantities reported by facilities in the Biennial Reports that are associated with primary generation activities, as defined in the PC BR Measurement Methodology. However, for one or more reasons, the generated and managed quantities of PCs may be different. Please see Section 2.2 of the PC BR Measurement Methodology document for a discussion of potential reasons for these differences.