

## Chapter 6: Special Analyses

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All tables and figures in Chapter 6 are from the 1997 Matched Data Set

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## ■ Key Findings

- The 10 parent companies (companies that owned reporting facilities) with the largest total releases and transfers accounted for one-third of NPRI releases and transfers in 1997. In TRI, the 10 parent companies with the largest amounts accounted for one-fifth of the total. For most of these companies, a single release or transfer type dominated the company's reporting.
- While overall PRTR releases and transfers are dominated by a few facilities reporting the largest amounts, most facilities in both NPRI and TRI report total releases and transfers of less than 100,000 kg. In 1995, 84 percent of NPRI facilities and 92 percent in TRI reported total releases and transfers of less than 100,000 kg. Excluding facilities that did not report in 1997, total releases and transfers from facilities reporting less than 100,000 kg in 1995 increased by 38 percent in NPRI and four percent in TRI from 1995 to 1997.
- Almost 75 percent of NPRI facilities indicated that they engaged in pollution prevention/source reduction activities in 1997. The overall reduction in NPRI total releases and transfers from 1995 to 1997 reflects decreases associated with reporting of source reduction activities. In TRI, almost 40 percent of facilities indicated pollution prevention/source reduction activities were undertaken in 1997. These facilities also had the largest percentage reduction in releases and transfers. Whether the difference in reporting pollution prevention/source reduction activities between NPRI and TRI is significant depends in part on whether NPRI facilities—for which 1997 was the first year that reporting on pollution prevention activities was mandatory—are reporting ongoing activities initiated in previous years in addition to newly implemented measures.

### 6.1 Introduction

This chapter examines some of the data common to both Canadian and US PRTRs that can be refined for further analysis. In **Section 6.2**, releases and transfers are aggregated by the parent companies owning the facilities in the individual PRTRs. In **Section 6.3**, reporting by facilities with releases and transfers of less than 100,000 kg is investigated (this provides a point of comparison with previous chapters, where the facilities reporting the largest releases and transfers were seen to dominate the totals in each country's PRTR.) The final section (**6.4**) examines the reporting on pollution prevention activities at the facilities. This type of reporting is mandatory for the first time in NPRI for the 1997 reporting year. Only US and Canadian facilities in the matched data set are included in the analyses in this chapter. Mexican data for 1997 are not available.

## 6.2 Parent Company Reporting

Both NPRI and TRI require facilities to identify their parent company. NPRI defines a parent company as the highest-level company or group of companies that directly controls the facility. NPRI collects the parent company name and address (which may be outside Canada). More than one parent company can be listed, if necessary, along with the percentage of ownership. TRI defines a parent company as the highest-level US company that directly owns at least 50 percent of the voting stock. TRI collects the parent company name and its Dun and Bradstreet number (an identification number supplied by this corporate information service).

A parent company may have other NPRI or TRI facilities that are not in the matched data set (based on common industries and chemicals in the two PRTRs). A parent company may also have facilities that do not report to NPRI or TRI because they do not meet reporting requirements. Compiling facility reports for a parent company

Table 6-1		The 10 Parent Companies with the Largest NPRI Total On-site Releases, 1997						
M	1997							
Rank	Facility	Number of Facilities	Number of Forms	Total Air Emissions (kg)	Surface Water Discharges (kg)	Underground Injection (kg)	On-site Land Releases (kg)	Total Releases (kg)
1	Inco Limited	3	21	4,360,123	19,572	0	702,900	5,082,595
2	Celanese Canada Inc.	2	17	331,175	4,780	3,542,000	913	3,878,868
3	Nova Corporation	7	41	2,868,703	480	2,883	0	2,872,116
4	ISPAT Mexicana	4	14	49,245	718	0	2,703,355	2,753,318
5	Avenor Inc.	4	22	1,872,659	2,334	0	2,001	1,876,994
6	General Motors of Canada	9	55	1,835,323	1,034	0	0	1,836,824
7	Grupo Gerdau	1	7	22,992	165	0	1,759,790	1,782,947
8	Agrium	3	22	967,110	160,160	571,060	0	1,698,330
9	Stelco Inc.	11	66	447,542	55,566	0	1,160,035	1,666,341
10	Bayer AG	1	17	1,397,853	22,937	0	0	1,421,799
<b>Subtotal</b>		<b>45</b>	<b>282</b>	<b>14,152,725</b>	<b>267,746</b>	<b>4,115,943</b>	<b>6,328,994</b>	<b>24,870,132</b>
<b>% of Total</b>		<b>3.1</b>	<b>6.1</b>	<b>22.5</b>	<b>6.3</b>	<b>98.1</b>	<b>69.8</b>	<b>30.9</b>
<b>Total</b>		<b>1,430</b>	<b>4,599</b>	<b>62,838,622</b>	<b>4,224,169</b>	<b>4,197,660</b>	<b>9,062,108</b>	<b>80,448,924</b>

Table 6-2		The 10 Parent Companies with the Largest TRI Total On-site Releases, 1997						
M	1997							
Rank	Facility	Number of Facilities	Number of Forms	Total Air Emissions (kg)	Surface Water Discharges (kg)	Underground Injection (kg)	On-site Land Releases (kg)	Total Releases (kg)
1	Renco Group Inc.	11	40	28,561,139	532	0	3,839,903	32,401,574
2	DuPont	59	592	6,088,873	3,373,703	20,049,900	268,262	29,780,738
3	ASARCO Inc.	9	68	317,430	2,829	81,949	22,263,538	22,665,746
4	Potash Corp. of Saskatchewan Inc.	15	66	722,849	13,899,625	0	6,749,975	21,372,449
5	International Paper Co.	47	312	15,856,464	780,805	13,197	1,239,711	17,890,177
6	Armco Inc.	8	52	222,323	14,456,160	0	0	14,678,483
7	Phelps Dodge Corp.	17	74	1,557,338	4,439	0	12,055,746	13,617,523
8	General Motors Corp.	86	675	7,067,306	115,418	0	6,185,126	13,367,850
9	Solutia Inc.	16	117	735,584	23,775	11,360,300	82,287	12,201,946
10	Georgia-Pacific Corp.	82	359	9,528,040	1,051,040	0	1,067,422	11,646,502
<b>Subtotal</b>		<b>350</b>	<b>2,355</b>	<b>70,657,346</b>	<b>33,708,326</b>	<b>31,505,346</b>	<b>53,751,970</b>	<b>189,622,988</b>
<b>% of Total</b>		<b>1.8</b>	<b>4.0</b>	<b>15.7</b>	<b>35.6</b>	<b>42.2</b>	<b>36.2</b>	<b>24.7</b>
<b>Total</b>		<b>19,125</b>	<b>58,252</b>	<b>449,375,340</b>	<b>94,618,694</b>	<b>74,649,654</b>	<b>148,658,503</b>	<b>767,302,191</b>

Rank	Major Chemicals Reported (Primary Media)*
1	Sulfuric acid (air)
2	Methanol, Methyl ethyl ketone (UIJ)
3	Cyclohexane, Ethylene (air)
4	Zinc and compounds (land)
5	Methanol (air)
6	Xylene, Toluene (air)
7	Zinc and compounds (land)
8	Methanol, Nitric acid and nitrate compounds (air)
9	Manganese/Zinc and compounds (land), Benzene (air)
10	Cyclohexane, Chloromethane (air)

\* Chemicals accounting for more than 70% of total releases from the facilities belonging to the parent company.

► UIJ = underground injection

Rank	Major Chemicals Reported (Primary Media)*
1	Chlorine (air)
2	Nitric acid and nitrate compounds, Manganese and compounds, Hydrochloric acid (air)
3	Zinc and compounds (land)
4	Phosphoric acid (water, land)
5	Methanol, Hydrochloric acid (air)
6	Nitric acid and nitrate compounds (water)
7	Zinc/Copper and compounds (land)
8	Zinc/Manganese and compounds (land), Xylene, n-Butyl alcohol (air)
9	Nitric acid and nitrate compounds, Acrylonitrile (UIJ)
10	Methanol, Manganese and compounds, Formaldehyde, Sulfuric acid (air)

\* Chemicals accounting for more than 70% of total releases from the facilities belonging to the parent company.

► UIJ = underground injection

requires the direct inspection of names, addresses and identification numbers. Complicating this effort is that company names are not standardized in the databases. For example, facilities belonging to the “Company of North America, Inc.” may identify their parent company by half a dozen or more variations, such as CNA, Inc., Co. of NA, Inc., First Division of CNA, City Branch of CNA, Inc., etc. While facilities may be owned by parent companies headquartered in other countries, only facilities that are located in the particular country report to the country’s PRTR. Thus, this analysis looks at facilities in the US and their ownership separately from facilities in Canada and their ownership.

## 6.2.1 On-site Releases

In 1997, the 10 parent companies with the largest total releases in NPRI owned 45 reporting facilities. These facilities accounted for 31 percent of all NPRI releases in the matched data set, or 24.9 million kg. Their releases included a substantial majority (70 percent) of

NPRI’s on-site land releases and nearly all (98 percent) of the underground injection (Table 6–1, see previous page).

The 10 parent companies with the largest TRI releases owned 350 reporting facilities and their releases represented 25 percent of the TRI total, or 189.6 million kg. They reported more than one-third of TRI’s on-site releases to surface water, underground injection and land (Table 6–2, see previous page).

For most of these companies, the great majority of the facilities’ releases were to a single environmental medium. For five companies in NPRI and three in TRI, for example, nearly all of the on-site releases were emitted to air. On-site land releases similarly predominated for three NPRI companies and two in TRI.

A number of parent companies have facilities in both Canada and the United States. Of these, General Motors, with nine Canadian facilities and 86 in the United States, was the only company ranking in the top 10 in both NPRI and TRI for total releases.

## 6.2.2 Off-site Transfers

In Canada, the 10 parent companies with the largest total off-site transfers reported nearly two-thirds (31.8 million kg) of the NPRI transfers in 1997. Their 31 facilities reported 76 percent of NPRI's transfers of metals to treatment/sewage/disposal and 73 percent of the transfers of nonmetals to sewage/POTWs (Table 6-3).

In the United States, the 10 parent companies with the largest total transfers owned 145 reporting facilities, whose transfers amounted to one-quarter (93.3 million kg) of TRI transfers in 1997. They reported 36 percent of the transfers of metals (Table 6-4).

For seven companies in NPRI and six companies in TRI, all or nearly all of the off-site transfers consisted of metals sent to treatment/sewage/disposal.

Table 6-3		The 10 Parent Companies with the Largest NPRI Total Off-site Transfers, 1997						
M	1997							
Rank	Facility	Number of Facilities	Number of Forms	Treatment (except metals) (kg)	Sewage/POTWs (except metals) (kg)	Disposal (except metals) (kg)	Treatment/Disposal of Metals (kg)	Total Transfers (kg)
1	Dofasco Inc.	1	18	865	123	50	8,168,440	8,169,478
2	Co-Steel Inc.	1	6	0	0	0	5,799,885	5,799,885
3	Stelco Inc.	11	66	10,300	73,050	239,137	4,233,390	4,555,877
4	Kikuchi Color & Chemicals Corp.	1	6	0	3,732,000	0	224,300	3,956,300
5	Noranda	10	58	1,453,630	0	139,450	556,267	2,149,347
6	Aimco Solrec Ltd.	1	6	2,028,917	0	0	0	2,028,917
7	Ivaco	2	14	0	0	1	1,647,732	1,647,733
8	Slater Steels	2	14	0	15,075	14,391	1,536,346	1,565,812
9	Zalev Brothers Limited	1	8	0	0	0	1,104,869	1,104,869
10	Kronos Canada, Inc.	1	8	0	0	0	855,000	855,000
<b>Subtotal</b>		<b>31</b>	<b>204</b>	<b>3,493,712</b>	<b>3,820,248</b>	<b>393,029</b>	<b>24,126,229</b>	<b>31,833,218</b>
<b>% of Total</b>		<b>2.2</b>	<b>4.4</b>	<b>35.2</b>	<b>72.6</b>	<b>15.5</b>	<b>75.9</b>	<b>64.3</b>
<b>Total</b>		<b>1,430</b>	<b>4,599</b>	<b>9,925,693</b>	<b>5,260,842</b>	<b>2,533,015</b>	<b>31,788,711</b>	<b>49,508,261</b>

Table 6-4		The 10 Parent Companies with the Largest TRI Total Off-site Transfers, 1997						
M	1997							
Rank	Facility	Number of Facilities	Number of Forms	Treatment (except metals) (kg)	Sewage/POTWs (except metals) (kg)	Disposal (except metals) (kg)	Treatment/Disposal of Metals (kg)	Total Transfers (kg)
1	Nucor Corp.	20	81	14,957	0	1,191	21,940,294	21,956,442
2	Horsehead Industries Inc.	7	41	0	0	0	14,587,115	14,587,115
3	USX Corp.	8	114	9,945,802	0	568	3,445,287	13,391,657
4	Air Products and Chemicals Inc.	25	121	839,201	7,843,235	1,561	44,762	8,728,759
5	Birmingham Steel Corp. Inc.	8	39	0	0	0	6,568,438	6,568,438
6	Steel Dynamics Inc.	1	7	0	0	0	6,529,560	6,529,560
7	Rouge Industries Inc.	1	7	0	0	0	6,086,892	6,086,892
8	DuPont	59	592	4,060,960	349,685	260,307	645,653	5,316,605
9	Ameristeel Corp.	6	30	0	0	0	5,053,114	5,053,114
10	Stone Container Corp.	10	86	0	4,841,260	228	195,054	5,036,542
<b>Subtotal</b>		<b>145</b>	<b>1,118</b>	<b>14,860,920</b>	<b>13,034,180</b>	<b>263,855</b>	<b>65,096,169</b>	<b>93,255,124</b>
<b>% of Total</b>		<b>0.8</b>	<b>1.9</b>	<b>16.1</b>	<b>12.9</b>	<b>1.3</b>	<b>36.1</b>	<b>23.7</b>
<b>Total</b>		<b>19,125</b>	<b>58,252</b>	<b>92,058,224</b>	<b>100,954,738</b>	<b>20,484,603</b>	<b>180,542,191</b>	<b>394,039,756</b>

Rank	Major Chemicals Reported (Primary Transfers)*
1	Zinc/Manganese and compounds (transfers of metals)
2	Zinc and compounds (transfers of metals)
3	Zinc and compounds (transfers of metals)
4	Nitric acid and nitrate compounds (transfers to sewage)
5	Methanol (transfers to treatment)
6	Xylene, Toluene, Methyl ethyl ketone (transfers to treatment)
7	Zinc and compounds (transfers of metals)
8	Zinc/Lead and compounds (transfers of metals)
9	Zinc/Copper and compounds (transfers of metals)
10	Manganese and compounds (transfers of metals)

\* Chemicals accounting for more than 70% of total transfers from the facilities belonging to the parent company.

Rank	Major Chemicals Reported (Primary Transfers)*
1	Zinc and compounds (transfers of metals)
2	Zinc and compounds (transfers of metals)
3	Ethylene (transfers to treatment)
4	Nitric acid and nitrate compounds (transfers to sewage)
5	Zinc and compounds (transfers of metals)
6	Zinc and compounds (transfers of metals)
7	Zinc and compounds (transfers of metals)
8	Methanol, 1,2-Dichlorobenzene, Nitric acid and nitrate compounds, Ethylene glycol, Toluene, Cyclohexane, Xylene (transfers to treatment), Nickel and compounds (transfers of metals)
9	Zinc and compounds (transfers of metals)
10	Methanol (transfers to sewage)

\* Chemicals accounting for more than 70% of total transfers from the facilities belonging to the parent company.

### 6.2.3 Total Releases and Transfers

Facilities of 10 parent companies reported more than one-third (45.8 million kg) of NPRI's total releases and transfers in 1997. These companies owned 41 reporting facilities. Large amounts of metals transferred off-site to treatment/sewage/disposal accounted for the majority of reporting for the three companies with the largest totals (Table 6-5).

In the United States, the 10 parent companies accounted for 20 percent (228.1 million kg) of TRI's total releases and transfers. These companies owned 270 reporting facilities. For the top three companies, releases outweighed transfers, with a different release medium dominating in each case (underground injection, air emissions, and on-site land releases) (Table 6-6).

Table 6-5		The 10 Parent Companies with the Largest NPRI Total Releases and Transfers, 1997						
M	1997							
Rank	Facility	Number of Facilities	Number of Forms	Total Air Emissions (kg)	Surface Water Discharges (kg)	Underground Injection (kg)	On-site Land Releases (kg)	Total Releases (kg)
1	Dofasco Inc.	1	18	424,762	6,176	0	125	431,063
2	Co-Steel Inc.	1	6	14,253	362	0	1,245,254	1,259,869
3	Stelco Inc.	11	66	447,542	55,566	0	1,160,035	1,666,341
4	Inco Limited	3	21	4,360,123	19,572	0	702,900	5,082,595
5	Celanese Canada Inc.	2	17	331,175	4,780	3,542,000	913	3,878,868
6	Kikychi Color & Chemicals Corp.	1	6	0	0	0	0	29
7	Noranda	10	58	933,673	30,136	0	0	966,701
8	Nova Corporation	7	41	2,868,703	480	2,883	0	2,872,116
9	ISPAT Mexicana	4	14	49,245	718	0	2,703,355	2,753,318
10	Aimco Solrec Ltd.	1	6	35,641	0	0	0	35,641
<b>Subtotal</b>		<b>41</b>	<b>253</b>	<b>9,465,117</b>	<b>117,790</b>	<b>3,544,883</b>	<b>5,812,582</b>	<b>18,946,541</b>
<b>% of Total</b>		<b>2.9</b>	<b>5.5</b>	<b>15.1</b>	<b>2.8</b>	<b>84.4</b>	<b>64.1</b>	<b>23.6</b>
<b>Total</b>		<b>1,430</b>	<b>4,599</b>	<b>62,838,622</b>	<b>4,224,169</b>	<b>4,197,660</b>	<b>9,062,108</b>	<b>80,448,924</b>

Table 6-6		The 10 Parent Companies with the Largest TRI Total Releases and Transfers, 1997						
M	1997							
Rank	Facility	Number of Facilities	Number of Forms	Total Air Emissions (kg)	Surface Water Discharges (kg)	Underground Injection (kg)	On-site Land Releases (kg)	Total Releases (kg)
1	DuPont	59	592	6,088,873	3,373,703	20,049,900	268,262	29,780,738
2	Renco Group Inc.	11	40	28,561,139	532	0	3,839,903	32,401,574
3	ASARCO Inc.	9	68	317,430	2,829	81,949	22,263,538	22,665,746
4	USX Corp.	8	114	1,154,994	67,407	0	8,605,123	9,827,524
5	Nucor Corp.	20	81	159,057	1,176	0	6,342	166,575
6	Potash Corp. of Saskatchewan Inc.	15	66	722,849	13,899,625	0	6,749,975	21,372,449
7	International Paper Co.	47	312	15,856,464	780,805	13,197	1,239,711	17,890,177
8	Armco Inc.	8	52	222,323	14,456,160	0	0	14,678,483
9	General Motors Corp.	86	675	7,067,306	115,418	0	6,185,126	13,367,850
10	Horsehead Industries Inc.	7	41	235,439	744	807	433	237,423
<b>Subtotal</b>		<b>270</b>	<b>2,041</b>	<b>60,385,874</b>	<b>32,698,399</b>	<b>20,145,853</b>	<b>49,158,413</b>	<b>162,388,539</b>
<b>% of Total</b>		<b>1.4</b>	<b>3.5</b>	<b>13.4</b>	<b>34.6</b>	<b>27.0</b>	<b>33.1</b>	<b>21.2</b>
<b>Total</b>		<b>19,125</b>	<b>58,252</b>	<b>449,375,340</b>	<b>94,618,694</b>	<b>74,649,654</b>	<b>148,658,503</b>	<b>767,302,191</b>



Rank	Treatment (except metals) (kg)	Sewage/POTWs (except metals) (kg)	Disposal (except metals) (kg)	Treatment/ Sewage/Disposal of Metals (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Major Chemicals Reported (Primary Media/Transfers)*
1	865	123	50	8,168,440	8,169,478	8,600,541	Zinc/Manganese and compounds (transfers of metals)
2	0	0	0	5,799,885	5,799,885	7,059,754	Zinc and compounds (transfers of metals)
3	10,300	73,050	239,137	4,233,390	4,555,877	6,222,218	Zinc/Manganese and compounds (transfers of metals)
4	0	0	0	0	0	5,082,595	Sulfuric acid (air)
5	0	0	64,484	41,000	105,484	3,984,352	Methanol, Methyl ethyl ketone (UIJ)
6	0	3,732,000	0	224,300	3,956,300	3,956,329	Nitric acid and nitrate compounds (transfers to sewage)
7	1,453,630	0	139,450	556,267	2,149,347	3,116,048	Methanol, Lead and compounds (transfers to treatment)
8	64,226	0	30,415	0	94,641	2,966,757	Cyclohexane, Ethylene (air)
9	0	0	0	9,100	9,100	2,762,418	Zinc and compounds (land)
10	2,028,917	0	0	0	2,028,917	2,064,558	Xylene, Toluene, Methyl ethyl ketone (transfers to treatment)
	<b>3,557,938</b>	<b>3,805,173</b>	<b>473,536</b>	<b>19,032,382</b>	<b>26,869,029</b>	<b>45,815,570</b>	
	<b>35.8</b>	<b>72.3</b>	<b>18.7</b>	<b>59.9</b>	<b>54.3</b>	<b>35.3</b>	
	<b>9,925,693</b>	<b>5,260,842</b>	<b>2,533,015</b>	<b>31,788,711</b>	<b>49,508,261</b>	<b>129,957,185</b>	

\* Chemicals accounting for more than 70% of total releases and transfers from the facilities belonging to the parent company.

► UIJ = underground injection

Rank	Treatment (except metals) (kg)	Sewage/POTWs (except metals) (kg)	Disposal (except metals) (kg)	Treatment/ Sewage/Disposal of Metals (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Major Chemicals Reported (Primary Media/Transfers)*
1	4,060,960	349,685	260,307	645,653	5,316,605	35,097,343	Nitric acid and nitrate compounds, Manganese and compounds, Methanol (UIJ), Hydrochloric acid (air)
2	0	0	0	599,360	599,360	33,000,934	Chlorine (air)
3	0	0	0	3,199,393	3,199,393	25,865,139	Zinc/Lead and compounds (land)
4	9,945,802	0	568	3,445,287	13,391,657	23,219,181	Ethylene (transfers to treatment), Zinc and compounds (land)
5	14,957	0	1,191	21,940,294	21,956,442	22,123,017	Zinc and compounds (transfers of metals)
6	0	38,079	0	10	38,089	21,410,538	Phosphoric acid (water, land)
7	244,009	1,638,199	4,385	160,434	2,047,027	19,937,204	Methanol, Hydrochloric acid (air)
8	1,600,820	0	3,944	1,335,899	2,940,663	17,619,146	Nitric acid and nitrate compounds (water)
9	171,504	499,828	218,822	762,041	1,652,195	15,020,045	Zinc/Manganese and compounds (land), Xylene, n-Butyl alcohol, Methanol (air)
10	0	0	0	14,587,115	14,587,115	14,824,538	Zinc and compounds (transfers of metals)
	<b>16,038,052</b>	<b>2,525,791</b>	<b>489,217</b>	<b>46,675,486</b>	<b>65,728,546</b>	<b>228,117,085</b>	
	<b>17.4</b>	<b>2.5</b>	<b>2.4</b>	<b>25.9</b>	<b>16.7</b>	<b>19.6</b>	
	<b>92,058,224</b>	<b>100,954,738</b>	<b>20,484,603</b>	<b>180,542,191</b>	<b>394,039,756</b>	<b>1,161,341,947</b>	

\* Chemicals accounting for more than 70% of total releases and transfers from the facilities belonging to the parent company.

► UIJ = underground injection

### 6.3 Facilities Reporting Releases and Transfers less than 100,000 kg in 1995

Reporting to the PRTRs is dominated by the facilities reporting the largest releases and transfers. **Chapters 3, 4 and 5** include analyses of their influence on total amounts reported in 1997 and the changes from 1995 to 1997. In contrast, this section examines reporting by facilities that reported total releases and transfers of less than 100,000 kg in 1995. It investigates what changes this group reported from 1995 to 1997, including whether or not they were still reporting less than 100,000 kg in 1997. By tracking this group of facilities, the analysis enables us to compare the trends of this group with the trends of those facilities reporting 100,000 kg or more in 1995. The analysis covers only the facilities and forms in the matched data set (common industries and chemicals) addressed throughout most of *Taking Stock*.

#### 6.3.1 Releases and Transfers, 1995–1997

Nearly 84 percent of NPRI facilities (nearly 1,100 facilities) reporting in 1995 reported less than 100,000 kg of total releases and transfers. In TRI, 92 percent (more than 18,400 facilities) did. By 1997, this group numbered fewer than 1,000 in NPRI and about 15,400 in TRI. In that time, their total releases and transfers rose from 13.9 million kg to 19.2 million kg in NPRI and from 193.9 million kg to 201.7 million kg in TRI (**Tables 6–7 and 6–8**).

This analysis excludes 19 TRI facilities whose reporting differed substantially from other facilities that had relatively small totals in 1995. These 19 facilities reported increases of more than one million kg in total releases and transfers from 1995 to 1997. This placed them among the 50 TRI facilities with the largest increases (see **Chapter 5, Table 5–42**). No NPRI facilities reporting less than 100,000 kg in 1995 reported such large increases.

Ten percent of the NPRI facilities reporting the smallest releases and transfers in 1995 did not report in 1997 (in the matched data set), but for the remaining facilities in this group, total releases and transfers increased 38 percent. The increase occurred in both on-site releases (25 percent) and off-site transfers (65 percent). The only type of release or transfer that decreased was on-site releases to land, with a reduction of 34 percent (**Table 6–7 and Figure 6–1**).

Trends differ between those facilities reporting the larger totals and those reporting less than 100,000 kg in 1995. NPRI facilities that reported larger totals (100,000 kg or more) in 1995 decreased in number by four percent, and their total releases and transfers decreased by 11 percent. This group did, however, also report increases in off-site transfers, but to a lesser extent than the increase of the group of facilities with smaller 1995 totals (16 percent, versus 65 percent). Also, the facilities with larger totals in 1995 reported a decrease in on-site releases

of 22 percent, in contrast to the facilities with smaller reported totals, whose releases rose 25 percent.

While there was a decrease of 16 percent by 1997 in the number of TRI facilities that had reported the smallest releases and transfers in 1995, their total releases and transfers rose four percent. The increase occurred in off-site transfers, up 48 percent. The only type of release or transfer that did decrease was on-site air emissions, which declined 19 percent (**Table 6–8 and Figure 6–1**).

This was in contrast to the TRI facilities that reported larger totals (100,000 kg or more) in 1995. The group with larger releases and transfers in 1995 had four percent fewer facilities reporting and a seven percent decrease in total releases and transfers. This group had reductions in on-site air emissions and underground injection and in off-site disposal of nonmetals.

Table 6-7

**NPRI Releases and Transfers by Facilities Reporting less than 100,000 kg in 1995  
Compared to those of Facilities Reporting 100,000 kg or more, 1995-1997**

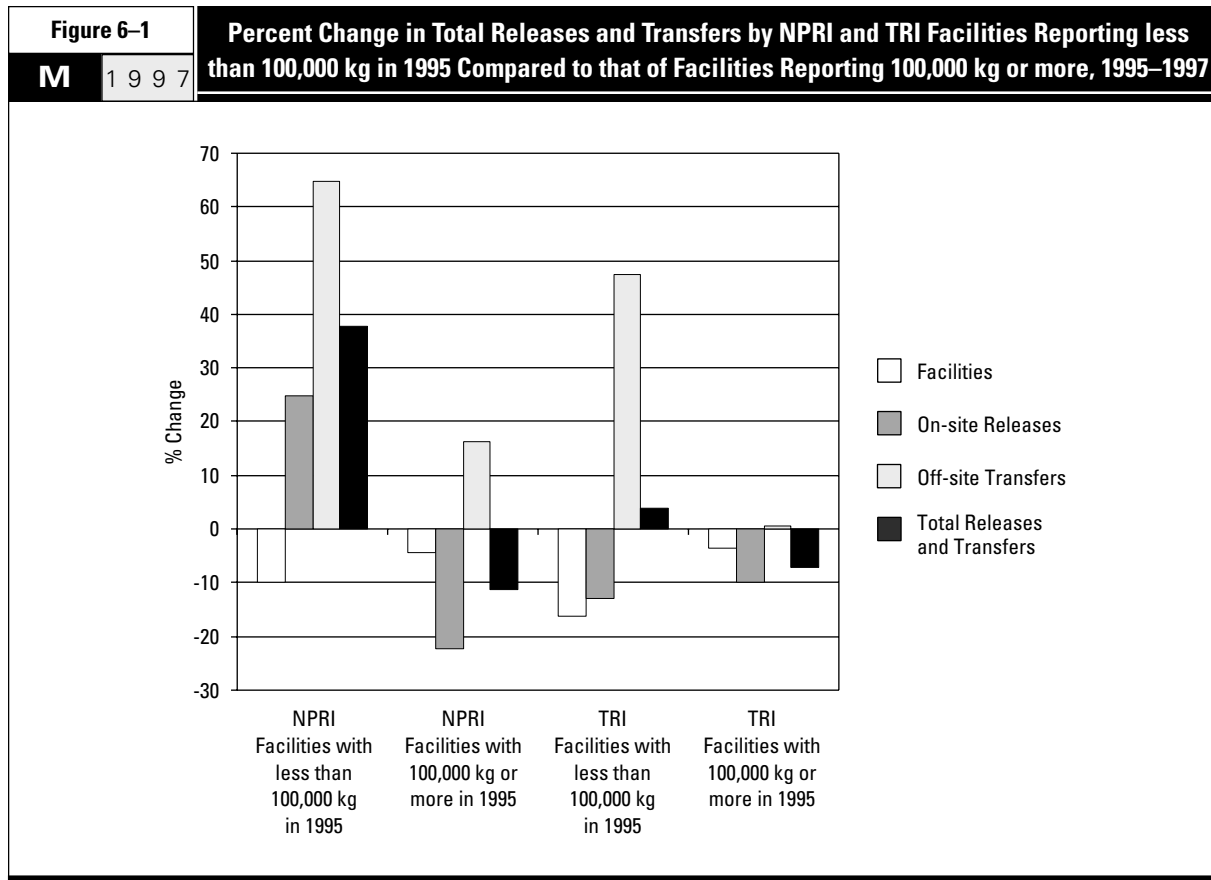
M 1997

	Facilities Reporting less than 100,000 kg in 1995		Facilities Reporting 100,000 kg or more in 1995		Total	
	1995 Number	1997 Number	1995 Number	1997 Number	1995 Number	1997 Number
Total Facilities	1,091	984	211	202	1,302	1,186
Total Forms	2,777	2,649	1,387	1,418	4,164	4,067
<b>On-site Releases</b>	<b>kg</b>	<b>kg</b>	<b>kg</b>	<b>kg</b>	<b>kg</b>	<b>kg</b>
Total Air Emissions	8,307,797	10,419,648	58,679,915	48,528,937	66,987,712	58,948,585
Surface Water Discharges	509,022	846,409	11,821,824	3,180,112	12,330,846	4,026,521
Underground Injection	1,336	14,233	3,555,591	4,182,527	3,556,927	4,196,760
On-site Land Releases	409,629	270,934	9,198,114	8,754,112	9,607,743	9,025,046
<b>Total Releases</b>	<b>9,339,681</b>	<b>11,644,015</b>	<b>83,280,427</b>	<b>64,667,540</b>	<b>92,620,108</b>	<b>76,311,555</b>
<b>Off-site Transfers</b>						
Treatment (except metals)	1,356,752	1,671,709	6,099,898	5,494,788	7,456,650	7,166,497
Sewage/POTWs (except metals)	476,345	568,371	3,701,564	4,481,226	4,177,909	5,049,597
Disposal (except metals)	515,737	811,144	3,726,743	1,568,067	4,242,480	2,379,211
Treatment/Sewage/Disposal of Metals	2,234,829	4,502,035	19,636,836	27,050,305	21,871,665	31,552,340
<b>Total Transfers</b>	<b>4,583,663</b>	<b>7,553,259</b>	<b>33,165,041</b>	<b>38,594,386</b>	<b>37,748,704</b>	<b>46,147,645</b>
<b>Total Releases and Transfers</b>	<b>13,923,344</b>	<b>19,197,274</b>	<b>116,445,468</b>	<b>103,261,926</b>	<b>130,368,812</b>	<b>122,459,200</b>
	<b>Change 1995-1997</b>		<b>Change 1995-1997</b>		<b>Change 1995-1997</b>	
	<b>Number</b>	<b>%</b>	<b>Number</b>	<b>%</b>	<b>Number</b>	<b>%</b>
Total Facilities	-107	-9.8	-9	-4.3	-116	-8.9
Total Forms	-128	-4.6	31	2.2	-97	-2.3
<b>On-site Releases</b>	<b>kg</b>	<b>%</b>	<b>kg</b>	<b>%</b>	<b>kg</b>	<b>%</b>
Total Air Emissions	2,111,851	25.4	-10,150,978	-17.3	-8,039,127	-12.0
Surface Water Discharges	337,387	66.3	-8,641,712	-73.1	-8,304,325	-67.3
Underground Injection	12,897	965.3	626,936	17.6	639,833	18.0
On-site Land Releases	-138,695	-33.9	-444,002	-4.8	-582,697	-6.1
<b>Total Releases</b>	<b>2,304,334</b>	<b>24.7</b>	<b>-18,612,887</b>	<b>-22.3</b>	<b>-16,308,553</b>	<b>-17.6</b>
<b>Off-site Transfers</b>						
Treatment (except metals)	314,957	23.2	-605,110	-9.9	-290,153	-3.9
Sewage/POTWs (except metals)	92,026	19.3	779,662	21.1	871,688	20.9
Disposal (except metals)	295,407	57.3	-2,158,676	-57.9	-1,863,269	-43.9
Treatment/Sewage/Disposal of Metals	2,267,206	101.4	7,413,469	37.8	9,680,675	44.3
<b>Total Transfers</b>	<b>2,969,596</b>	<b>64.8</b>	<b>5,429,345</b>	<b>16.4</b>	<b>8,398,941</b>	<b>22.2</b>
<b>Total Releases and Transfers</b>	<b>5,273,930</b>	<b>37.9</b>	<b>-13,183,542</b>	<b>-11.3</b>	<b>-7,909,612</b>	<b>-6.1</b>

► Does not include facilities not reporting in 1995.

Table 6-8		TRI Releases and Transfers by Facilities Reporting less than 100,000 kg in 1995 Compared to those of Facilities Reporting 100,000 kg or more, 1995-1997							
M	1997	Facilities Reporting less than 100,000 kg in 1995		Facilities Reporting less than 100,000 kg in 1995 but with increase 95-97 of more than 1,000,000 kg		Facilities Reporting 100,000 kg or more in 1995		Total	
		1995 Number	1997 Number	1995 Number	1997 Number	1995 Number	1997 Number	1995 Number	1997 Number
		18,421	15,420	19	19	1,566	1,511	20,006	16,950
		47,253	41,232	109	122	13,392	12,903	60,754	54,257
<b>On-site Releases</b>		<b>kg</b>	<b>kg</b>	<b>kg</b>	<b>kg</b>	<b>kg</b>	<b>kg</b>	<b>kg</b>	<b>kg</b>
Total Air Emissions		133,959,412	108,823,503	220,382	215,757	404,860,352	327,363,506	539,040,146	436,402,766
Surface Water Discharges		2,677,088	5,952,496	13,278	3,266,295	71,923,811	84,991,286	74,614,177	94,210,077
Underground Injection		177,250	379,456	0	0	84,089,842	72,604,383	84,267,092	72,983,839
On-site Land Releases		2,844,378	6,581,398	18,141	766,139	134,256,032	140,397,866	137,118,551	147,745,403
<b>Total Releases</b>		<b>139,658,128</b>	<b>121,736,853</b>	<b>251,801</b>	<b>4,248,191</b>	<b>695,130,037</b>	<b>625,357,041</b>	<b>835,039,966</b>	<b>751,342,085</b>
<b>Off-site Transfers</b>									
Treatment (except metals)		13,349,873	19,198,704	0	0	67,772,941	69,262,305	81,122,814	88,461,009
Sewage/POTWs (except metals)		12,520,656	16,555,711	13,204	9,884	78,855,409	82,142,536	91,389,269	98,708,131
Disposal (except metals)		5,365,051	7,153,012	32,666	1,294,658	12,317,254	9,948,310	17,714,971	18,395,980
Treatment/Sewage/Disposal of Metals		23,004,583	37,091,258	111,111	39,050,871	97,406,242	96,320,088	120,521,936	172,462,217
<b>Total Transfers</b>		<b>54,240,163</b>	<b>79,998,685</b>	<b>156,981</b>	<b>40,355,413</b>	<b>256,351,846</b>	<b>257,673,239</b>	<b>310,748,990</b>	<b>378,027,337</b>
<b>Total Releases and Transfers</b>		<b>193,898,291</b>	<b>201,735,538</b>	<b>408,782</b>	<b>44,603,604</b>	<b>951,481,883</b>	<b>883,030,280</b>	<b>1,145,788,956</b>	<b>1,129,369,422</b>
		<b>Change from 1995 to 1997</b>		<b>Change from 1995 to 1997</b>		<b>Change from 1995 to 1997</b>		<b>Change from 1995 to 1997</b>	
		<b>Number</b>	<b>%</b>	<b>Number</b>	<b>%</b>	<b>Number</b>	<b>%</b>	<b>Number</b>	<b>%</b>
Total Facilities		-3,001	-16.3	0	0.0	-55	-3.5	-3,056	-15.3
Total Forms		-6,021	-12.7	13	11.9	-489	-3.7	-6,497	-10.7
<b>On-site Releases</b>		<b>kg</b>	<b>%</b>	<b>kg</b>	<b>%</b>	<b>kg</b>	<b>%</b>	<b>kg</b>	<b>%</b>
Total Air Emissions		-25,135,909	-18.8	-4,625	-2.1	-77,496,846	-19.1	-102,637,380	-19.0
Surface Water Discharges		3,275,408	122.3	3,253,017	24,499.3	13,067,475	18.2	19,595,900	26.3
Underground Injection		202,206	114.1	0	—	-11,485,459	-13.7	-11,283,253	-13.4
On-site Land Releases		3,737,020	131.4	747,998	4,123.2	6,141,834	4.6	10,626,852	7.8
<b>Total Releases</b>		<b>-17,921,275</b>	<b>-12.8</b>	<b>3,996,390</b>	<b>1,587.1</b>	<b>-69,772,996</b>	<b>-10.0</b>	<b>-83,697,881</b>	<b>-10.0</b>
<b>Off-site Transfers</b>									
Treatment (except metals)		5,848,831	43.8	0	—	1,489,364	2.2	7,338,195	9.0
Sewage/POTWs (except metals)		4,035,055	32.2	-3,320	-25.1	3,287,127	4.2	7,318,862	8.0
Disposal (except metals)		1,787,961	33.3	1,261,992	3,863.3	-2,368,944	-19.2	681,009	3.8
Treatment/Sewage/Disposal of Metals		14,086,675	61.2	38,939,760	35,045.8	-1,086,154	-1.1	51,940,281	43.1
<b>Total Transfers</b>		<b>25,758,522</b>	<b>47.5</b>	<b>40,198,432</b>	<b>25,607.2</b>	<b>1,321,393</b>	<b>0.5</b>	<b>67,278,347</b>	<b>21.7</b>
<b>Total Releases and Transfers</b>		<b>7,837,247</b>	<b>4.0</b>	<b>44,194,822</b>	<b>10,811.3</b>	<b>-68,451,603</b>	<b>-7.2</b>	<b>-16,419,534</b>	<b>-1.4</b>

&gt; Does not include facilities not reporting in 1995.



► Does not include facilities not reporting in 1995 or TRI facilities reporting an increase greater than 1,000,000 kg from 1995 to 1997.

Table 6-9		NPRI Releases and Transfers by Facilities Reporting less than 100,000 kg in 1995 Compared to those of Facilities Reporting 100,000 kg or more, 1995-1997							
M	1997	Facilities Reporting less than 100,000 kg in 1995				Facilities Reporting 100,000 kg or more in 1995			
		1995		1997		1995		1997	
		kg	%	kg	%	kg	%	kg	%
<b>On-site Releases</b>									
Total Air Emissions		8,307,797	59.7	10,419,648	54.3	58,679,915	50.4	48,528,937	47.0
Surface Water Discharges		509,022	3.7	846,409	4.4	11,821,824	10.2	3,180,112	3.1
Underground Injection		1,336	0.0	14,233	0.1	3,555,591	3.1	4,182,527	4.1
On-site Land Releases		409,629	2.9	270,934	1.4	9,198,114	7.9	8,754,112	8.5
<b>Total Releases</b>		<b>9,339,681</b>	<b>67.1</b>	<b>11,644,015</b>	<b>60.7</b>	<b>83,280,427</b>	<b>71.5</b>	<b>64,667,540</b>	<b>62.6</b>
<b>Off-site Transfers</b>									
Treatment (except metals)		1,356,752	9.7	1,671,709	8.7	6,099,898	5.2	5,494,788	5.3
Sewage/POTWs (except metals)		476,345	3.4	568,371	3.0	3,701,564	3.2	4,481,226	4.3
Disposal (except metals)		515,737	3.7	811,144	4.2	3,726,743	3.2	1,568,067	1.5
Treatment/Sewage/Disposal of Metals		2,234,829	16.1	4,502,035	23.5	19,636,836	16.9	27,050,305	26.2
<b>Total Transfers</b>		<b>4,583,663</b>	<b>32.9</b>	<b>7,553,259</b>	<b>39.3</b>	<b>33,165,041</b>	<b>28.5</b>	<b>38,594,386</b>	<b>37.4</b>
<b>Total Releases and Transfers</b>		<b>13,923,344</b>	<b>100.0</b>	<b>19,197,274</b>	<b>100.0</b>	<b>116,445,468</b>	<b>100.0</b>	<b>103,261,926</b>	<b>100.0</b>

► Does not include facilities not reporting in 1995.

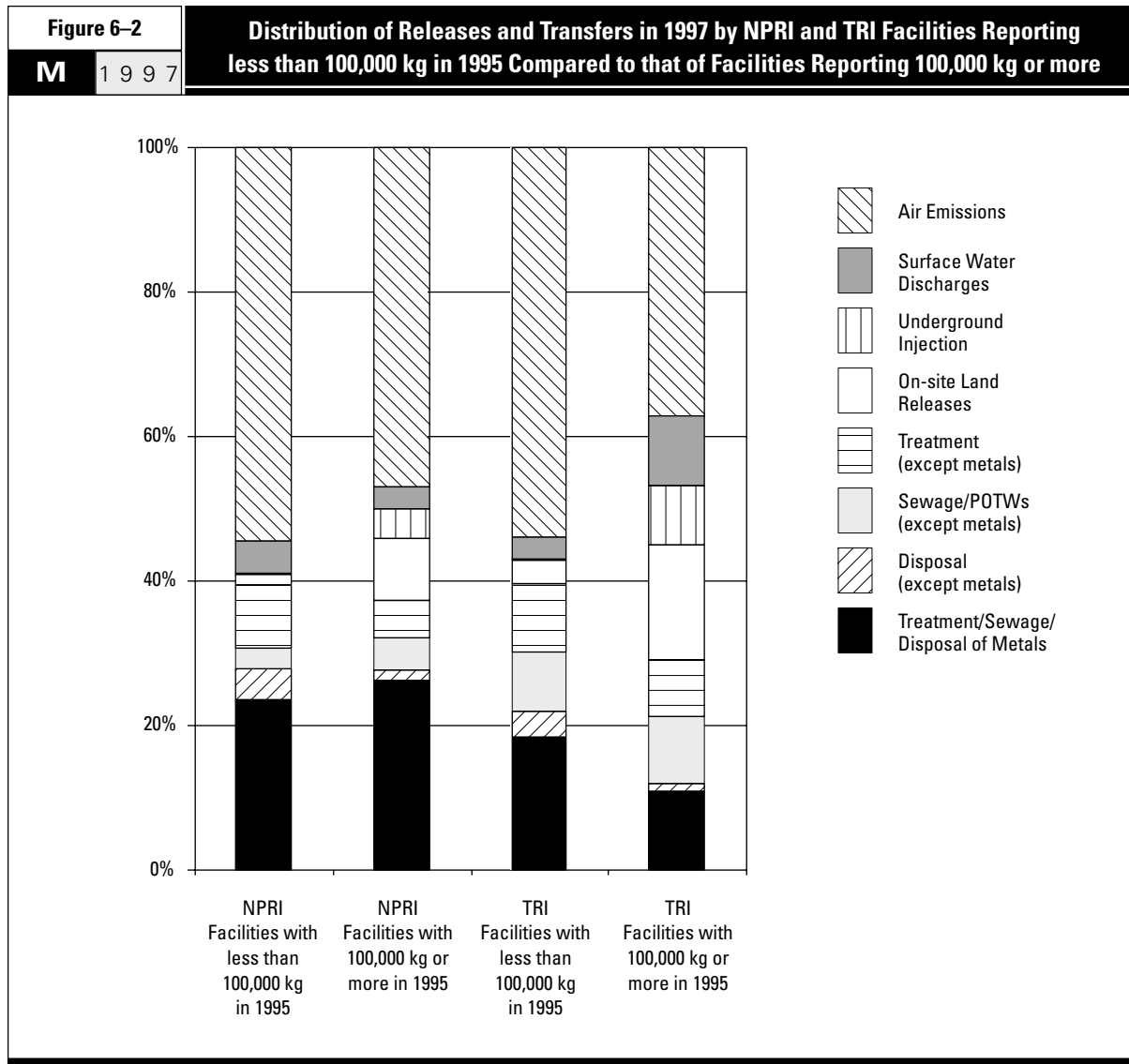
Changes in the proportion of various types of releases and transfers also were different for the two groups of facilities in both countries. For 1997, NPRI on-site releases to air constituted more than half (54 percent) of all releases and transfers by the facilities with smaller totals in 1995. The other

NPRI facilities, taken together, had relatively larger on-site releases to land in 1997 (nine percent for facilities reporting less than 100,000 kg in 1995, versus one percent for all others) (Table 6-9 and Figure 6-2).

For 1997, TRI on-site releases to air constituted more than half (54 per-

cent) of all releases and transfers for the group of facilities with smaller releases and transfers. The group of TRI facilities with larger total releases and transfers in 1995 reported just over one-third of their totals as on-site air releases. This group with larger total releases and transfers had relatively

larger on-site releases to land, surface water and underground injection in 1997. Transfers of metals were larger (18 percent) for the facilities with smaller 1995 totals than for the other facilities (11 percent—see Table 6-10 and Figure 6-2).

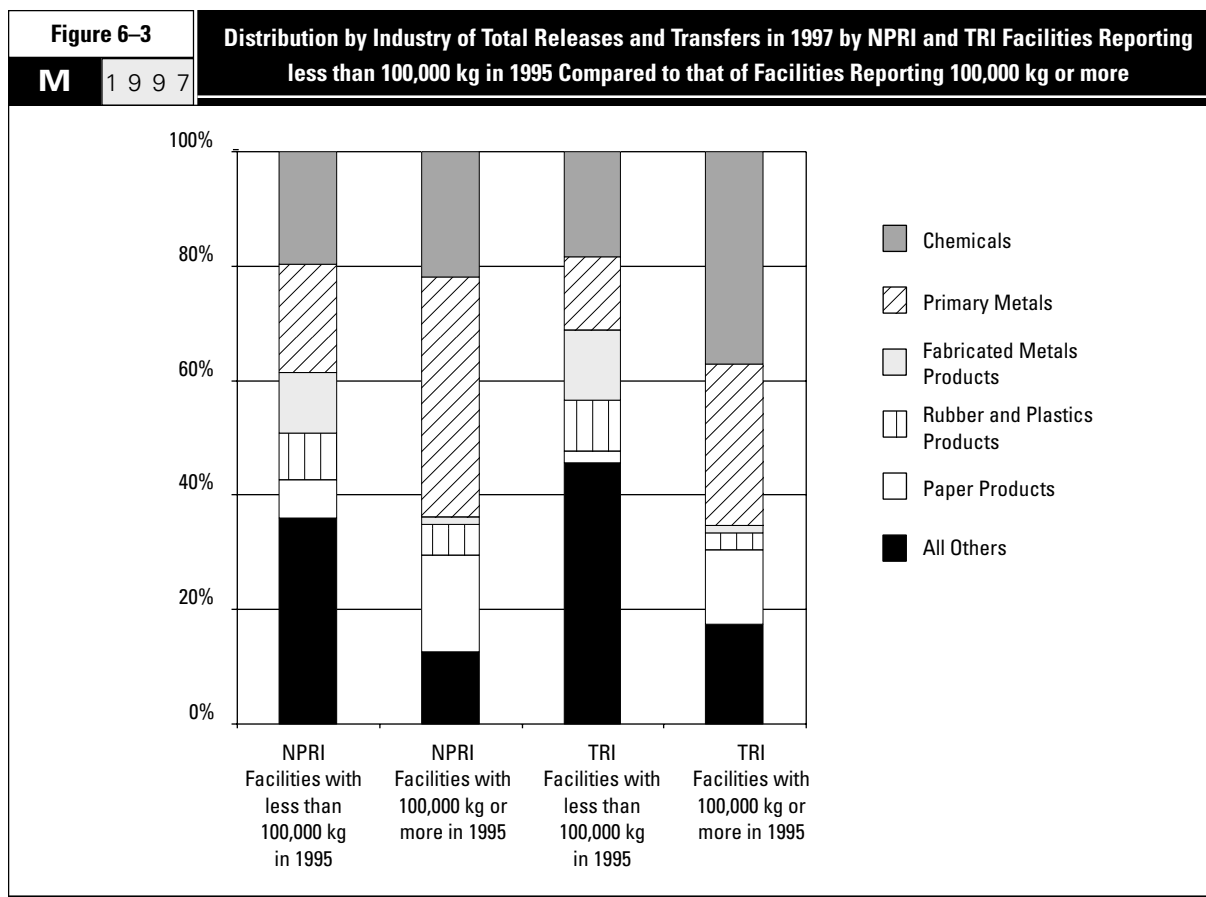


► Does not include facilities not reporting in 1995 or TRI facilities reporting an increase greater than 1,000,000 kg from 1995 to 1997.

Table 6-10		<b>TRI Releases and Transfers by Facilities Reporting less than 100,000 kg in 1995 Compared to those of Facilities Reporting 100,000 kg or more, 1995-1997</b>							
<b>M</b>	1997	Facilities Reporting less than 100,000 kg in 1995				Facilities Reporting 100,000 kg or more in 1995			
		1995		1997		1995		1997	
		kg	%	kg	%	kg	%	kg	%
<b>On-site Releases</b>									
Total Air Emissions		133,959,412	69.1	108,823,503	53.9	404,860,352	42.6	327,363,506	37.1
Surface Water Discharges		2,677,088	1.4	5,952,496	3.0	71,923,811	7.6	84,991,286	9.6
Underground Injection		177,250	0.1	379,456	0.2	84,089,842	8.8	72,604,383	8.2
On-site Land Releases		2,844,378	1.5	6,581,398	3.3	134,256,032	14.1	140,397,866	15.9
<b>Total Releases</b>		<b>139,658,128</b>	<b>72.0</b>	<b>121,736,853</b>	<b>60.3</b>	<b>695,130,037</b>	<b>73.1</b>	<b>625,357,041</b>	<b>70.8</b>
<b>Off-site Transfers</b>									
Treatment (except metals)		13,349,873	6.9	19,198,704	9.5	67,772,941	7.1	69,262,305	7.8
Sewage/POTWs (except metals)		12,520,656	6.5	16,555,711	8.2	78,855,409	8.3	82,142,536	9.3
Disposal (except metals)		5,365,051	2.8	7,153,012	3.5	12,317,254	1.3	9,948,310	1.1
Treatment/Sewage/Disposal of Metals		23,004,583	11.9	37,091,258	18.4	97,406,242	10.2	96,320,088	10.9
<b>Total Transfers</b>		<b>54,240,163</b>	<b>28.0</b>	<b>79,998,685</b>	<b>39.7</b>	<b>256,351,846</b>	<b>26.9</b>	<b>257,673,239</b>	<b>29.2</b>
<b>Total Releases and Transfers</b>		<b>193,898,291</b>	<b>100.0</b>	<b>201,735,538</b>	<b>100.0</b>	<b>951,481,883</b>	<b>100.0</b>	<b>883,030,280</b>	<b>100.0</b>

► Does not include facilities not reporting in 1995. Does not include 19 facilities reporting increases greater than 1,000,000 kg from 1995 to 1997.





► Does not include facilities not reporting in 1995 or TRI facilities reporting an increase greater than 1,000,000 kg from 1995 to 1997.

### 6.3.2 Industry Reporting, 1995–1997

The industries represented by NPRI facilities reporting less than 100,000 kg in 1995 were somewhat different from those for facilities with larger releases and transfers. The chemical manufacturing industry was the industry with the largest percentage of the total releases and transfers for the smaller release/transfer group. Chemical manufacturing facilities reported 23 percent of the total for this group in 1995, followed by the primary metals industry, with 13 percent. The primary

metals industry had the greatest increase, but still ranked second in 1997. Third-ranked in 1995 was the rubber and plastics products industry, and the fabricated metal products industry was fourth. By 1997, the two industries had switched places (**Figure 6-3** and **Table 6-11**).

For the NPRI facilities reporting 100,000 kg or more in 1995, primary metals facilities reported the largest amount of total releases and transfers, with 31 percent of the total for this group. This industry also reported the largest increase from 1995 to 1997, rising to 42 percent of the total in 1997.

On the other hand, the chemical industry, ranking second in both years, decreased overall, from 27 percent of the total in 1995 to 22 percent in 1997. The paper industry ranked third in both years and had the largest decrease from 1995 to 1997 for facilities with larger total releases and transfers in 1995. On the other hand, for the facilities with smaller releases and transfers in 1995, this industry ranked fifth in 1995, but reported an increase of 21 percent.

For TRI facilities, the chemical industry reported the largest total releases and transfers for both the facilities reporting less than 100,000

kg and those reporting 100,000 kg or more in 1995. However, the primary metals industry facilities with smaller total releases and transfers reported the largest increase in this group (10.5 million kg, or 67 percent) and, therefore, rose from fifth-ranked in 1995 to second in 1997. The fabricated metal products industry ranked second for facilities with smaller releases and transfers in 1995 and third in 1997 (**Figure 6-3** and **Table 6-12**).

Table 6-11		NPRI Total Releases and Transfers by Facilities Reporting less than 100,000 kg in 1995 Compared to those of Facilities Reporting 100,000 kg or more, by Industry, 1995-1997								
US SIC Code	Industry	NPRI Facilities Reporting less than 100,000 kg in 1995 Total Releases and Transfers							Change 1995-1997	
		1995			1997			kg	%	
		kg	% of Total	Rank	kg	% of Total	Rank			
20	Food Products	175,137	1.3	15	663,435	3.5	10	488,298	278.8	
22	Textile Mill Products	98,862	0.7	16	43,292	0.2	16	-55,570	-56.2	
23	Apparel and Other Textile Products	860	0.0	19	280	0.0	18	-580	-67.4	
24	Lumber and Wood Products	634,941	4.6	8	1,407,506	7.3	5	772,565	121.7	
25	Furniture and Fixtures	196,504	1.4	14	288,911	1.5	13	92,407	47.0	
26	Paper Products	1,069,957	7.7	5	1,288,998	6.7	6	219,041	20.5	
27	Printing and Publishing	394,030	2.8	11	1,267,510	6.6	7	873,480	221.7	
28	Chemicals	3,179,246	22.8	1	3,768,099	19.6	1	588,853	18.5	
29	Petroleum and Coal Products	420,676	3.0	10	707,532	3.7	9	286,856	68.2	
30	Rubber and Plastics Products	1,718,053	12.3	3	1,567,472	8.2	4	-150,581	-8.8	
31	Leather Products	23,888	0.2	17	15,927	0.1	17	-7,961	-33.3	
32	Stone/Clay/Glass Products	733,702	5.3	7	563,850	2.9	11	-169,852	-23.1	
33	Primary Metals	1,749,257	12.6	2	3,634,456	18.9	2	1,885,199	107.8	
34	Fabricated Metals Products	1,458,361	10.5	4	2,035,542	10.6	3	577,181	39.6	
35	Industrial Machinery	294,289	2.1	12	264,966	1.4	14	-29,323	-10.0	
36	Electronic/Electrical Equipment	634,095	4.6	9	335,626	1.7	12	-298,469	-47.1	
37	Transportation Equipment	932,667	6.7	6	1,183,103	6.2	8	250,436	26.9	
38	Measurement/Photographic Instruments	1,501	0.0	18	250	0.0	19	-1,251	-83.3	
39	Misc. Manufacturing Industries	207,318	1.5	13	160,519	0.8	15	-46,799	-22.6	
	<b>Total</b>	<b>13,923,344</b>	<b>100.0</b>		<b>19,197,274</b>	<b>100.0</b>		<b>5,273,930</b>	<b>37.9</b>	

► Does not include facilities not reporting in 1995.

NPRI Facilities Reporting 100,000 kg or more in 1995									
Total Releases and Transfers									
US SIC Code	Industry	1995			1997			Change 1995-1997	
		kg	% of Total	Rank	kg	% of Total	Rank	kg	%
20	Food Products	264,000	0.2	14	201,600	0.2	14	-62,400	-23.6
22	Textile Mill Products	827,338	0.7	8	489,305	0.5	9	-338,033	-40.9
23	Apparel and Other Textile Products	0	0.0	18	0	0.0	18	0	—
24	Lumber and Wood Products	641,362	0.6	10	430,627	0.4	11	-210,735	-32.9
25	Furniture and Fixtures	298,096	0.3	12	493,357	0.5	8	195,261	65.5
26	Paper Products	27,168,057	23.3	3	17,418,164	16.9	3	-9,749,893	-35.9
27	Printing and Publishing	473,547	0.4	11	403,276	0.4	12	-70,271	-14.8
28	Chemicals	30,925,967	26.6	2	22,656,178	21.9	2	-8,269,789	-26.7
29	Petroleum and Coal Products	4,882,189	4.2	6	4,789,123	4.6	6	-93,066	-1.9
30	Rubber and Plastics Products	5,730,757	4.9	5	5,573,176	5.4	4	-157,581	-2.7
31	Leather Products	0	0.0	17	0	0.0	17	0	—
32	Stone/Clay/Glass Products	713,810	0.6	9	441,139	0.4	10	-272,671	-38.2
33	Primary Metals	35,588,448	30.6	1	43,161,824	41.8	1	7,573,376	21.3
34	Fabricated Metals Products	1,887,699	1.6	7	1,432,383	1.4	7	-455,316	-24.1
35	Industrial Machinery	295,410	0.3	13	327,898	0.3	13	32,488	11.0
36	Electronic/Electrical Equipment	0	0.0	16	0	0.0	16	0	—
37	Transportation Equipment	6,620,553	5.7	4	5,320,572	5.2	5	-1,299,981	-19.6
38	Measurement/Photographic Instruments	0	0.0	19	0	0.0	19	0	—
39	Misc. Manufacturing Industries	128,235	0.1	15	123,304	0.1	15	-4,931	-3.8
	<b>Total</b>	<b>116,445,468</b>	<b>100.0</b>		<b>103,261,926</b>	<b>100.0</b>		<b>-13,183,542</b>	<b>-11.3</b>

Table 6-12		TRI Total Releases and Transfers by Facilities Reporting less than 100,000 kg in 1995 Compared to those of Facilities Reporting 100,000 kg or more, by Industry, 1995-1997								
US SIC Code	Industry	TRI Facilities Reporting less than 100,000 kg in 1995 Total Releases and Transfers							Change 1995-1997	
		1995			1997			kg	%	
		kg	% of Total	Rank	kg	% of Total	Rank			
20	Food Products	5,368,993	2.8	12	6,919,178	3.4	9	1,550,185	28.9	
21	Tobacco Products	118,746	0.1	21	212,585	0.1	21	93,839	79.0	
22	Textile Mill Products	3,228,476	1.7	16	2,914,147	1.4	16	-314,329	-9.7	
23	Apparel and Other Textile Products	354,585	0.2	20	221,403	0.1	20	-133,182	-37.6	
24	Lumber and Wood Products	8,369,570	4.3	10	6,231,480	3.1	11	-2,138,090	-25.5	
25	Furniture and Fixtures	10,995,219	5.7	7	6,210,329	3.1	12	-4,784,890	-43.5	
26	Paper Products	4,846,923	2.5	13	4,410,618	2.2	14	-436,305	-9.0	
27	Printing and Publishing	2,129,942	1.1	17	1,549,434	0.8	17	-580,508	-27.3	
28	Chemicals	29,561,289	15.2	1	36,887,538	18.3	1	7,326,249	24.8	
29	Petroleum and Coal Products	4,188,524	2.2	14	5,826,497	2.9	13	1,637,973	39.1	
30	Rubber and Plastics Products	19,559,281	10.1	3	17,936,322	8.9	4	-1,622,959	-8.3	
31	Leather Products	1,459,451	0.8	19	1,286,170	0.6	19	-173,281	-11.9	
32	Stone/Clay/Glass Products	5,775,328	3.0	11	7,869,817	3.9	8	2,094,489	36.3	
33	Primary Metals	15,649,253	8.1	5	26,110,871	12.9	2	10,461,618	66.9	
34	Fabricated Metals Products	26,748,427	13.8	2	24,441,212	12.1	3	-2,307,215	-8.6	
35	Industrial Machinery	8,715,667	4.5	8	6,824,238	3.4	10	-1,891,429	-21.7	
36	Electronic/Electrical Equipment	8,514,494	4.4	9	9,535,383	4.7	7	1,020,889	12.0	
37	Transportation Equipment	17,544,371	9.0	4	16,099,597	8.0	5	-1,444,774	-8.2	
38	Measurement/Photographic Instruments	1,916,761	1.0	18	1,370,587	0.7	18	-546,174	-28.5	
39	Misc. Manufacturing Industries	3,685,940	1.9	15	2,995,773	1.5	15	-690,167	-18.7	
	Multiple Codes 20-39	15,167,051	7.8	6	15,882,359	7.9	6	715,308	4.7	
	<b>Total</b>	<b>193,898,291</b>	<b>100.0</b>		<b>201,735,538</b>	<b>100.0</b>		<b>7,837,247</b>	<b>4.0</b>	

► Does not include facilities not reporting in 1995. Does not include 19 facilities reporting more than 1,000,000 kg increase from 1995 to 1997.

		TRI Facilities Reporting 100,000 kg or more in 1995 Total Releases and Transfers							
US SIC Code	Industry	1995			1997			Change 1995-1997	
		kg	% of Total	Rank	kg	% of Total	Rank	kg	%
20	Food Products	15,257,128	1.6	8	14,167,146	1.6	8	-1,089,982	-7.1
21	Tobacco Products	350,832	0.0	19	404,088	0.0	19	53,256	15.2
22	Textile Mill Products	4,889,376	0.5	16	4,614,192	0.5	14	-275,184	-5.6
23	Apparel and Other Textile Products	128,563	0.0	20	62,187	0.0	20	-66,376	-51.6
24	Lumber and Wood Products	5,771,324	0.6	15	4,349,292	0.5	15	-1,422,032	-24.6
25	Furniture and Fixtures	7,345,157	0.8	12	4,112,777	0.5	16	-3,232,380	-44.0
26	Paper Products	118,823,034	12.5	3	115,032,612	13.0	3	-3,790,422	-3.2
27	Printing and Publishing	11,557,541	1.2	9	9,196,824	1.0	10	-2,360,717	-20.4
28	Chemicals	369,679,263	38.9	1	327,548,860	37.1	1	-42,130,403	-11.4
29	Petroleum and Coal Products	20,574,238	2.2	7	21,818,220	2.5	7	1,243,982	6.0
30	Rubber and Plastics Products	30,551,820	3.2	6	26,007,707	2.9	6	-4,544,113	-14.9
31	Leather Products	105,187	0.0	21	28,457	0.0	21	-76,730	-72.9
32	Stone/Clay/Glass Products	6,756,590	0.7	13	5,842,903	0.7	12	-913,687	-13.5
33	Primary Metals	235,711,582	24.8	2	248,369,175	28.1	2	12,657,593	5.4
34	Fabricated Metals Products	11,235,616	1.2	10	11,702,138	1.3	9	466,522	4.2
35	Industrial Machinery	2,291,987	0.2	18	2,221,773	0.3	17	-70,214	-3.1
36	Electronic/Electrical Equipment	10,948,341	1.2	11	7,804,382	0.9	11	-3,143,959	-28.7
37	Transportation Equipment	32,156,665	3.4	5	26,556,833	3.0	5	-5,599,832	-17.4
38	Measurement/Photographic Instruments	6,365,294	0.7	14	4,772,094	0.5	13	-1,593,200	-25.0
39	Misc. Manufacturing Industries	2,606,494	0.3	17	1,392,665	0.2	18	-1,213,829	-46.6
	Multiple Codes 20-39	58,375,851	6.1	4	47,025,955	5.3	4	-11,349,896	-19.4
	<b>Total</b>	<b>951,481,883</b>	<b>100.0</b>		<b>883,030,280</b>	<b>100.0</b>		<b>-68,451,603</b>	<b>-7.2</b>

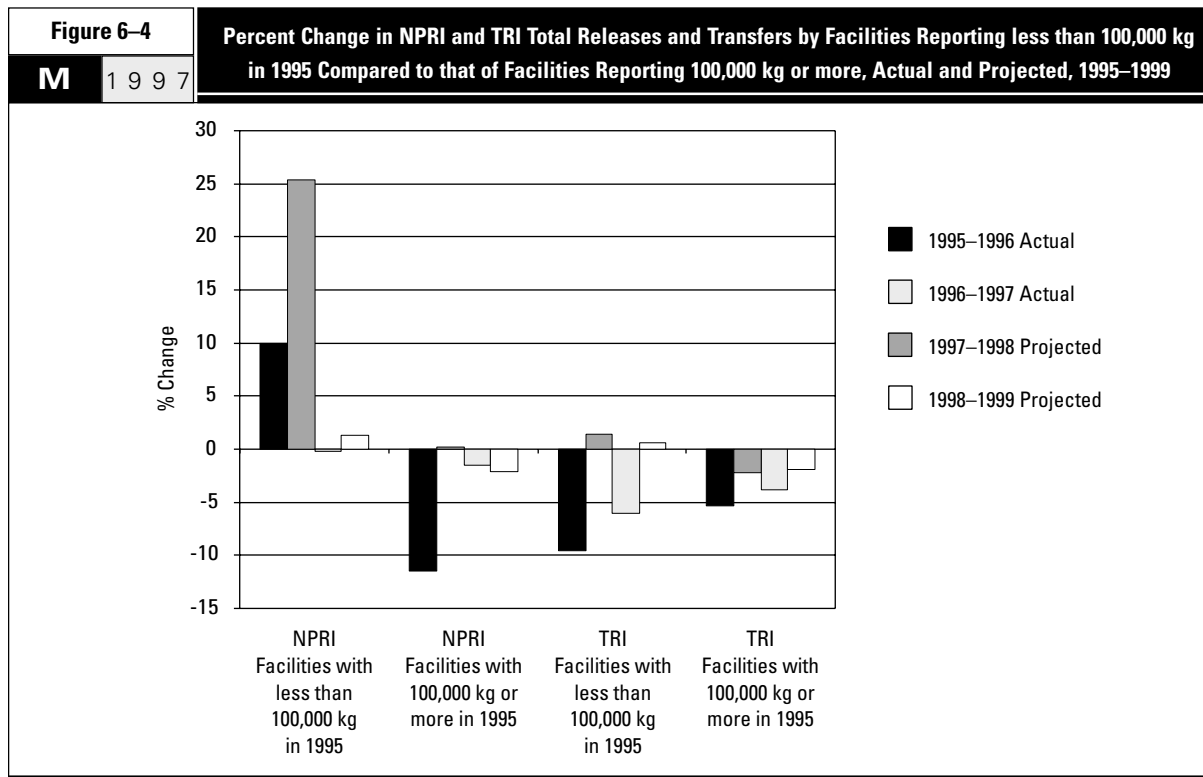
### 6.3.3 Actual and Projected Total Releases and Transfers, 1995–1999

NPRI facilities reporting less than 100,000 kg in 1995 reported substantial increases in total releases and transfers for both 1995 to 1996 and 1996 to 1997. This group projected a slight decrease of 0.2 percent for 1998 and an increase of 1.4 percent from 1998 to 1999. On the other hand, NPRI facilities reporting 100,000 kg or more in 1995 showed a decrease of 12 percent from 1995 to 1996 and a slight increase (0.2 percent) from 1996 to 1997, with continuing expected decreases for 1998 and 1999 (Table 6–13 and Figure 6–4).

TRI facilities in both groups reported decreases from 1995 to 1996, with the facilities with larger releases and transfers reporting continued decreases from 1996 to 1997 and projected decreases through 1999. The TRI facilities that reported under 100,000 kg in 1995 projected decreasing releases and transfers from 1997 to 1998 and then a slight increase for 1999. These data come from a different section of the TRI reporting form (Section 8), so the total releases and transfers for 1995 and 1997 do not match exactly those in other tables (Table 6–14 and Figure 6–4).

Table 6–13			
NPRI Total Releases and Transfers by Facilities Reporting less than 100,000 kg in 1995 Compared to those of Facilities Reporting 100,000 kg or more, 1995–1999 (Projected)			
M	1997		
		<b>Facilities Reporting less than 100,000 kg in 1995 (kg)</b>	<b>Facilities Reporting 100,000 kg or more in 1995 (kg)</b>
			<b>Total (kg)</b>
		1995 Actual	13,923,344
		1996 Actual	15,312,747
		1997 Actual	19,197,274
		1998 Projected	19,166,088
		1999 Projected	19,424,990
			116,445,468
			103,102,143
			103,261,926
			101,660,794
			99,535,297
			130,368,812
			118,414,890
			122,459,200
			120,826,882
			118,960,287
		<b>% Change</b>	<b>% Change</b>
		1995–1996 Actual	10.0
		1996–1997 Actual	25.4
		1997–1998 Projected	-0.2
		1998–1999 Projected	1.4
			-11.5
			0.2
			-1.6
			-2.1
			-9.2
			3.4
			-1.3
			-1.5

► Does not include facilities not reporting in 1995.



► Does not include facilities not reporting in 1995 or TRI facilities reporting an increase greater than 1 million kg from 1995 to 1997.



Table 6-15

## NPRI Pollution Prevention Activities and TRI Source Reduction Activities

1 9 9 7

**NPRI Categories**

- A** Materials or feedstock substitution
- B** Product design or reformulation
- C** Equipment or process modifications
- D** Spill and leak prevention
- E** On-site reuse, recycling or recovery
- F** Improved inventory management or purchasing techniques
- G** Good operating practices or training

**Corresponding NPRI**
**Category TRI Categories**
**Good Operating Practices**

- G W13 Improved maintenance scheduling, recordkeeping, or procedures
- G W14 Changed production schedule to minimize equipment and feedstock changeovers
- G W19 Other changes in operating practices

**Inventory Control**

- F W21 Instituted procedures to ensure that materials do not stay in inventory beyond shelf-life
- F W22 Began to test outdated material—continue to use if still effective
- F W23 Eliminated shelf-life requirements for stable materials
- F W24 Instituted better labeling procedures
- F W25 Instituted clearinghouse to exchange materials that would otherwise be discarded
- F W29 Other changes in inventory control

**Spill and Leak Prevention**

- D W31 Improved storage or stacking procedures
- D W32 Improved procedures for loading, unloading, and transfer operations
- D W33 Installed overflow alarms or automatic shut-off valves
- D W35 Installed vapor recovery systems
- D W36 Implemented inspection or monitoring program of potential spill or leak sources
- D W39 Other spill and leak prevention

**Raw Material Modifications**

- A W41 Increased purity of raw materials
- A W42 Substituted raw materials
- A W49 Other raw material modifications

**Corresponding NPRI**
**Category TRI Categories**
**Process Modifications**

- C W51 Instituted recirculation within a process
- C W52 Modified equipment, layout, or piping
- C W53 Use of a different process catalyst
- C W54 Instituted better controls on operating bulk containers to minimize discarding of empty containers
- C W55 Changed from small volume containers to bulk containers to minimize discarding of empty containers
- C W58 Other process modifications

**Cleaning and Degreasing**

- C W59 Modified stripping/cleaning equipment
- C W60 Changed to mechanical stripping/cleaning devices (from solvents or other materials)
- A W61 Changed to aqueous cleaners (from solvents or other materials)
- D W63 Modified containment procedures for cleaning units
- D W64 Improved draining procedures
- C W65 Redesigned parts racks to reduce drag out
- C W66 Modified or installed rinse systems
- C W67 Improved rinse equipment design
- C W68 Improved rinse equipment operation
- C W71 Other cleaning and degreasing modifications

**Surface Preparation and Finishing**

- C W72 Modified spray systems or equipment
- A W73 Substituted coating materials used
- C W74 Improved application techniques
- C W75 Changed from spray to other system
- C W78 Other surface preparation and finishing modifications

**Product Modifications**

- B W81 Changed product specifications
- B W82 Modified design or composition
- B W83 Modified packaging
- B W89 Other product modifications

► On-site reuse, recycling or recovery not a source reduction activity in TRI.



In both systems, facilities are to report activities undertaken during the reporting year. Some facilities, however, may be reporting ongoing activities that began in earlier years. The TRI form specifies that facilities are to report activities engaged in during the reporting year, while the NPRI form does not (Appendices D and E). In both cases, separate instructions indicate that the reporting should cover those activities engaged in during the calendar year. Because this is the first reporting year for this information in NPRI, investigation as to whether these are newly implemented activities or ongoing activities that are being reported has not yet been done.

Except for on-site recycling and energy recovery under TRI, neither country asks a facility to report on the quantity of the substance in waste that was reduced due to the pollution prevention activities.

Table 6-16		NPRI Facilities and Forms Reporting Pollution Prevention Activity, by Category, 1997			
Source Reduction Activity Categories	Number	Facilities Reporting Source Reduction Activity		Forms Reporting Source Reduction Activity	
		Number	As % of All NPRI Facilities	Number	As % of All NPRI Forms
Materials or feedstock substitutions	154		10.8	283	6.2
Product redesign or reformulation	175		12.2	352	7.7
Equipment or process modifications	386		27.0	841	18.3
Spill and leak prevention	396		27.7	1,140	24.8
Improved inventory management or purchasing techniques	221		15.5	566	12.3
Good operating practices or training	743		52.0	2,195	47.7
<b>Any Source Reduction Activity*</b>	<b>1,000</b>		<b>69.9</b>	<b>2,971</b>	<b>64.6</b>
On-site reuse, recycling, recovery	389		27.2	905	19.7
<b>Total Pollution Prevention Activity Reporting</b>	<b>1,068</b>		<b>74.7</b>	<b>3,198</b>	<b>69.5</b>

\* The numerical totals do not equal the sum of the above categories because facilities and forms may report more than one type of source reduction activity category.

### 6.4.1 1997 Pollution Prevention/Source Reduction Reporting

In 1997, 70 percent of NPRI facilities in the matched data set reported undertaking at least one source reduction

activity and 27 percent reported undertaking on-site reuse, recycling or recovery. A total of 75 percent of NPRI facilities reported some pollution prevention activity, source reduction and/or on-site reuse, recycling or recovery. These facilities reported such activity

for 70 percent of their forms. The most frequently reported source reduction activity was "good operating practices or training." This activity was reported by 52 percent of the facilities and appeared on 48 percent of the forms (Table 6-16).

On the other hand, 28 percent of TRI facilities in the matched data set reported engaging in at least one source reduction activity during 1997 and 19 percent reported on-site recycling or energy recovery. A total of 39 percent of TRI facilities reported undertaking some pollution prevention activity during 1997. These facilities reported such activities on 33 percent of their forms. The most frequently reported types of activity were “good operating practices or training” and “equipment or process modification.” Both of these categories were reported by 13 percent of TRI facilities and appeared on about 10 percent of the forms (Table 6–17).

Substantially fewer TRI facilities reported on pollution prevention activities during 1997 than did NPRI facilities. Whether this difference is significant depends in part on whether NPRI facilities are reporting activities from previous years. As indicated in US EPA’s annual reports of TRI data, fewer TRI facilities indicate source reduction activities over time, suggesting that they are (correctly) reporting new source reduction efforts only in the year in which those activities are first undertaken.

Table 6–17		TRI Facilities and Forms Reporting Pollution Prevention Activity, by Category, 1997				
M	1997	Facilities Reporting Source Reduction Activity		Forms Reporting Source Reduction Activity		
		Number	As % of All TRI Facilities	Number	As % of All TRI Forms	
<b>Source Reduction Activity Categories</b>						
		Materials or feedstock substitutions	1,468	8.7	2,592	5.2
		Product redesign or reformulation	422	2.5	821	1.6
		Equipment or process modifications	2,124	12.6	5,014	10.0
		Spill and leak prevention	932	5.5	2,803	5.6
		Improved inventory management or purchasing techniques	514	3.0	1,340	2.7
		Good operating practices or training	2,156	12.8	5,381	10.7
		<b>Any Source Reduction Activity*</b>	<b>4,739</b>	<b>28.0</b>	<b>10,699</b>	<b>21.3</b>
		On-site reuse, recycling, recovery**	3,205	19.0	8,285	16.5
		<b>Total Pollution Prevention Activity Reporting</b>	<b>6,643</b>	<b>39.3</b>	<b>16,347</b>	<b>32.5</b>

\* The numerical totals do not equal the sum of the above categories because facilities and forms may report more than one type of source reduction activity category.

\*\* On-site recycling or energy amount reported in Section 8 of TRI Form for 1997.

➤ Only TRI Form R was used in this analysis because TRI Form A does not include the section on source reduction activity. There were 16,906 facilities submitting at least one TRI Form R for 1997 for matched chemicals and industries, with a total of 50,296 TRI Form Rs.

## 6.4.2 Pollution Prevention Reporting and Actual and Projected Changes in Total Releases and Transfers, 1995–1999

Pollution prevention activities are intended to reduce the amount of releases and transfers of the substances. The amounts of these reductions are not reported, just the activities under-

taken. However, the releases and transfers of facilities that report pollution prevention activities can be compared with those that do not to see if the amounts differ. This analysis covers only consistent reporting for all three years from 1995 to 1997, that is, submissions by the same facility for the same substance.

Overall, NPRI total releases and transfers decreased three percent from 1995 to 1997 for forms submitted in all three years and this decrease can be attributed to substances for which

source reduction activity was reported. These forms reported an 18 percent reduction from 1995 to 1997 and projected a six percent reduction from 1997 to 1999. All other forms, those with no source reduction as well as those with on-site reuse, recycling or recovery, reported an increase from 1995 to 1997 and projected an increase for 1997 to 1999 (**Table 6–18** and **Figure 6–5**).

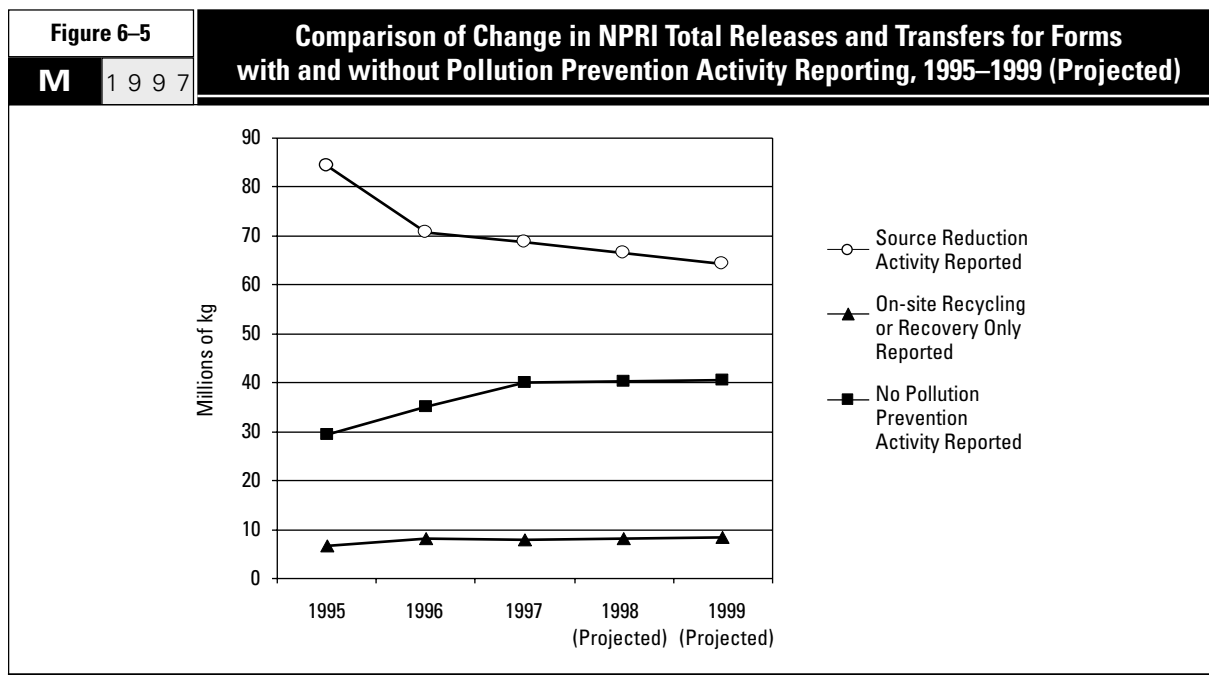
For TRI, all groups of forms with some type of pollution prevention reported decreases in total releases and

transfers from 1995 to 1997 and projected further decreases for 1997 to 1999. Forms indicating source reduction had the largest percentage decrease in total releases and transfers (eight percent from 1995 to 1997 and projected 10 percent from 1997 to 1999). TRI forms with on-site recycling or energy recovery also reported a reduction from 1995 to 1997 of seven percent with further projected reductions of two percent (**Table 6–19** and **Figure 6–6**).

Table 6-18		Comparisons of NPRI Total Releases and Transfers for Forms with and without Pollution Prevention Activity Reporting, 1995-1999 (Projected)					
M 1997		Chemicals Reported All Three Years, 1995-1997*					
	All Forms Number	Forms Reporting Source Reduction Activities (SRA) Number	Forms Reporting On-site Reuse, Recycling or Recovery Only Number	Forms Reporting No SRA Number	Forms Reporting No SRA and No On-site Reuse, Recycling or Recovery Number	Forms Reporting Pollution Prevention Activity** as Reason for Change Number	
Forms	3,456	2,244	178	1,212	1,034	244	
<b>Total Releases and Transfers</b>	<b>kg</b>	<b>kg</b>	<b>kg</b>	<b>kg</b>	<b>kg</b>	<b>kg</b>	
1995 Actual	120,556,528	84,342,901	6,776,802	36,213,627	29,436,825	15,372,877	
1996 Actual	113,997,085	70,768,406	8,145,540	43,228,679	35,083,139	14,447,954	
1997 Actual	116,604,793	68,788,085	7,842,818	47,816,708	39,973,890	11,354,979	
1998 Projected	115,053,296	66,586,675	8,280,299	48,466,621	40,186,322	10,928,429	
1999 Projected	113,366,094	64,355,281	8,437,812	49,010,813	40,573,001	10,354,863	
	%	%	%	%	%	%	
	<b>Change</b>	<b>Change</b>	<b>Change</b>	<b>Change</b>	<b>Change</b>	<b>Change</b>	
1995-1997 Actual	-3.3	-18.4	15.7	32.0	35.8	-26.1	
1997-1999 Projected	-2.8	-6.4	7.6	2.5	1.5	-8.8	

\* Data for forms submitted by the same facility for the same substance in all three years, 1995-1997.

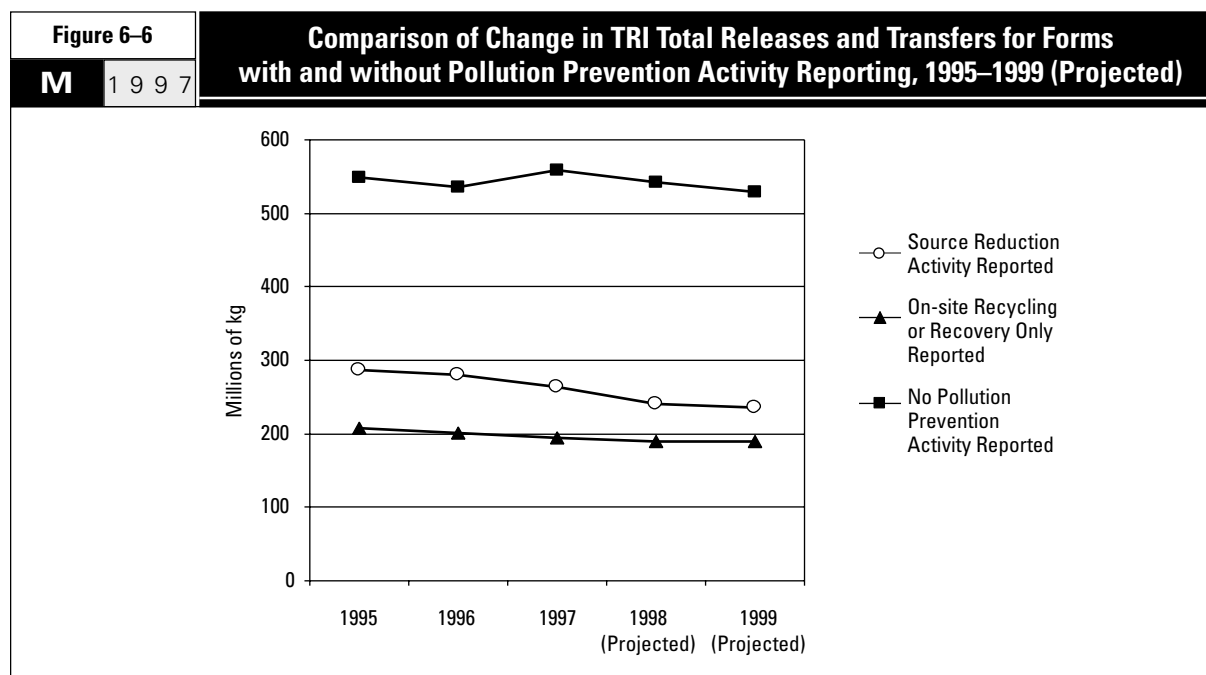
\*\* Pollution prevention activity reporting includes source reduction activities (SRA) and/or on-site reuse, recycling or recovery.



► For chemicals reported in all three years (1995-1997) only.

Table 6-19		Comparisons of TRI Total Releases and Transfers for Forms with and without Pollution Prevention Activity Reporting, 1995-1999 (Projected)				
M 1997		Chemicals Reported All Three Years, 1995-1997*				
	All Forms Number	Forms Reporting Source Reduction Activities (SRA) Number	Forms Reporting On-site Reuse, Recycling or Recovery Only Number	Forms Reporting No SRA Number	Forms Reporting No SRA and No On-site Reuse, Recycling or Recovery Number	
Forms	40,343	9,036	4,774	31,307	26,533	
<b>Total Releases and Transfers</b>	<b>kg</b>	<b>kg</b>	<b>kg</b>	<b>kg</b>	<b>kg</b>	
1995 Actual	1,044,991,806	287,472,320	207,845,491	757,519,486	549,673,995	
1996 Actual	1,018,559,232	280,710,530	201,610,621	737,848,702	536,238,081	
1997 Actual	1,015,524,800	263,351,165	193,766,689	752,173,635	558,406,946	
1998 Projected	973,159,103	240,692,550	189,734,739	732,466,553	542,731,814	
1999 Projected	955,318,307	236,067,093	189,770,895	719,251,214	529,480,319	
	%	%	%	%	%	
	<b>Change</b>	<b>Change</b>	<b>Change</b>	<b>Change</b>	<b>Change</b>	
1995-1997 Actual	-2.8	-8.4	-6.8	-0.7	1.6	
1997-1999 Projected	-5.9	-10.4	-2.1	-4.4	-5.2	

\* Data for forms submitted by the same facility for the same substance in all three years, 1995-1997.



► For chemicals reported in all three years (1995-1997) only.

