Chapter 5: Releases and Transfers

M All tables and figures in Chapter 5 are from the 1997 Matched Data Set

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Total Releases and Transfers, 1997

Figures

Map

Tables

M All tables and figures in Chapter 5 are from the 1997 Matched Data Set

Changes in Total Releases and Transfers, 1995–1997, and Projections for 1998–1989

Figures

Map

Tables

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Changes in Total Releases and Transfers, 1995–1997, and Projections for 1998–1989 (cont.)

Key Findings

- In 1997, North American facilities released and transferred a total of 1.29 billion kg of substances listed in a matched data set of chemicals and industries covered by both Canada's NPRI and the US TRI. Two-thirds of the total consisted of on-site releases.
- The 50 facilities with the largest total releases and transfers reported 27 percent (353.5 million kg) of the North American total, although they represented only one-quarter of one percent (0.24 percent) of all facilities in the matched data set.
- Fifteen percent of the releases and transfers consisted of known or suspected carcinogens, a total of 195.0 million kg. Twenty-nine percent consisted of metals and their compounds—373.3 million kg. (These amounts overlap, as carcinogens include six of the 15 metals and/or their compounds.)
- Among the industry sectors with the largest total releases and transfers, the primary metals industry reported increasing its releases and transfers by more than 25 percent from 1995 to 1997 in both NPRI and TRI. (This sector is examined in more detail in **Chapter 7**.) In contrast, the chemical manufacturing and paper products industries both showed decreases, including a reduction of 32 percent in the paper products industry's NPRI totals.
- Releases and transfers reported to NPRI decreased slightly (0.3 percent) from 1995 to 1997, although the number of NPRI facilities and forms increased by 10 percent in the matched data set. Conversely, TRI releases and transfers rose 1.4 percent, despite a four percent decline in facilities and forms. The result was a 1.2 percent increase in North American total releases and transfers from 1995 to 1997.
- Although North American total releases and transfers increased from 1995 to 1997, from 1995 to 1996 they actually declined—this reduction, however, was outweighed by a larger increase in 1997.
- The difference between NPRI and TRI for average releases and transfers per form and per facility continues, but is diminishing. In 1995, NPRI facilities averaged total releases and transfers per form and per facility that were 1.7 times higher than those in TRI. For 1997, the average was 1.5. The change was due to NPRI averages decreasing and TRI averages increasing.
- Changes in releases and transfers have led to changes in the rankings of the states and provinces. Texas remained first with the largest total releases and transfers in all three years (1995 through 1997), despite a 22.2-million-kg reduction over the period, primarily in on-site releases. The other three states and provinces (Pennsylvania, Ontario, and Ohio) with the largest total releases and transfers in 1997 all reported increases from 1995 to 1997.

5.1 Introduction

This chapter examines North American total releases and transfers for PRTR-listed substances. Facilities may release—to air, water, land, or underground injection wells—the substances on-site within the boundaries of their facility, or they may send or transfer PRTR-listed substances in waste off-site to other locations for treatment or disposal. The previous two chapters have looked at on-site releases and off-site transfers separately. This chapter looks at total releases and transfers, that is, information as found in the PRTRs on the amount of substances in waste generated at the facilities. Tracking total releases and transfers can help explore how much of the substance is being generated in waste, and thereby highlight opportunities for pollution prevention and the need for waste management activities.

As explained in **Chapter 2**, this chapter analyzes data for industries and chemicals that must be reported in both the US and Canada (the matched data set). Mexican data are not available for the 1997 reporting year. The data on releases and transfers for 1997 are presented first: those for the combined North American data are followed by sections devoted to NPRI and TRI reporting for 1997 in the matched data set. Then there is a section on actual and projected changes in releases and transfers from 1995 to 1997. Each part presents geographic data for states and provinces; then data by chemical for

[continued on page 264]

substances with the largest amounts, for designated carcinogens and for metals; and finally data by industry sector.

5.2 1997 Releases and Transfers

In 1997, a total of 20,555 facilities submitted 62,851 forms that are included in the matched data set for North America. The 1,430 Canadian facilities filed 4,599 NPRI forms and the 19,125 US facilities filed 58,252 TRI forms (**Table 5–1**). As noted in earlier chapters, NPRI reporting supplied seven percent and TRI reporting supplied 93 percent of the facilities and forms in the matched data set.

NPRI facilities reported 10 percent of North American releases and transfers, while TRI facilities reported 90 percent. NPRI reporting included more than 10 percent of North American on-site releases to air, off-site transfers of nonmetals to disposal, and off-site transfers of metals to treatment/sewage/disposal. TRI facilities reported more than 90 percent of all other types of releases and transfers.

5.2.1 North American Releases and Transfers

Overview

Releases and transfers in North America totaled 1.29 billion kg in 1997 for the matched data set. NPRI facilities reported 130.0 million kg, while TRI facilities reported 1.16 billion kg. North American facilities released 847.8 million kg of listed substances on-site—66 percent of the total—and transferred 443.5 million kg off-site (**Table 5–1** and **Figures 5–1** and **5–2**).

Overall, NPRI facilities reported 10 percent of North American total releases and transfers and TRI facilities reported 90 percent. However, NPRI facilities accounted for 15 percent of off-site transfers of metals to treatment/sewage/disposal and 12 percent of on-site releases to air. On the other hand, TRI facilities accounted for 96 percent of on-site releases to surface waters and 95 percent of on-site underground injection and off-site transfers to sewage of nonmetals.

Table 5–1

M 1997

North American Total Releases and Transfers, NPRI and TRI, 1997

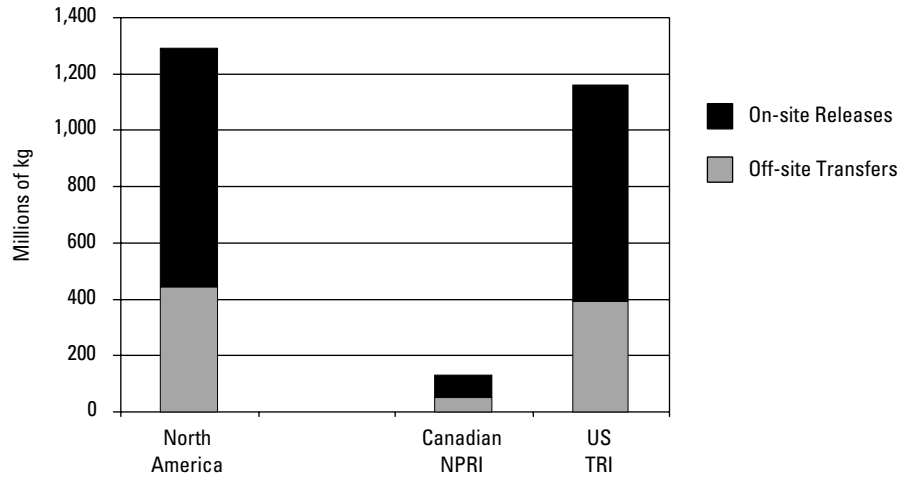
	North America		Canadian NPRI*		US TRI		NPRI as % of North American Total	TRI as % of North American Total
	Number		Number		Number			
Total Facilities	20,555		1,430		19,125		7.0	93.0
Total Forms	62,851		4,599		58,252		7.3	92.7
On-site Releases	**kg**	**%**	**kg**	**%**	**kg**	**%**		
Total Air Emissions	512,213,962	39.7	62,838,622	48.4	449,375,340	38.7	12.3	87.7
Surface Water Discharges	98,842,863	7.7	4,224,169	3.3	94,618,694	8.1	4.3	95.7
Underground Injection	78,847,314	6.1	4,197,660	3.2	74,649,654	6.4	5.3	94.7
On-site Land Releases	157,720,611	12.2	9,062,108	7.0	148,658,503	12.8	5.7	94.3
Total Releases	**847,751,115**	**65.7**	**80,448,924**	**61.9**	**767,302,191**	**66.1**	**9.5**	**90.5**
Off-site Transfers								
Treatment (except metals)	101,983,917	7.9	9,925,693	7.6	92,058,224	7.9	9.7	90.3
Sewage/POTWs (except metals)	106,215,580	8.2	5,260,842	4.0	100,954,738	8.7	5.0	95.0
Disposal (except metals)	23,017,618	1.8	2,533,015	1.9	20,484,603	1.8	11.0	89.0
Treatment/Sewage/Disposal of Metals	212,330,902	16.4	31,788,711	24.5	180,542,191	15.5	15.0	85.0
Total Transfers	**443,548,017**	**34.3**	**49,508,261**	**38.1**	**394,039,756**	**33.9**	**11.2**	**88.8**
Total Releases and Transfers	**1,291,299,132**	**100.0**	**129,957,185**	**100.0**	**1,161,341,947**	**100.0**	**10.1**	**89.9**

* The sum of individual release types for NPRI will not equal total releases because total releases of less than 1 tonne may be reported as total releases only.

➤ Canada and US data only. Mexico data not collected for 1997.

Figure 5–1
M 1997

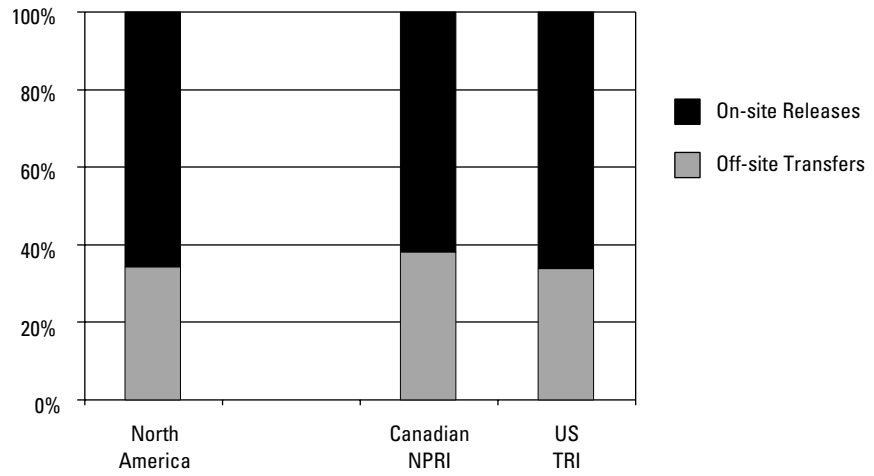
North American Total Releases and Transfers by Type, 1997



➤ Canada and US data only. Mexico data not collected for 1997.

Figure 5–2
M 1997

Distribution of North American Total Releases and Transfers, 1997



➤ Canada and US data only. Mexico data not collected for 1997.

Table 5–2

M 1997

North American Total Releases and Transfers, by Province and State, 1997

Province/State	On-site Releases (kg)	Rank	Off-site Transfers (kg)	Rank	Total Releases and Transfers (kg)	Rank
Texas	83,883,000	1	37,017,533	2	120,900,533	1
Pennsylvania	33,713,706	7	46,128,523	1	79,842,229	2
Ontario	39,955,770	4	35,395,295	3	75,351,065	3
Ohio	36,992,382	5	31,794,582	4	68,786,964	4
Louisiana	63,224,378	2	4,373,587	30	67,597,965	5
Indiana	27,811,195	12	23,853,714	6	51,664,909	6
Illinois	31,144,870	9	19,112,546	7	50,257,416	7
Utah	41,835,001	3	4,582,453	28	46,417,454	8
Michigan	20,000,568	16	26,034,295	5	46,034,863	9
Tennessee	35,877,974	6	8,553,230	17	44,431,204	10
Alabama	30,199,535	10	11,316,489	12	41,516,024	11
Florida	32,013,775	8	8,217,166	18	40,230,941	12
North Carolina	29,035,377	11	4,973,031	27	34,008,408	13
Virginia	19,348,059	18	10,668,654	13	30,016,713	14
Missouri	22,779,721	14	6,806,404	22	29,586,125	15
Georgia	20,373,823	15	8,596,443	16	28,970,266	16
South Carolina	19,349,981	17	8,850,818	15	28,200,799	17
Wisconsin	11,955,575	25	14,882,171	8	26,837,746	18
Mississippi	24,753,247	13	1,232,243	40	25,985,490	19
Quebec	14,649,326	20	9,078,464	14	23,727,790	20
Arkansas	10,227,944	27	12,860,185	10	23,088,129	21
California	8,921,534	29	11,897,413	11	20,818,947	22
New York	11,707,417	26	7,565,135	19	19,272,552	23
Montana	18,699,623	19	553,382	46	19,253,005	24
Kentucky	12,243,252	23	6,808,052	21	19,051,304	25
New Jersey	6,022,954	36	12,863,215	9	18,886,169	26
Oregon	9,677,021	28	7,336,782	20	17,013,803	27
Arizona	13,436,541	21	1,765,417	38	15,201,958	28
New Mexico	13,287,600	22	231,464	52	13,519,064	29
Iowa	7,830,048	32	5,641,192	24	13,471,240	30
Alberta	11,987,370	24	1,166,942	42	13,154,312	31
Washington	8,735,877	30	4,246,444	31	12,982,321	32
West Virginia	7,865,320	31	4,221,960	32	12,087,280	33
Kansas	7,228,250	33	3,879,211	34	11,107,461	34
Minnesota	5,371,218	38	5,314,124	25	10,685,342	35
Oklahoma	6,067,878	35	2,510,321	36	8,578 ,199	36
Connecticut	2,314,384	45	6,184,467	23	8,498,851	37
Maryland	4,446,359	39	3,923,483	33	8,369,842	38
Massachusetts	2,079,208	47	5,029,094	26	7,108,302	39
Idaho	6,229,364	34	340,740	51	6,570,104	40
Nebraska	2,140,998	46	4,410,219	29	6,551,217	41
Puerto Rico	2,894,302	43	3,615,562	35	6,509,864	42
British Columbia	5,459,128	37	890,409	44	6,349,537	43
New Brunswick	2,357,036	44	2,098,146	37	4,455,182	44
Maine	2,947,091	42	849,997	45	3,797,088	45
Manitoba	3,397,552	41	357,194	50	3,754,746	46
Wyoming	3,565,677	40	28,174	57	3,593,851	47
South Dakota	1,343,396	49	1,189,050	41	2,532,446	48
Delaware	1,011,075	52	1,502,816	39	2,513,891	49
Colorado	1,331,351	50	970,229	43	2,301,580	50
Nevada	1,821,377	48	13,540	59	1,834,917	51
Nova Scotia	1,063,517	51	472,606	48	1,536,123	52
New Hampshire	970,539	53	417,204	49	1,387,743	53
Rhode Island	705,748	55	500,366	47	1,206,114	54
Saskatchewan	946,849	54	14,511	58	961,360	55
Virgin Islands	537,535	57	159,608	53	697,143	56
North Dakota	509,847	58	85,306	55	595,153	57
Alaska	540,492	56	1,133	61	541,625	58
Newfoundland	412,606	59	0	—	412,606	59
Vermont	174,940	61	127,329	54	302,269	60
Prince Edward Island	219,770	60	34,694	56	254,464	61
Hawaii	123,864	62	3,258	60	127,122	62
District of Columbia	0	—	2	62	2	63
Total	**847,751,115**		**443,548,017**		**1,291,299,132**	

➤ Canada and US data only. Mexico data not collected for 1997.

Releases and Transfers by State and Province

For total releases and transfers, the largest sources by state and province were Texas, Pennsylvania, Ontario and Ohio (**Table 5–2**). More than one-quarter of all North American releases and transfers in the matched data set originated in these top four states and province. Overall, total releases and transfers were concentrated in eastern and southwestern North America (**Map 5–1**).

Texas facilities released and transferred a total of 120.9 million kg. The majority was releases, which amounted to 83.9 million kg. Off-site transfers by Texas facilities totaled 37.0 million kg. Texas ranked first for releases and second for transfers among all states and provinces.

In contrast to most states and all provinces, Pennsylvania facilities transferred a larger amount than they released, 46.1 million kg versus 33.7 million, for a total of 79.8 million kg. Pennsylvania ranked first for off-site transfers but seventh for on-site releases.

Ontario facilities released 40.0 million kg on-site and transferred 35.4 million kg off-site. The total of 75.4 million kg placed Ontario third among states and provinces. The amount of off-site transfers led Ontario to rank third for transfers, higher than its fourth-place ranking for on-site releases.

Ohio facilities, ranking fourth overall, released 37.0 million kg and transferred 31.8 million kg, for a total of 68.8 million kg. Ohio's transfers also gave the state a higher ranking for off-site transfers—fourth among all states and provinces—than its ranking for on-site releases (fifth).

Map 5–1
M 1997

North American Total Releases and Transfers, 1997: States and Provinces

➤ Canada and US data only. Mexico data not collected for 1997.

Notably, although Louisiana ranked second for releases, it ranked thirtieth for transfers. A total of 67.6 million placed Louisiana fifth for total releases and transfers.

As noted in **Chapter 4**, the four top states and province also reported the largest transfers in 1997, although there they ranked in different order (Pennsylvania, Texas, Ontario, and Ohio). Two of them also ranked among the top four for releases, as seen in **Chapter 3**: Texas (first for releases) and Ontario (fourth).

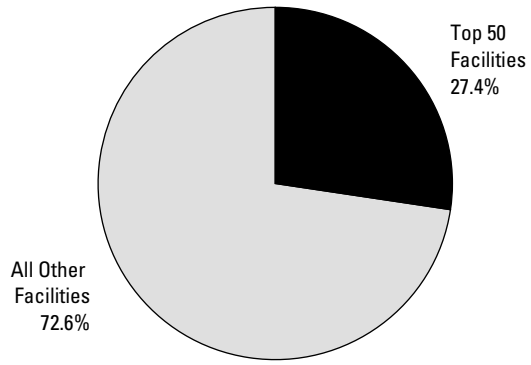
Top Facilities

The 50 North American facilities with the largest totals in the matched data set for 1997 reported 27 percent of all North American releases and transfers, although they represented only 0.24 percent of all facilities in the matched data set. These facilities released 242.9 million kg and transferred 110.6 million kg, for a total of 353.5 million kg (**Figure 5–3** and **Table 5–3**). Releases were a larger percentage (69 percent) of their total than was the case for other facilities (65 percent—see **Figure 5–4**).

The 50 facilities were responsible for nearly two-thirds of the underground injection (51.5 million kg) and on-site land releases (98.0 million kg) in the matched data set, and they reported a little more than one-third of the surface water discharges (36.0 million kg). They reported less than one-third of all transfer types, although transfers exceeded releases for 19 of them.

Twenty-three of the 50 facilities belonged to the primary metals industry (US SIC code 33). This subgroup reported 202.7 million kg of releases and transfers, 16 percent of the total releases and transfers in the matched data set reported by all North American facilities. Twenty-one of the 50 facilities belonged to the chemical manufacturing industry (US SIC code 28) and they reported 127.6 million kg of releases and transfers, 10 percent of the North American total.

Figure 5–3 **M** 1997
North American Total Releases and Transfers, Top 50 Facilities and All Others, 1997



Total Releases and Transfers: 1,291,299,132 kg
Total Facilities: 20,555

➤ Canada and US data only. Mexico data not collected for 1997.

Table 5–3

M 1997

The 50 North American Facilities with the Largest Total Releases and Transfers, 1997

Rank	Facility	City, Province/State	SIC Codes Canada	SIC Codes US	Number of Forms	Total Air Emissions (kg)	Surface Water Discharges (kg)	Under-ground Injection (kg)	On-site Land Releases (kg)	Total Releases (kg)
1	Magnesium Corp. of America, Renco Group Inc.	Rowley, UT		33	6	28,270,233	0	0	0	28,270,233
2	ASARCO Inc.	East Helena, MT		33	10	47,346	2,280	0	17,100,454	17,150,080
3	Zinc Corp. of America, Horsehead Ind. Inc.	Monaca, PA		33	9	224,918	195	0	0	225,113
4	PCS Nitrogen Fertilizer L.P., Potash Corp. of Saskatchewan	Geismar, LA		28	12	48,716	13,487,112	0	291,886	13,827,714
5	Phelps Dodge Hidalgo Inc., Phelps Dodge Corp.	Playas, NM		33	13	288,368	3,644	0	12,053,733	12,345,745
6	Armco Inc. (Route 8 S.)	Butler, PA		33	14	98,510	11,793,413	0	0	11,891,923
7	Kennecott Utah Copper, Kennecott Holdings Corp.	Magna, UT		33	14	109,489	4,441	0	10,908,661	11,022,591
8	USS Clairton Works, USX Corp.	Clairton, PA		33	19	110,326	51,803	0	0	162,129
9	Solutia Inc.	Gonzalez, FL		28	18	103,557	826	9,712,998	0	9,817,381
10	DuPont	Victoria, TX		28	29	176,213	791	8,861,812	5,445	9,044,261
11	Dofasco Inc.	Hamilton, ON	29	33	18	424,762	6,176	0	125	431,063
12	Cyprus Miami Mining Corp., Cyprus Climax Metals Co.	Claypool, AZ		33	13	92,972	0	0	8,503,492	8,596,464
13	American Chrome & Chemicals, Harrisons & Crosfield American	Corpus Christi, TX		28	2	2,131	703	0	6,575,964	6,578,798
14	Air Prods. Inc., Air Prods. & Chemicals Inc.	Pasadena, TX		28	12	29,252	0	0	0	29,252
15	Lenzing Fibers Corp.	Lowland, TN		28	5	7,619,166	2,879	0	142,766	7,764,811
16	Cytec Ind. Inc., Fortier Plant	Westwego, LA		28	24	71,934	3,167	7,594,695	0	7,669,796
17	Nucor-Yamato Steel Co., Nucor Corp.	Blytheville, AR		33	8	7,224	0	0	0	7,224
18	U.S. Steel, USS Gary Works, USX Corp.	Gary, IN		33	33	777,508	13,242	0	6,463,719	7,254,469
19	Co-Steel Lasco	Whitby, ON	29	33	6	14,253	362	0	1,245,254	1,259,869
20	Courtaulds Fibers Inc., Courtaulds Finance U.S. Inc.	Axis, AL		28	4	6,848,254	9,265	0	175,510	7,033,029
21	Northwestern Steel & Wire Co.	Sterling, IL		33	6	60,613	7,982	0	6,716,100	6,784,695
22	BASF Corp.	Freeport, TX		28	26	143,873	6,353,578	5,407	0	6,502,858
23	Steel Dynamics Inc.	Butler, IN		33	7	6,642	0	0	0	6,642
24	Rouge Steel Co., Rouge Ind. Inc.	Dearborn, MI		33	7	33,356	2,111	0	0	35,467
25	Hoechst-Celanese Chemical, Clear Lake Plant, Hoechst Corp.	Pasadena, TX		28	20	386,059	0	1,517,577	0	1,903,636
26	GM Powertrain Defiance, General Motors Corp.	Defiance, OH		33	20	333,612	18,744	0	5,620,881	5,973,237
27	Nucor Steel, Nucor Corp.	Crawfordsville, IN		33	9	30,560	42	0	660	31,262
28	Elkem Metals Co.	Marietta, OH		33	6	174,841	205,442	0	4,752,382	5,132,665
29	ASARCO Inc., Glover Plant	Annapolis, MO		33	7	28,690	10	0	4,892,495	4,921,195
30	Inco Limited, Copper Cliff Smelter Complex	Copper Cliff, ON	29	33	7	4,259,786	0	0	649,000	4,908,786
31	CPI Kraft Div., Consolidated Papers Inc.	Wisconsin Rapids, WI		26	14	1,154,037	340	0	96,599	1,250,976
32	BP Chemicals Inc., BP America Inc.	Lima, OH		28	27	142,400	0	4,146,788	0	4,289,188
33	BP Chemicals Inc., Green Lake, BP America Inc.	Port Lavaca, TX		28	17	54,412	306	4,198,418	3,985	4,257,121
34	Occidental Chemical Corp., Occidental Petroleum Corp.	Castle Hayne, NC		28	1	2,843	14	0	4,126,984	4,129,841
35	DuPont	Pass Christian, MS		28	11	282,458	0	3,809,524	0	4,091,982
36	Regal Ware Inc.	Kewaskum, WI		34	6	0	0	0	0	0
37	PCS Phosphate Co. Inc., Potash Corp. of Saskatchewan	Aurora, NC		28	6	163,429	0	0	3,805,895	3,969,324
38	Doe Run Co., Renco Group Inc.	Herculaneum, MO		33	9	119,063	183	0	3,839,901	3,959,147
39	Dominion Colour Corp., Kikuchi Color & Chemicals Corp.	Ajax, ON	37	28	6	0	0	0	0	29
40	Celanese Canada Inc.	Edmonton, AB	37	28	11	294,315	0	3,542,000	593	3,836,908
41	Nucor Steel	Plymouth, UT		33	7	4,421	0	0	2,334	6,755
42	Stone Container Corp.	Panama City, FL		26	10	793,382	0	0	19,618	813,000
43	Rubicon Inc.	Geismar, LA		28	24	144,879	79	3,274,650	0	3,419,608
44	Pharmacia & Upjohn Co.	Portage, MI		28	25	88,132	38,292	1,282,573	0	1,408,997
45	Vicksburg Chemical Co.	Vicksburg, MS		28	3	34,454	3,668,877	0	0	3,703,331
46	National Steel Corp., Great Lakes Dlv.	Ecorse, MI		33	18	85,003	16,367	0	0	101,370
47	DuPont	New Johnsonville, TN		28	11	33,946	32,986	3,516,553	57	3,583,542
48	Boise Cascade Corp.	Saint Helens, OR		26	9	240,408	0	0	0	240,408
49	Simpson Pasadena Paper Co., Simpson Investment Co.	Pasadena, TX		26	8	211,227	0	0	0	211,227
50	Eastman Kodak Co., Kodak Park	Rochester, NY		38	46	2,750,339	288,950	0	18,603	3,057,892
	Subtotal				**653**	**57,422,312**	**36,014,602**	**51,462,995**	**98,013,096**	**242,913,034**
	% of Total				**1.0**	**11.2**	**36.4**	**65.3**	**62.1**	**28.7**
	Total				**62,851**	**512,213,962**	**98,842,863**	**78,847,314**	**157,720,611**	**847,751,115**

➤ Canada and US data only. Mexico data not collected for 1997.

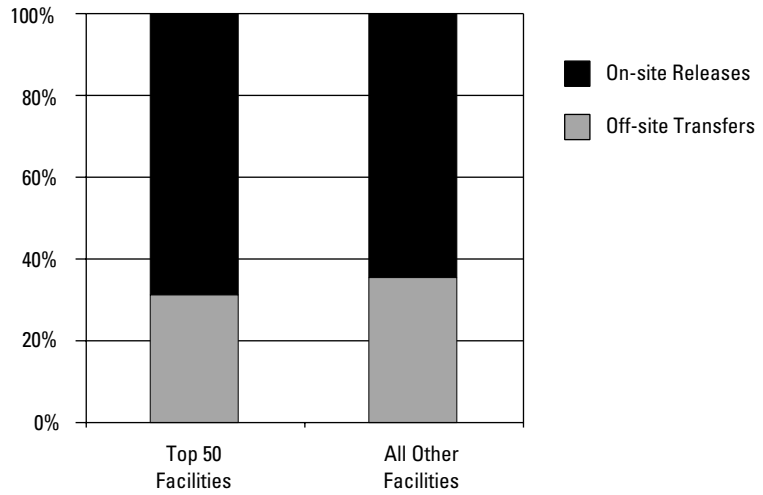
Rank	Treatment (except metals) (kg)	Sewage/POTWs (except metals) (kg)	Disposal (except metals) (kg)	Treatment/ Sewage/Disposal of Metals (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Major Chemicals Reported (Primary Media/Transfers)*
1	0	0	0	0	0	28,270,233	Chlorine (air)
2	0	0	0	547,191	547,191	17,697,271	Zinc and compounds (land)
3	0	0	0	13,855,648	13,855,648	14,080,761	Zinc and compounds (transfers of metals)
4	0	0	0	0	0	13,827,714	Phosphoric acid (water)
5	0	0	0	113	113	12,345,858	Zinc/Copper and compounds (land)
6	22,976	0	544	131,125	154,645	12,046,568	Nitric acid and nitrate compounds (water)
7	0	0	0	192,057	192,057	11,214,648	Copper/Zinc/Lead and compounds (land)
8	9,944,975	0	58	0	9,945,033	10,107,162	Ethylene (transfers to treatment)
9	0	0	10	1,584	1,594	9,818,975	Nitric acid and nitrate compounds (UIJ)
10	345,419	0	0	196	345,615	9,389,876	Nitric acid and nitrate compounds (UIJ)
11	865	123	50	8,168,440	8,169,478	8,600,541	Zinc/Manganese and compounds (transfers of metals)
12	0	0	0	0	0	8,596,464	Copper and compounds (land)
13	0	0	0	1,434,288	1,434,288	8,013,086	Chromium and compounds (land)
14	183,178	7,767,699	11	13,156	7,964,044	7,993,296	Nitric acid and nitrate compounds (transfers to sewage)
15	0	0	0	0	0	7,764,811	Carbon disulfide (air)
16	2,944	0	109	18,662	21,715	7,691,511	Acetonitrile, Acrylic acid, Acrylamide (UIJ)
17	0	0	0	7,543,045	7,543,045	7,550,269	Zinc and compounds (transfers of metals)
18	0	0	118	294,304	294,422	7,548,891	Zinc and compounds (land)
19	0	0	0	5,799,885	5,799,885	7,059,754	Zinc and compounds (transfers of metals)
20	0	0	0	0	0	7,033,029	Carbon disulfide (air)
21	0	0	0	30,658	30,658	6,815,353	Zinc/Manganese and compounds (land)
22	116,507	0	8,555	6,738	131,800	6,634,658	Nitric acid and nitrate compounds (water)
23	0	0	0	6,529,560	6,529,560	6,536,202	Zinc and compounds (transfers of metals)
24	0	0	0	6,086,892	6,086,892	6,122,359	Zinc and compounds (transfers of metals)
25	115,728	3,997,034	195	0	4,112,957	6,016,593	Ethylene glycol (transfers to sewage)
26	3,560	1,734	230	505	6,029	5,979,266	Zinc and compounds (land)
27	14,957	0	0	5,609,771	5,624,728	5,655,990	Zinc and compounds (transfers of metals)
28	0	0	0	56,236	56,236	5,188,901	Manganese and compounds (land)
29	0	0	0	0	0	4,921,195	Zinc/Lead and compounds (land)
30	0	0	0	0	0	4,908,786	Sulfuric acid (air)
31	3,202,562	0	0	35,533	3,238,095	4,489,071	Methanol (transfers to treatment)
32	7,342	0	404	345	8,091	4,297,279	Acetonitrile, Acrylamide, Cyanide compounds (UIJ)
33	1,058	0	3,617	207	4,882	4,262,003	Acetonitrile, Acrylamide, Acrylonitrile (UIJ)
34	0	0	0	6,349	6,349	4,136,190	Chromium and compounds (land)
35	8,163	0	0	0	8,163	4,100,145	Manganese and compounds (UIJ)
36	0	0	4,078,005	0	4,078,005	4,078,005	Aluminum oxide (transfers to disposal)
37	0	0	0	0	0	3,969,324	Phosphoric acid (land)
38	0	0	0	451	451	3,959,598	Zinc and compounds (land)
39	0	3,732,000	0	224,300	3,956,300	3,956,329	Nitric acid and nitrate compounds (transfers to sewage)
40	0	0	64,384	41,000	105,384	3,942,292	Methanol, Methyl ethyl ketone (UIJ)
41	0	0	0	3,922,477	3,922,477	3,929,232	Zinc and compounds (transfers of metals)
42	0	3,082,333	0	25,122	3,107,455	3,920,455	Methanol (transfers to sewage)
43	287,265	0	38,984	4	326,253	3,745,861	Nitric acid and nitrate compounds, Methanol, Nitrobenzene (UIJ)
44	1,656,263	655,802	6,191	7,301	2,325,557	3,734,554	Dichloromethane (transfers to treatment), Methanol (UIJ)
45	0	0	0	0	0	3,703,331	Nitric acid and nitrate compounds (water)
46	0	10,970	0	3,497,819	3,508,789	3,610,159	Zinc and compounds (transfers of metals)
47	0	0	0	0	0	3,583,542	Manganese and compounds (UIJ)
48	0	3,327,347	1,280	3,628	3,332,255	3,572,663	Methanol (transfers to sewage)
49	0	3,361,224	0	0	3,361,224	3,572,451	Methanol (transfers to sewage)
50	400,499	569	4,024	24,750	429,842	3,487,734	Dichloromethane, Hydrochloric acid, Methanol (air)
	16,314,261	**25,936,835**	**4,206,769**	**64,109,340**	**110,567,205**	**353,480,239**	
	16.0	**24.4**	**18.3**	**30.2**	**24.9**	**27.4**	
	101,983,917	**106,215,580**	**23,017,618**	**212,330,902**	**443,548,017**	**1,291,299,132**	

* Chemicals accounting for more than 70% of total releases and transfers from the facility.

➤ UIJ = underground injection

Figure 5–4
M 1997

Distribution of North American Releases, Top 50 Facilities and All Others, 1997



➤ Canada and US data only. Mexico data not collected for 1997.

Releases and Transfers by Chemical

Top Chemicals

North American facilities released and transferred 1.14 billion kg of the top 25 chemicals. This amounted to 88 percent of the total for matched chemicals. The chemical with the largest total releases and transfers was methanol, followed by zinc and its compounds. As noted in **Chapters 3** and **4**, methanol ranked first for on-site releases and zinc and its compounds ranked first for off-site transfers (**Table 5–4**).

Releases were 66 percent of totals reported for the top 25 chemicals, the same as for all matched chemicals in 1997 (**Figure 5–5**).

Table 5–4

M 1997

The 25 Chemicals with the Largest Total Releases and Transfers in North America, 1997

CAS Number	Chemical	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	NPRI/TRI as % of Total: Number of Forms (%)	Total Releases (%)	Total Transfers (%)	Total Releases and Transfers (%)
67-56-1	Methanol	2,477	118,386,601	63,124,935	181,511,536	10.5 / 89.5	16.1 / 83.9	4.6 / 95.4	12.1 / 87.9
—	Zinc (and its compounds)	3,366	65,061,318	114,991,258	180,052,576	9.6 / 90.4	8.9 / 91.1	17.3 / 82.7	14.3 / 85.7
—	Nitric acid and nitrate compounds	2,805	100,405,925	50,406,814	150,812,739	4.9 / 95.1	3.1 / 96.9	10.0 / 90.0	5.4 / 94.6
—	Manganese (and its compounds)	3,084	38,696,839	33,549,526	72,246,365	8.3 / 91.7	4.9 / 95.1	14.5 / 85.5	9.4 / 90.6
108-88-3	Toluene	3,261	57,797,513	12,072,499	69,870,012	7.4 / 92.6	10.6 / 89.4	18.7 / 81.3	12.0 / 88.0
1330-20-7	Xylene (mixed isomers)	3,099	40,022,182	6,905,384	46,927,566	7.5 / 92.5	16.0 / 84.0	24.8 / 75.2	17.3 / 82.7
7664-38-2	Phosphoric acid	2,929	34,298,617	5,332,330	39,630,947	7.1 / 92.9	0.1 / 99.9	9.3 / 90.7	1.3 / 98.7
—	Copper (and its compounds)	4,438	21,840,400	14,647,763	36,488,163	5.9 / 94.1	3.0 / 97.0	7.6 / 92.4	4.9 / 95.1
78-93-3	Methyl ethyl ketone	2,071	29,222,187	4,064,668	33,286,855	6.3 / 93.7	17.6 / 82.4	19.6 / 80.4	17.8 / 82.2
7782-50-5	Chlorine	1,334	30,288,037	629,668	30,917,705	9.0 / 91.0	3.0 / 97.0	0.0 / 100.0	3.0 / 97.0
—	Lead (and its compounds)	1,735	10,069,524	20,515,816	30,585,340	7.4 / 92.6	12.4 / 87.6	14.2 / 85.8	13.6 / 86.4
75-09-2	Dichloromethane	838	23,809,687	6,345,450	30,155,137	6.6 / 93.4	9.7 / 90.3	4.1 / 95.9	8.5 / 91.5
—	Chromium (and its compounds)	3,524	15,262,424	13,717,318	28,979,742	6.7 / 93.3	5.1 / 94.9	14.5 / 85.5	9.5 / 90.5
7647-01-0	Hydrochloric acid	918	27,562,613	0	27,562,613	8.5 / 91.5	5.1 / 94.9	— / —	5.1 / 94.9
74-85-1	Ethylene	344	15,684,983	9,886,644	25,571,627	12.2 / 87.8	12.7 / 87.3	0.0 / 100.0	7.8 / 92.2
100-42-5	Styrene	1,571	21,127,342	3,405,374	24,532,716	5.1 / 94.9	3.9 / 96.1	9.4 / 90.6	4.6 / 95.4
75-15-0	Carbon disulfide	96	23,387,547	139,372	23,526,919	4.2 / 95.8	0.1 / 99.9	0.2 / 99.8	0.1 / 99.9
107-21-1	Ethylene glycol	1,383	4,868,785	15,940,401	20,809,186	10.6 / 89.4	7.3 / 92.7	3.5 / 96.5	4.4 / 95.6
71-36-3	n-Butyl alcohol	1,066	12,347,082	2,374,439	14,721,521	7.3 / 92.7	9.7 / 90.3	16.5 / 83.5	10.8 / 89.2
7664-93-9	Sulfuric acid	612	13,941,694	0	13,941,694	12.7 / 87.3	32.0 / 68.0	— / —	32.0 / 68.0
50-00-0	Formaldehyde	900	11,712,702	1,809,720	13,522,422	10.1 / 89.9	15.6 / 84.4	16.7 / 83.3	15.8 / 84.2
75-05-8	Acetonitrile	101	8,987,554	4,241,538	13,229,092	1.0 / 99.0	0.1 / 99.9	3.1 / 96.9	1.1 / 98.9
79-01-6	Trichloroethylene	649	8,619,908	701,717	9,321,625	4.9 / 95.1	8.1 / 91.9	5.3 / 94.7	7.9 / 92.1
108-10-1	Methyl isobutyl ketone	892	7,990,948	866,510	8,857,458	6.3 / 93.7	9.1 / 90.9	12.5 / 87.5	9.5 / 90.5
108-95-2	Phenol	816	4,997,322	3,725,403	8,722,725	7.5 / 92.5	5.8 / 94.2	7.8 / 92.2	6.6 / 93.4
	Subtotal	**44,309**	**746,389,734**	**389,394,547**	**1,135,784,281**	**7.5 / 92.5**	**9.0 / 91.0**	**11.9 / 88.1**	**10.0 / 90.0**
	% of Total	**70.5**	**88.0**	**87.8**	**88.0**				
	Total	**62,851**	**847,751,115**	**443,548,017**	**1,291,299,132**	**7.3 / 92.7**	**9.5 / 90.5**	**11.2 / 88.8**	**10.1 / 89.9**

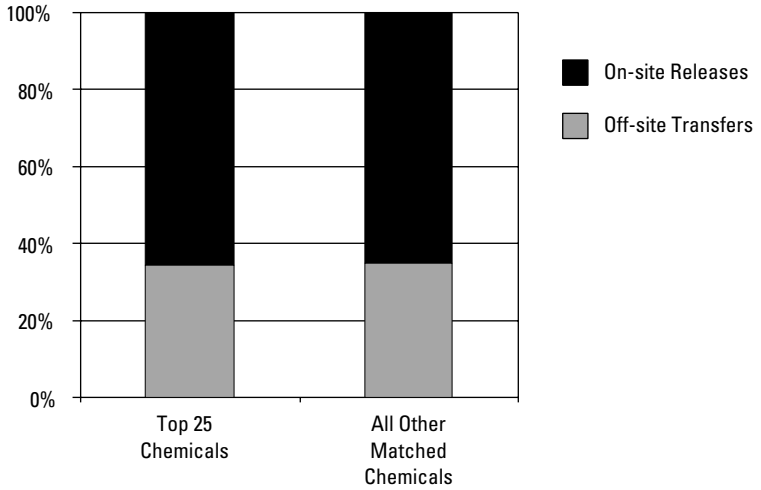
➤ Canada and US data only. Mexico data not collected for 1997.

Methanol was released and transferred in the largest amount, with a total of 181.5 million kg, including 118.4 million kg of releases. The total for zinc and its compounds, ranking second, was 180.1 million kg. The majority of the zinc total consisted of 115.0 million kg of transfers. Nitric acid and nitrate compounds ranked third, with releases and transfers of 150.8 million kg, two-thirds of which was released.

NPRI facilities reported nine percent of the releases and 12 percent of the transfers of the top 25 chemicals. This amounted to 10 percent of total releases and transfers. Correspondingly, TRI facilities reported 91 percent of releases of the top chemicals, 88 percent of the transfers, and 90 percent overall. These percentages compare to NPRI's seven percent and TRI's 93 percent of all forms in the matched data set.

Figure 5–5
M 1997

North American Releases and Transfers, Top 25 Chemicals and All Others, 1997



➤ Canada and US data only. Mexico data not collected for 1997.

The proportions of NPRI and TRI reporting varied considerably for individual chemicals. NPRI facilities reported 12 percent of the methanol releases and transfers and 14 percent for zinc and its compounds (compared to 10 percent overall). On the other hand, TRI facilities reported 95 percent of the total for nitric acid and nitrate compounds (compared to 90 percent overall).

(**Appendix C** presents information on potential health effects of substances with the largest releases and transfers, as reported to the North American PRTRs, from the US Agency for Toxic Substances and Disease Registry, US EPA's Office of Pollution Prevention and Toxics and the New Jersey Department of Health and Senior Services. **Appendix C** also describes uses of these substances.)

Carcinogens

North American releases and transfers of the designated carcinogens totaled 195.0 million kg. These substances are designated as known or suspected carcinogens by the International Agency for Research on Cancer (IARC) <http://www.iarc.fr/> or by the US National Toxicological Program (NTP) <http://ntp-server.niehs.nih.gov/>. Releases of these substances totaled 128.0 million kg, while transfers totaled 67.0 million kg. Fifteen percent of releases, transfers and total releases and transfers of all matched substances were carcinogens (**Table 5–5**).

Releases constituted two-thirds of the total amounts reported for carcinogens in 1997, the same as for all matched chemicals (**Figure 5–6**).

The carcinogens with the largest total releases and transfers were lead and its compounds (30.6 million kg), dichloromethane (30.2 million kg), chromium and its compounds (29.0 million kg) and styrene (24.5 million kg). Releases and transfers of these four substances alone amounted to nine percent of all releases and transfers in the matched data set for 1997.

The 50 North American facilities with the largest total releases and transfers of known carcinogens reported 30 percent (58.9 million kg) of total releases and transfers of these substances (**Figure 5–7** and **Table 5–6**). These facilities reported one-third of the releases and one-quarter of the transfers of carcinogens. This included 86 percent of carcinogen releases to underground injection and 79 percent of on-site land releases. The 50 facilities also reported 30 percent of the transfers of carcinogenic metals to treatment/sewage/disposal and 21 percent of the transfers of nonmetal carcinogens to treatment.

Table 5–5
M 1997

Total Releases and Transfers in North America of Known or Suspected Carcinogens†, 1997

CAS Number	Chemical	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)
—	Lead (and its compounds)	1,735	10,069,524	20,515,816	30,585,340
75-09-2	Dichloromethane	838	23,809,687	6,345,450	30,155,137
—	Chromium (and its compounds)	3,524	15,262,424	13,717,318	28,979,742
100-42-5	Styrene	1,571	21,127,342	3,405,374	24,532,716
50-00-0	Formaldehyde	900	11,712,702	1,809,720	13,522,422
79-01-6	Trichloroethylene	649	8,619,908	701,717	9,321,625
—	Nickel (and its compounds)	3,097	2,915,533	5,715,443	8,630,976
75-07-0	Acetaldehyde	266	6,331,624	550,472	6,882,096
71-43-2	Benzene	497	5,628,282	1,072,935	6,701,217
67-66-3	Chloroform	157	3,567,931	845,818	4,413,749
—	Arsenic (and its compounds)	438	2,891,228	1,402,372	4,293,600
127-18-4	Tetrachloroethylene	386	3,106,968	512,823	3,619,791
79-06-1	Acrylamide	82	3,357,989	114,428	3,472,417
1332-21-4	Asbestos (friable)	99	289,649	3,066,684	3,356,333
107-13-1	Acrylonitrile	117	2,391,280	531,447	2,922,727
108-05-4	Vinyl acetate	196	1,846,566	553,319	2,399,885
106-99-0	1,3-Butadiene	197	1,336,918	157,572	1,494,490
107-06-2	1,2-Dichloroethane	84	438,272	869,344	1,307,616
—	Cadmium (and its compounds)	162	457,198	807,736	1,264,934
—	Cobalt (and its compounds)	542	377,928	596,590	974,518
98-95-3	Nitrobenzene	14	318,675	589,636	908,311
106-89-8	Epichlorohydrin	78	151,049	619,602	770,651
117-81-7	Di(2-ethylhexyl) phthalate	329	159,113	605,678	764,791
56-23-5	Carbon tetrachloride	69	177,616	535,635	713,251
75-56-9	Propylene oxide	120	275,662	299,264	574,926
75-01-4	Vinyl chloride	51	461,285	83,378	544,663
75-21-8	Ethylene oxide	156	426,859	60,069	486,928
26471-62-5	Toluenediisocyanate (mixed isomers)	198	24,551	429,873	454,424
123-91-1	1,4-Dioxane	47	159,168	266,885	426,053
106-46-7	1,4-Dichlorobenzene	27	129,621	89,822	219,443
140-88-5	Ethyl acrylate	99	83,370	74,201	157,571
101-77-9	4,4'-Methylenedianiline	27	11,050	39,954	51,004
302-01-2	Hydrazine	43	5,181	20,622	25,803
139-13-9	Nitrilotriacetic acid	25	7,346	8,408	15,754
79-46-9	2-Nitropropane	3	12,026	11	12,037
62-56-6	Thiourea	30	3,004	7,083	10,087
584-84-9	Toluene-2,4-diisocyanate	62	2,964	7,013	9,977
96-45-7	Ethylene thiourea	13	130	4,457	4,587
64-67-5	Diethyl sulfate	36	3,365	942	4,307
101-14-4	4,4'-Methylenebis(2-chloroaniline)	25	1,034	3,061	4,095
77-78-1	Dimethyl sulfate	38	2,052	1,056	3,108
91-08-7	Toluene-2,6-diisocyanate	28	1,271	1,429	2,700
121-14-2	2,4-Dinitrotoluene	5	1,674	85	1,759
95-80-7	2,4-Diaminotoluene	3	888	125	1,013
94-59-7	Safrole	2	229	113	342
96-09-3	Styrene oxide	4	302	0	302
606-20-2	2,6-Dinitrotoluene	1	210	50	260
90-94-8	Michler's ketone	1	182	0	182
	Subtotal	**17,071**	**127,958,830**	**67,040,830**	**194,999,660**
	% of Total	**27.2**	**15.1**	**15.1**	**15.1**
	Total for All Matched Chemicals	**62,851**	**847,751,115**	**443,548,017**	**1,291,299,132**

† Carcinogenic substances are those chemicals or chemical compounds listed in either the International Agency for Research on Cancer (IARC) Monographs or the US National Toxicological Program (NTP) Annual Report on Carcinogens.

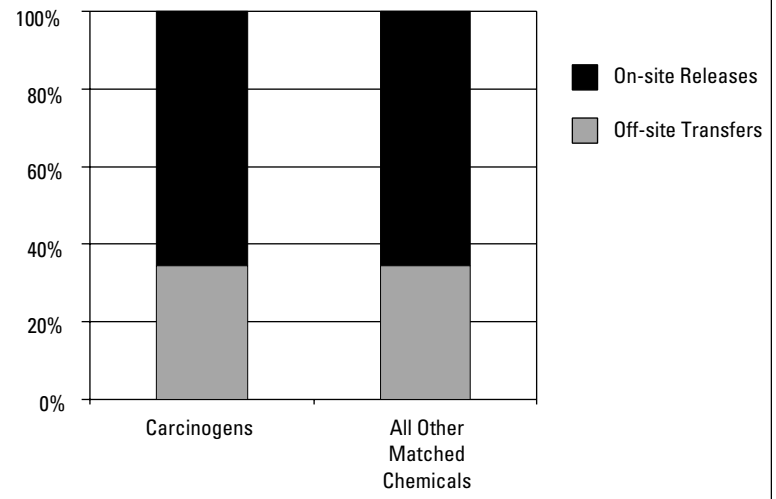
➤ A chemical (and its compounds) is included if the chemical or any of its compounds is designated carcinogenic.

➤ Canada and US data only. Mexico data not collected for 1997.

NPRI/TRI as % of Total			
Number of Forms (%)	Total Releases (%)	Total Transfers (%)	Total Releases and Transfers (%)
7.4 / 92.6	12.4 / 87.6	14.2 / 85.8	13.6 / 86.4
6.6 / 93.4	9.7 / 90.3	4.1 / 95.9	8.5 / 91.5
6.7 / 93.3	5.1 / 94.9	14.5 / 85.5	9.5 / 90.5
5.1 / 94.9	3.9 / 96.1	9.4 / 90.6	4.6 / 95.4
10.1 / 89.9	15.6 / 84.4	16.7 / 83.3	15.8 / 84.2
4.9 / 95.1	8.1 / 91.9	5.3 / 94.7	7.9 / 92.1
4.8 / 95.2	12.5 / 87.5	9.0 / 91.0	10.2 / 89.8
6.8 / 93.2	4.2 / 95.8	1.3 / 98.7	4.0 / 96.0
9.7 / 90.3	26.3 / 73.7	2.5 / 97.5	22.5 / 77.5
8.9 / 91.1	6.2 / 93.8	0.7 / 99.3	5.2 / 94.8
11.0 / 89.0	5.2 / 94.8	4.8 / 95.2	5.0 / 95.0
7.0 / 93.0	1.7 / 98.3	4.8 / 95.2	2.1 / 97.9
6.1 / 93.9	0.0 / 100.0	2.3 / 97.7	0.1 / 99.9
36.4 / 63.6	18.3 / 81.7	36.0 / 64.0	34.4 / 65.6
6.8 / 93.2	0.3 / 99.7	0.0 / 100.0	0.2 / 99.8
5.1 / 94.9	15.3 / 84.7	0.7 / 99.3	12.0 / 88.0
6.6 / 93.4	7.9 / 92.1	8.0 / 92.0	7.9 / 92.1
7.1 / 92.9	4.5 / 95.5	0.1 / 99.9	1.5 / 98.5
9.3 / 90.7	9.0 / 91.0	15.3 / 84.7	13.0 / 87.0
4.6 / 95.4	5.5 / 94.5	1.7 / 98.3	3.2 / 96.8
0.0 / 100.0	0.0 / 100.0	0.0 / 100.0	0.0 / 100.0
1.3 / 98.7	0.0 / 100.0	0.0 / 100.0	0.0 / 100.0
10.0 / 90.0	12.5 / 87.5	7.5 / 92.5	8.5 / 91.5
5.8 / 94.2	0.2 / 99.8	2.3 / 97.7	1.8 / 98.2
2.5 / 97.5	4.7 / 95.3	0.0 / 100.0	2.3 / 97.7
15.7 / 84.3	9.5 / 90.5	0.0 / 100.0	8.1 / 91.9
5.8 / 94.2	3.8 / 96.2	0.0 / 100.0	3.3 / 96.7
12.1 / 87.9	3.2 / 96.8	1.9 / 98.1	2.0 / 98.0
6.4 / 93.6	2.5 / 97.5	0.0 / 100.0	0.9 / 99.1
14.8 / 85.2	6.2 / 93.8	0.4 / 99.6	3.9 / 96.1
6.1 / 93.9	0.2 / 99.8	0.1 / 99.9	0.2 / 99.8
3.7 / 96.3	0.0 / 100.0	0.0 / 100.0	0.0 / 100.0
2.3 / 97.7	0.0 / 100.0	0.0 / 100.0	0.0 / 100.0
64.0 / 36.0	39.0 / 61.0	34.5 / 65.5	36.6 / 63.4
0.0 / 100.0	0.0 / 100.0	0.0 / 100.0	0.0 / 100.0
3.3 / 96.7	0.0 / 100.0	0.0 / 100.0	0.0 / 100.0
1.6 / 98.4	0.3 / 99.7	0.0 / 100.0	0.1 / 99.9
0.0 / 100.0	0.0 / 100.0	0.0 / 100.0	0.0 / 100.0
0.0 / 100.0	0.0 / 100.0	0.0 / 100.0	0.0 / 100.0
4.0 / 96.0	0.6 / 99.4	0.0 / 100.0	0.1 / 99.9
2.6 / 97.4	0.5 / 99.5	0.0 / 100.0	0.3 / 99.7
0.0 / 100.0	0.0 / 100.0	0.0 / 100.0	0.0 / 100.0
20.0 / 80.0	48.7 / 51.3	0.0 / 100.0	46.4 / 53.6
0.0 / 100.0	0.0 / 100.0	0.0 / 100.0	0.0 / 100.0
0.0 / 100.0	0.0 / 100.0	0.0 / 100.0	0.0 / 100.0
50.0 / 50.0	98.3 / 1.7	— / —	98.3 / 1.7
0.0 / 100.0	0.0 / 100.0	0.0 / 100.0	0.0 / 100.0
0.0 / 100.0	0.0 / 100.0	— / —	0.0 / 100.0
6.8 / 93.2	**8.5 / 91.5**	**11.6 / 88.4**	**9.6 / 90.4**
7.3 / 92.7	**9.5 / 90.5**	**11.2 / 88.8**	**10.1 / 89.9**

Figure 5–6 M 1997

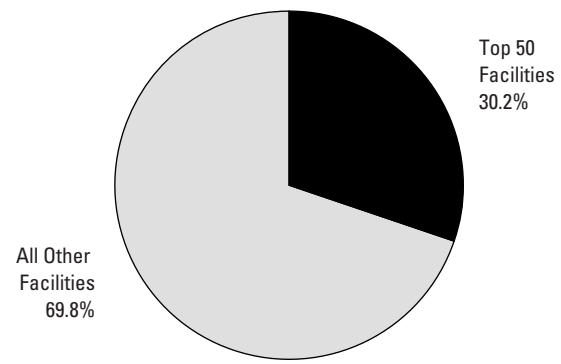
North American Total Releases and Transfers, Known or Suspected Carcinogens† and All Others, 1997



† Carcinogenic substances are those chemicals or chemical compounds listed in either the International Agency for Research on Cancer (IARC) Monographs or the US National Toxicological Program (NTP) Annual Report on Carcinogens.
➤ A chemical (and its compounds) is included if the chemical or any of its compounds is designated carcinogenic. ➤ Canada and US data only. Mexico data not collected for 1997.

Figure 5–7 M 1997

North American Total Releases and Transfers of Known or Suspected Carcinogens†, Top 50 Facilities and All Others, 1997



Total Releases and Transfers: 194,999,660 kg
Total Facilities: 10,198

† Carcinogenic substances are those chemicals or chemical compounds listed in either the International Agency for Research on Cancer (IARC) Monographs or the US National Toxicological Program (NTP) Annual Report on Carcinogens.
➤ A chemical (and its compounds) is included if the chemical or any of its compounds is designated carcinogenic. ➤ Canada and US data only. Mexico data not collected for 1997.

Table 5–6

M 1997

The 50 North American Facilities with the Largest Total Releases and Transfers of Known or Suspected Carcinogens†, 1997

Rank	Facility	City, Province/State	SIC Codes Canada	SIC Codes US	Number of Forms	Total Air Emissions (kg)	Surface Water Discharges (kg)	Underground Injection (kg)	On-site Land Releases (kg)	Total Releases (kg)
1	American Chrome & Chemicals, Harrisons & Crosfield American	Corpus Christi, TX		28	1	2,018	113	0	6,575,964	6,578,095
2	Kennecott Utah Copper, Kennecott Holdings Corp.	Magna, UT		33	5	27,487	452	0	4,073,128	4,101,067
3	Occidental Chemical Corp., Occidental Petroleum Corp.	Castle Hayne, NC		28	1	2,843	14	0	4,126,984	4,129,841
4	Monsanto Co.	Luling, LA		28	2	15,601	0	3,221,043	0	3,236,644
5	ASARCO Inc.	East Helena, MT		33	4	23,355	1,262	0	1,739,278	1,763,895
6	Pharmacia & Upjohn Co.	Portage, MI		28	4	55,706	830	8,784	0	65,320
7	American Microtrace Corp., Tetra Techs. Inc.	Fairbury, NE		28	2	11	46	0	0	57
8	BP Chemicals Inc., Green Lake, BP America Inc.	Port Lavaca, TX		28	5	20,563	0	1,690,118	656	1,711,337
9	ASARCO Inc., Glover Plant	Annapolis, MO		33	4	21,141	5	0	1,582,218	1,603,364
10	Angus Chemical Co.	Sterlington, LA		28	4	12,481	1,956	1,126,995	0	1,141,432
11	Glenbrook Nickel Co., Cominco American Inc.	Riddle, OR		33	1	34,921	7	0	1,062,717	1,097,645
12	Zinc Corp. of America, Horsehead Ind. Inc.	Monaca, PA		33	4	5,149	14	0	0	5,163
13	Aquaglass Corp., Masco Corp.	Adamsville, TN		30	1	1,057,867	0	0	0	1,057,867
14	Solutia Inc., Chocolate Bayou	Alvin, TX		28	3	13,064	0	1,025,986	0	1,039,050
15	Eastman Kodak Co., Kodak Park	Rochester, NY		38	9	980,987	25,565	0	6,803	1,013,355
16	BP Chemicals Inc., BP America Inc.	Lima, OH		28	10	27,171	0	965,267	0	992,438
17	Cytec Ind. Inc., Fortier Plant	Westwego, LA		28	5	4,009	235	979,139	0	983,383
18	Quemetco Inc., RSR Corp.	City of Industry, CA		33	3	722	1	0	0	723
19	Pharmacia & Upjohn Caribe Inc., Pharmacia & Upjohn Inc.	Arecibo, PR		28	2	396,123	0	0	0	396,123
20	Foamex L.P., Div. of Kihi	Corry, PA		30	2	903,448	0	0	0	903,448
21	Inco Limited, Copper Cliff Smelter Complex	Copper Cliff, ON	29	33	4	248,650	0	0	649,000	897,650
22	ASARCO Inc.	Omaha, NE		33	2	1,818	338	0	680	2,836
23	Quemetco Inc., RSR Corp.	Indianapolis, IN		33	3	1,416	0	0	0	1,416
24	Phelps Dodge Hidalgo Inc., Phelps Dodge Corp.	Playas, NM		33	6	13,177	267	0	833,526	846,970
25	Borden Chemicals & Plastics LP	Geismar, LA		28	7	815,549	187	9	0	815,745
26	C & D Techs. Inc.	Conyers, GA		36	1	430	0	0	363	793
27	Nucor-Yamato Steel Co., Nucor Corp.	Blytheville, AR		33	4	663	0	0	0	663
28	Boeing Co.	Wichita, KS		Mult.	6	595,943	452	0	0	596,395
29	Carpenter Co., Tupelo Div.	Verona, MS		30	2	704,215	0	0	0	704,215
30	Abbott Health Prods. Inc., Abbott Labs.	Barceloneta, PR		28	1	689,524	0	0	0	689,524
31	New Haven Fndy., Wesley Ind. Inc.	New Haven, MI		33	5	19,138	2	0	0	19,140
32	Cyprus Miami Mining Corp., Cyprus Climax Metals Co.	Claypool, AZ		33	7	8,074	0	0	672,109	680,183
33	Shell Oil Co.	Deer Park, TX		Mult.	17	90,956	3	0	164	91,123
34	Dofasco Inc.	Hamilton, ON	29	33	5	315,968	446	0	82	316,496
35	Northwestern Steel & Wire Co.	Sterling, IL		33	2	4,921	345	0	593,651	598,917
36	Doe Run Co., Renco Group Inc.	Herculaneum, MO		33	5	99,783	98	0	494,901	594,782
37	Co-Steel Lasco	Whitby, ON	29	33	3	1,220	99	0	91,254	92,573
38	Carpenter Co.	Russellville, KY		Mult.	5	571,776	0	0	0	571,776
39	Sterling Chemicals Inc.	Texas City, TX		28	9	67,453	0	481,566	0	549,019
40	Wagner Brake, Cooper Ind. Inc.	Scottsville, KY		37	1	113	0	0	0	113
41	Dominion Castings Ltd., NACO Inc.	Hamilton, ON	29	33	2	1,476	100	0	0	1,676
42	General Battery Corp., Reading Smelter Div., Exide Corp.	Reading, PA		33	3	713	251	0	0	964
43	ASARCO Inc., Ray Complex/Hayden Smelter	Hayden, AZ		33	4	16,091	0	0	40,230	56,321
44	Foamex Intl. Inc.	Milan, TN		30	2	521,285	0	0	0	521,285
45	Rubicon Inc.	Geismar, LA		28	9	40,207	8	268,481	0	308,696
46	Doe Run Co., Recycling Facility, Renco Group Inc.	Boss, MO		33	3	17,134	226	0	0	17,360
47	Pfizer Pharmaceuticals Inc., Pfizer Inc.	Barceloneta, PR		28	1	35,873	0	0	0	35,873
48	Celanese Canada Inc.	Edmonton, AB	37	28	6	151,422	0	227,000	0	378,422
49	Noranda Mining and Exploration Inc., Brunswick Smelting Div.	Belledune, NB	29	33	3	17,150	837	0	0	17,987
50	FMC Corp.	Pocatello, ID		28	4	2,924	0	0	477,785	480,709
	Subtotal				**204**	**8,659,729**	**34,159**	**9,994,388**	**23,021,493**	**41,709,869**
	% of Total				**1.2**	**10.0**	**4.0**	**86.0**	**78.6**	**32.6**
	Total for All Matched Carcinogens				**17,071**	**86,184,372**	**845,133**	**11,623,573**	**29,272,397**	**127,958,830**

† Carcinogenic substances are those chemicals or chemical compounds listed in either the International Agency for Research on Cancer (IARC) Monographs or the US National Toxicological Program (NTP) Annual Report on Carcinogens.

➤ A chemical (and its compounds) is included if the chemical or any of its compounds is designated carcinogenic.

➤ Canada and US data only. Mexico data not collected for 1997.

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	0	0	0	1,434,288	1,434,288	8,012,383	Chromium and compounds (land)
2	0	0	0	69,666	69,666	4,170,733	Lead/Arsenic and compounds (land)
3	0	0	0	6,349	6,349	4,136,190	Chromium and compounds (land)
4	6,803	0	0	0	6,803	3,243,447	Formaldehyde (UIJ)
5	0	0	0	279,650	279,650	2,043,545	Lead and compounds (land)
6	1,629,089	126,005	4,526	69	1,759,689	1,825,009	Dichloromethane (transfers to treatment)
7	0	0	0	1,723,356	1,723,356	1,723,413	Lead and compounds (transfers of metals)
8	504	0	0	207	711	1,712,048	Acrylamide, Acrylonitrile (UIJ)
9	0	0	0	0	0	1,603,364	Lead and compounds (land)
10	91	0	0	3,717	3,808	1,145,240	Formaldehyde (UIJ)
11	0	0	0	0	0	1,097,645	Nickel and compounds (land)
12	0	0	0	1,061,318	1,061,318	1,066,481	Lead/Nickel/Cadmium and compounds (transfers of metals)
13	0	0	0	0	0	1,057,867	Styrene (air)
14	0	0	0	0	0	1,039,050	Acrylonitrile (UIJ)
15	17,276	0	544	176	17,996	1,031,351	Dichloromethane (air)
16	2,373	0	177	230	2,780	995,218	Acrylamide (UIJ)
17	31	0	2	22	55	983,438	Acrylamide (UIJ)
18	0	0	0	934,969	934,969	935,692	Lead and compounds (transfers of metals)
19	498,866	38,957	0	0	537,823	933,946	Dichloromethane (transfers to treatment, air)
20	7,126	0	0	0	7,126	910,574	Dichloromethane (air)
21	0	0	0	0	0	897,650	Chromium and compounds (land)
22	0	0	0	893,671	893,671	896,507	Lead and compounds (transfers of metals)
23	0	0	0	879,880	879,880	881,296	Lead and compounds (transfers of metals)
24	0	0	0	113	113	847,083	Lead/Arsenic/Chromium and compounds (land)
25	18,796	0	12	1	18,809	834,554	Benzene (air)
26	0	0	0	810,519	810,519	811,312	Lead and compounds (transfers of metals)
27	0	0	0	735,580	735,580	736,243	Lead and compounds (transfers of metals)
28	33,401	0	0	98,927	132,328	728,723	Tetrachloroethylene (air)
29	992	0	0	0	992	705,207	Dichloromethane (air)
30	0	12	0	0	12	689,536	Dichloromethane (air)
31	0	0	0	666,122	666,122	685,262	Lead/Arsenic/Cobalt and compounds (transfers of metals)
32	0	0	0	0	0	680,183	Lead/Chromium and compounds (land)
33	559,185	0	327	0	559,512	650,635	Epichlorohydrin (transfers to treatment)
34	0	63	0	302,700	302,763	619,259	Benzene (air), Lead and compounds (transfers of metals)
35	0	0	0	2,087	2,087	601,004	Chromium/Lead and compounds (land)
36	0	0	0	368	368	595,150	Lead and compounds (land)
37	0	0	0	496,278	496,278	588,851	Lead and compounds (transfers of metals)
38	4,402	0	0	0	4,402	576,178	Dichloromethane (air)
39	9,324	0	3,363	108	12,795	561,814	Acrylamide (UIJ)
40	0	0	557,771	0	557,771	557,884	Asbestos (transfers to disposal)
41	0	0	0	545,510	545,510	547,186	Chromium and compounds (transfers of metals)
42	0	0	0	545,674	545,674	546,638	Lead and compounds (transfers of metals)
43	0	0	0	478,160	478,160	534,481	Arsenic and compounds (transfers of metals)
44	445	0	0	0	445	521,730	Dichloromethane (air)
45	192,526	0	5,468	4	197,998	506,694	Nitrobenzene (UIJ, transfers to treatment)
46	0	0	0	475,008	475,008	492,368	Lead and compounds (transfers of metals)
47	445,533	7,846	0	0	453,379	489,252	Dichloromethane (transfers to treatment)
48	0	0	64,033	41,000	105,033	483,455	Vinyl acetate, Acetaldehyde, Formaldehyde (UIJ)
49	0	0	0	465,000	465,000	482,987	Lead and compounds (transfers of metals)
50	0	0	0	23	23	480,732	Chromium/Cadmium and compounds (land)
	3,426,763	**172,883**	**636,223**	**12,950,750**	**17,186,619**	**58,896,488**	
	21.0	**6.2**	**12.3**	**30.3**	**25.6**	**30.2**	
	16,311,305	**2,805,020**	**5,169,230**	**42,755,275**	**67,040,830**	**194,999,660**	

* Chemicals accounting for more than 70% of total releases and transfers of carcinogens from the facility.

➤ UIJ = underground injection

Metals

Releases and transfers of 15 metals (and their compounds) in North America totaled 373.3 million kg. This was 29 percent of the total for all matched chemicals. Zinc and its compounds had the largest total release and transfer amount, 180.1 million kg, followed by manganese and copper (and their compounds) with 72.2 million kg and 36.5 million kg, respectively (**Table 5–7**).

The 50 North American facilities with the largest releases and transfers of metals and their compounds reported 60 percent of the total in 1997, with 223.5 million kg (**Figure 5–8** and **Table 5–8**).

Releases of metals by the top 50 facilities equaled 119.8 million kg and constituted 74 percent of the total metals released. Similarly, they made three-quarters of the on-site land releases of metals. Their transfers equaled 103.7 million kg, 49 percent of the total metals transferred.

Table 5–7
M 1997

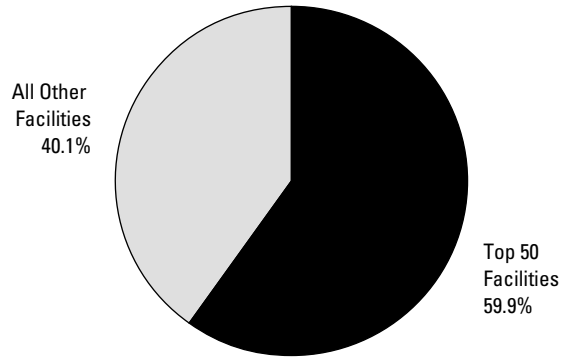
Total Releases and Transfers in North America of Metals and Their Compounds, 1997

CAS Number	Chemical	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)
—	Zinc (and its compounds)	3,366	65,061,318	114,991,258	180,052,576
—	Manganese (and its compounds)	3,084	38,696,839	33,549,526	72,246,365
—	Copper (and its compounds)	4,438	21,840,400	14,647,763	36,488,163
—	Lead (and its compounds)	1,735	10,069,524	20,515,816	30,585,340
—	Chromium (and its compounds)	3,524	15,262,424	13,717,318	28,979,742
—	Nickel (and its compounds)	3,097	2,915,533	5,715,443	8,630,976
7429-90-5	Aluminum (fume or dust)	362	2,278,190	4,069,070	6,347,260
—	Arsenic (and its compounds)	438	2,891,228	1,402,372	4,293,600
—	Antimony (and its compounds)	701	639,540	2,177,176	2,816,716
—	Cadmium (and its compounds)	162	457,198	807,736	1,264,934
—	Cobalt (and its compounds)	542	377,928	596,590	974,518
7440-62-2	Vanadium (fume or dust)	33	274,610	21,369	295,979
—	Selenium (and its compounds)	65	193,895	48,840	242,735
—	Silver (and its compounds)	148	30,027	44,091	74,118
—	Mercury (and its compounds)	32	10,571	26,534	37,105
	Subtotal	**21,727**	**160,999,225**	**212,330,902**	**373,330,127**
	% of Total	**34.6**	**19.0**	**47.9**	**28.9**
	Total for All Matched Chemicals	**62,851**	**847,751,115**	**443,548,017**	**1,291,299,132**

➤ Canada and US data only. Mexico data not collected for 1997.

NPRI/TRI as % of Total			
Number of Forms (%)	Total Releases (%)	Total Transfers (%)	Total Releases and Transfers (%)
9.6 / 90.4	8.9 / 91.1	17.3 / 82.7	14.3 / 85.7
8.3 / 91.7	4.9 / 95.1	14.5 / 85.5	9.4 / 90.6
5.9 / 94.1	3.0 / 97.0	7.6 / 92.4	4.9 / 95.1
7.4 / 92.6	12.4 / 87.6	14.2 / 85.8	13.6 / 86.4
6.7 / 93.3	5.1 / 94.9	14.5 / 85.5	9.5 / 90.5
4.8 / 95.2	12.5 / 87.5	9.0 / 91.0	10.2 / 89.8
10.2 / 89.8	23.5 / 76.5	6.3 / 93.7	12.4 / 87.6
11.0 / 89.0	5.2 / 94.8	4.8 / 95.2	5.0 / 95.0
4.3 / 95.7	1.1 / 98.9	0.6 / 99.4	0.7 / 99.3
9.3 / 90.7	9.0 / 91.0	15.3 / 84.7	13.0 / 87.0
4.6 / 95.4	5.5 / 94.5	1.7 / 98.3	3.2 / 96.8
39.4 / 60.6	78.4 / 21.6	7.7 / 92.3	73.3 / 26.7
9.2 / 90.8	4.8 / 95.2	62.2 / 37.8	16.3 / 83.7
6.1 / 93.9	4.9 / 95.1	0.6 / 99.4	2.4 / 97.6
9.4 / 90.6	2.3 / 97.7	13.1 / 86.9	10.1 / 89.9
7.1 / 92.9	**7.3 / 92.7**	**15.0 / 85.0**	**11.7 / 88.3**
7.3 / 92.7	**9.5 / 90.5**	**11.2 / 88.8**	**10.1 / 89.9**

Figure 5–8
M 1997
North American Total Releases and Transfers of Metals and Their Compounds, Top 50 Facilities and All Others, 1997



➤ Canada and US data only. Mexico data not collected for 1997.

Table 5–8

M 1997

The 50 North American Facilities with the Largest Total Releases and Transfers of Metals and Their Compounds, 1997

Rank	Facility	City, Province/State	SIC Codes Canada	SIC Codes US	Number of Forms	Total Air Emissions (kg)	Surface Water Discharges (kg)	Underground Injection (kg)	On-site Land Releases (kg)	Total Releases (kg)
1	ASARCO Inc.	East Helena, MT		33	9	40,338	2,280	0	17,100,454	17,143,072
2	Zinc Corp. of America, Horsehead Ind. Inc.	Monaca, PA		33	9	224,918	195	0	0	225,113
3	Phelps Dodge Hidalgo Inc., Phelps Dodge Corp.	Playas, NM		33	10	133,922	3,644	0	12,048,532	12,186,098
4	Kennecott Utah Copper, Kennecott Holdings Corp.	Magna, UT		33	8	71,865	4,215	0	10,900,498	10,976,578
5	Cyprus Miami Mining Corp., Cyprus Climax Metals Co.	Claypool, AZ		33	11	18,596	0	0	8,503,492	8,522,088
6	Dofasco Inc.	Hamilton, ON	29	33	6	16,758	6,173	0	0	22,931
7	American Chrome & Chemicals, Harrisons & Crosfield American	Corpus Christi, TX		28	1	2,018	113	0	6,575,964	6,578,095
8	Nucor-Yamato Steel Co., Nucor Corp.	Blytheville, AR		33	7	7,224	0	0	0	7,224
9	Co-Steel Lasco	Whitby, ON	29	33	6	14,253	362	0	1,245,254	1,259,869
10	U.S. Steel, USS Gary Works, USX Corp.	Gary, IN		33	11	140,596	7,755	0	6,450,341	6,598,692
11	Northwestern Steel & Wire Co.	Sterling, IL		33	4	55,261	1,179	0	6,716,100	6,772,540
12	Steel Dynamics Inc.	Butler, IN		33	6	6,612	0	0	0	6,612
13	Rouge Steel Co., Rouge Ind. Inc.	Dearborn, MI		33	7	33,356	2,111	0	0	35,467
14	Nucor Steel, Nucor Corp.	Crawfordsville, IN		33	6	964	42	0	660	1,666
15	GM Powertrain Defiance, General Motors Corp.	Defiance, OH		33	6	33,575	2,175	0	5,564,083	5,599,833
16	Elkem Metals Co.	Marietta, OH		33	5	174,615	205,442	0	4,752,382	5,132,439
17	ASARCO Inc., Glover Plant	Annapolis, MO		33	7	28,690	10	0	4,892,495	4,921,195
18	Occidental Chemical Corp., Occidental Petroleum Corp.	Castle Hayne, NC		28	1	2,843	14	0	4,126,984	4,129,841
19	Doe Run Co., Renco Group Inc.	Herculaneum, MO		33	8	118,721	183	0	3,839,901	3,958,805
20	Nucor Steel	Plymouth, UT		33	5	4,348	0	0	2,334	6,682
21	DuPont	Pass Christian, MS		28	6	0	0	3,809,524	0	3,809,524
22	National Steel Corp., Great Lakes Dlv.	Ecorse, MI		33	5	52,446	4,354	0	0	56,800
23	DuPont	New Johnsonville, TN		28	5	0	0	3,516,553	0	3,516,553
24	USS Mon Valley Works, USX Corp.	Braddock, PA		33	5	1,549	465	0	0	2,014
25	Nucor Steel Arkansas Plant, Nucor Corp.	Blytheville, AR		33	7	10,868	115	0	0	10,983
26	BHP Copper Metals Co., BHP Copper Co.	San Manuel, AZ		33	11	2,046,411	0	0	842,723	2,889,134
27	Cerro Wire & Cable Co. Inc.	Hartselle, AL		33	3	120	4	0	0	124
28	Granite City Steel, National Steel Corp.	Granite City, IL		33	6	22,216	5,704	0	2,667,815	2,695,735
29	Keystone Steel & Wire Co., Keystone Consolidated Ind. Inc.	Peoria, IL		33	5	34,992	398	0	210	35,600
30	Timken Co., Faircrest Steel Plant	Canton, OH		33	6	5,378	1	0	0	5,379
31	Birmingham Southeast LLC, Birmingham Steel Corp.	Cartersville, GA		33	5	12,563	0	0	0	12,563
32	Birmingham Steel Corp., Kankakee Illinois Steel Div.	Bourbonnais, IL		33	5	4,231	0	0	0	4,231
33	Ispat Sidbec Inc. Aciérie, Ispat Mexicana	Contrecoeur, QC	29	33	5	48,835	550	0	2,300,405	2,349,790
34	Stelco McMaster Ltée, Stelco Inc.	Contrecoeur, QC	29	33	5	16,600	0	0	0	17,750
35	Ameristeel Corp., Jacksonville Mill Div.	Baldwin, FL		33	6	5,185	0	0	0	5,185
36	FMC Corp.	Pocatello, ID		28	9	4,674	338	0	2,167,628	2,172,640
37	USS Fairfield Works, USX Corp.	Fairfield, AL		33	8	6,353	794	0	2,133,209	2,140,356
38	Kerr-McGee Chemical LLC, Kerr-McGee Corp.	Hamilton, MS		Mult.	3	4,354	6,145	0	2,066,666	2,077,165
39	Lake Erie Steel Company Ltd., Stelco Inc.	Nanticoke, ON	29	33	6	18,012	2,682	0	442,030	462,724
40	Southwire Co.	Carrollton, GA		Mult.	29	13,228	1,310	0	0	14,538
41	Bar Techs. Inc.	Johnstown, PA		33	5	4,815	4	0	0	4,819
42	Birmingham Steel Corp., Washington Steel Div.	Seattle, WA		33	5	10,815	0	0	0	10,815
43	American Microtrace Corp., Tetra Techs. Inc.	Fairbury, NE		28	5	27,463	4,549	0	0	32,012
44	Gerdau MRM Steel Inc., Grupo Gerdau	Selkirk, MB	29	33	5	22,322	152	0	1,730,140	1,752,614
45	ASARCO Inc.	Omaha, NE		33	5	5,008	539	0	1,362	6,909
46	Ameristeel Corp.	Charlotte, NC		33	6	20,292	0	0	0	20,292
47	Ivaco Rolling Mills	L'Orignal, ON	29	33	7	8,552	1	0	0	9,447
48	Oregon Steel Mills Inc.	Portland, OR		33	6	2,737	47	0	0	2,784
49	Chemetals Inc., Comilog	New Johnsonville, TN		28	1	15,556	583	0	1,523,810	1,539,949
50	Acme Steel Co., Acme Metals Inc.	Riverdale, IL		Mult.	6	16,643	681	0	0	17,324
	Subtotal				**324**	**3,571,691**	**265,309**	**7,326,077**	**108,595,472**	**119,760,593**
	% of Total				**1.5**	**28.7**	**8.5**	**96.4**	**78.8**	**74.4**
	Total for All Matched Metals				**21,727**	**12,464,982**	**3,120,515**	**7,597,100**	**137,777,998**	**160,999,225**

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	0	0	0	547,191	547,191	17,690,263	Zinc and compounds (land)
2	0	0	0	13,855,648	13,855,648	14,080,761	Zinc and compounds (transfers of metals)
3	0	0	0	113	113	12,186,211	Zinc/Copper and compounds (land)
4	0	0	0	192,057	192,057	11,168,635	Copper/Zinc/Lead and compounds (land)
5	0	0	0	0	0	8,522,088	Copper and compounds (land)
6	0	0	0	8,168,440	8,168,440	8,191,371	Zinc/Manganese and compounds (transfers of metals)
7	0	0	0	1,434,288	1,434,288	8,012,383	Chromium and compounds (land)
8	0	0	0	7,543,045	7,543,045	7,550,269	Zinc and compounds (transfers of metals)
9	0	0	0	5,799,885	5,799,885	7,059,754	Zinc and compounds (transfers of metals)
10	0	0	0	294,304	294,304	6,892,996	Zinc and compounds (land)
11	0	0	0	30,658	30,658	6,803,198	Zinc/Manganese and compounds (land)
12	0	0	0	6,529,560	6,529,560	6,536,172	Zinc and compounds (transfers of metals)
13	0	0	0	6,086,892	6,086,892	6,122,359	Zinc and compounds (transfers of metals)
14	0	0	0	5,609,771	5,609,771	5,611,437	Zinc and compounds (transfers of metals)
15	0	0	0	505	505	5,600,338	Zinc and compounds (land)
16	0	0	0	56,236	56,236	5,188,675	Manganese and compounds (land)
17	0	0	0	0	0	4,921,195	Zinc/Lead and compounds (land)
18	0	0	0	6,349	6,349	4,136,190	Chromium and compounds (land)
19	0	0	0	451	451	3,959,256	Zinc and compounds (land)
20	0	0	0	3,922,477	3,922,477	3,929,159	Zinc and compounds (transfers of metals)
21	0	0	0	0	0	3,809,524	Manganese and compounds (UIJ)
22	0	0	0	3,497,819	3,497,819	3,554,619	Zinc and compounds (transfers of metals)
23	0	0	0	0	0	3,516,553	Manganese and compounds (UIJ)
24	0	0	0	3,090,268	3,090,268	3,092,282	Zinc and compounds (transfers of metals)
25	0	0	0	2,957,542	2,957,542	2,968,525	Zinc and compounds (transfers of metals)
26	0	0	0	36	36	2,889,170	Copper and compounds (air)
27	0	0	0	2,863,172	2,863,172	2,863,296	Copper and compounds (transfers of metals)
28	0	0	0	24	24	2,695,759	Zinc and compounds (land)
29	0	0	0	2,498,413	2,498,413	2,534,013	Zinc and compounds (transfers of metals)
30	0	0	0	2,486,113	2,486,113	2,491,492	Zinc and compounds (transfers of metals)
31	0	0	0	2,388,657	2,388,657	2,401,220	Zinc and compounds (transfers of metals)
32	0	0	0	2,384,320	2,384,320	2,388,551	Zinc and compounds (transfers of metals)
33	0	0	0	0	0	2,349,790	Zinc and compounds (land)
34	0	0	0	2,298,300	2,298,300	2,316,050	Zinc and compounds (transfers of metals)
35	0	0	0	2,175,039	2,175,039	2,180,224	Zinc and compounds (transfers of metals)
36	0	0	0	790	790	2,173,430	Zinc/Chromium and compounds (land)
37	0	0	0	0	0	2,140,356	Zinc and compounds (land)
38	0	0	0	0	0	2,077,165	Manganese and compounds (land)
39	0	0	0	1,480,000	1,480,000	1,942,724	Zinc and compounds (transfers of metals)
40	0	0	0	1,917,884	1,917,884	1,932,422	Zinc/Lead and compounds (transfers of metals)
41	0	0	0	1,925,941	1,925,941	1,930,760	Zinc and compounds (transfers of metals)
42	0	0	0	1,758,623	1,758,623	1,769,438	Zinc and compounds (transfers of metals)
43	0	0	0	1,723,356	1,723,356	1,755,368	Lead and compounds (transfers of metals)
44	0	0	0	0	0	1,752,614	Zinc and compounds (land)
45	0	0	0	1,742,791	1,742,791	1,749,700	Lead/Zinc and compounds (transfers of metals)
46	0	0	0	1,680,432	1,680,432	1,700,724	Zinc and compounds (transfers of metals)
47	0	0	0	1,647,700	1,647,700	1,657,147	Zinc and compounds (transfers of metals)
48	0	0	0	1,620,869	1,620,869	1,623,653	Zinc and compounds (transfers of metals)
49	0	0	0	0	0	1,539,949	Manganese and compounds (land)
50	0	0	0	1,487,000	1,487,000	1,504,324	Zinc and compounds (transfers of metals)
	0	**0**	**0**	**103,702,959**	**103,702,959**	**223,463,552**	
	—	**—**	**—**	**48.8**	**48.8**	**59.9**	
	0	**0**	**0**	**212,330,902**	**212,330,902**	**373,330,127**	

* Chemicals accounting for more than 70% of total releases and transfers of metals from the facility.
➤ UIJ=underground injection

Releases and Transfers by Industry

Chemical manufacturing, the primary metals industry and paper products together reported 71 percent of the total releases and transfers in North America in 1997 (**Figure 5–9**). The chemical manufacturing industry reported the largest amounts, 412.7 million kg, of total releases and transfers. The primary metals industry reported a total of 365.7 million kg, and the paper products industry reported 139.2 million kg (**Table 5–9**). These top three industries reported 32 percent, 28 percent and 11 percent, respectively, of total releases and transfers in North America.

As discussed in **Chapters 3** and **4**, chemical manufacturing facilities reported the largest releases (272.9 million kg) and the primary metals industry reported the largest transfers (175.6 million kg) in North America in 1997 (**Figure 5–10**). The primary metals industry is examined in more detail in **Chapter 7**.

Table 5–9

M 1997

Total Releases and Transfers in North America by Industry, 1997

Rank	US SIC Code	Industry	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)
1	28	Chemicals	17,597	272,904,779	139,768,161	412,672,940
2	33	Primary Metals	6,723	190,032,817	175,638,434	365,671,251
3	26	Paper Products	2,423	112,338,644	26,848,124	139,186,768
4		Multiple Codes 20–39*	3,840	42,133,850	21,755,280	63,889,130
5	30	Rubber and Plastics Products	3,264	45,055,140	7,230,381	52,285,521
6	37	Transportation Equipment	4,217	42,699,007	8,933,582	51,632,589
7	34	Fabricated Metals Products	7,085	22,761,249	19,254,312	42,015,561
8	29	Petroleum and Coal Products	3,066	28,019,407	5,513,243	33,532,650
9	20	Food Products	2,834	11,527,600	11,809,279	23,336,879
10	36	Electronic/Electrical Equipment	2,648	6,720,557	11,978,844	18,699,401
11	32	Stone/Clay/Glass Products	1,551	12,050,633	4,333,507	16,384,140
12	24	Lumber and Wood Products	1,728	13,087,552	455,998	13,543,550
13	27	Printing and Publishing	405	12,191,946	438,144	12,630,090
14	25	Furniture and Fixtures	1,033	11,377,301	565,042	11,942,343
15	35	Industrial Machinery	2,521	6,518,894	3,875,330	10,394,224
16	22	Textile Mill Products	500	7,817,258	1,429,283	9,246,541
17	38	Measurement/Photographic Instruments	523	4,676,856	1,606,739	6,283,595
18	39	Misc. Manufacturing Industries	711	4,434,996	1,116,244	5,551,240
19	31	Leather Products	113	488,528	929,012	1,417,540
20	21	Tobacco Products	28	662,668	929	663,597
21	23	Apparel and Other Textile Products	41	251,433	68,149	319,582
		Total for All Matched Industries	**62,851**	**847,751,115**	**443,548,017**	**1,291,299,132**

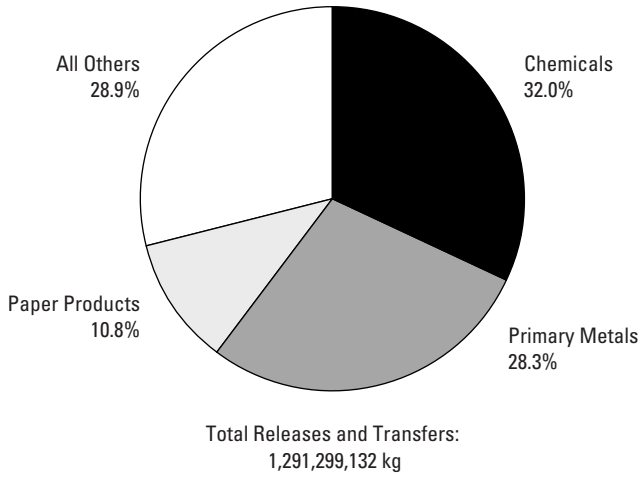
* Multiple SIC codes reported in TRI only.

➤ Canada and US data only. Mexico data not collected for 1997.

NPRI/TRI as % of Total			
Number of Forms (%)	Total Releases (%)	Total Transfers (%)	Total Releases and Transfers (%)
8.1 / 91.9	6.7 / 93.3	8.9 / 91.1	7.5 / 92.5
9.5 / 90.5	10.0 / 90.0	15.9 / 84.1	12.8 / 87.2
13.6 / 86.4	15.2 / 84.8	7.6 / 92.4	13.7 / 86.3
0.0 / 100.0	0.0 / 100.0	0.0 / 100.0	0.0 / 100.0
8.1 / 91.9	13.2 / 86.8	12.8 / 87.2	13.1 / 86.9
8.9 / 91.1	14.4 / 85.6	9.8 / 90.2	13.6 / 86.4
5.9 / 94.1	9.0 / 91.0	9.1 / 90.9	9.0 / 91.0
11.9 / 88.1	16.7 / 83.3	20.3 / 79.7	17.3 / 82.7
4.7 / 95.3	4.4 / 95.6	6.4 / 93.6	5.4 / 94.6
3.5 / 96.5	1.2 / 98.8	2.3 / 97.7	1.9 / 98.1
6.6 / 93.4	7.2 / 92.8	2.1 / 97.9	5.9 / 94.1
11.1 / 88.9	17.0 / 83.0	45.3 / 54.7	17.9 / 82.1
9.1 / 90.9	13.2 / 86.8	34.9 / 65.1	14.0 / 86.0
4.0 / 96.0	6.9 / 93.1	24.4 / 75.6	7.8 / 92.2
2.6 / 97.4	4.1 / 95.9	11.6 / 88.4	6.9 / 93.1
2.4 / 97.6	3.6 / 96.4	2.0 / 98.0	3.4 / 96.6
0.2 / 99.8	0.0 / 100.0	0.0 / 100.0	0.0 / 100.0
13.9 / 86.1	12.9 / 87.1	26.8 / 73.2	15.7 / 84.3
2.7 / 97.3	4.8 / 95.2	0.8 / 99.2	2.2 / 97.8
0.0 / 100.0	0.0 / 100.0	0.0 / 100.0	0.0 / 100.0
2.4 / 97.6	0.1 / 99.9	0.0 / 100.0	0.1 / 99.9
7.3 / 92.7	**9.5 / 90.5**	**11.2 / 88.8**	**10.1 / 89.9**

Figure 5–9
M 1997

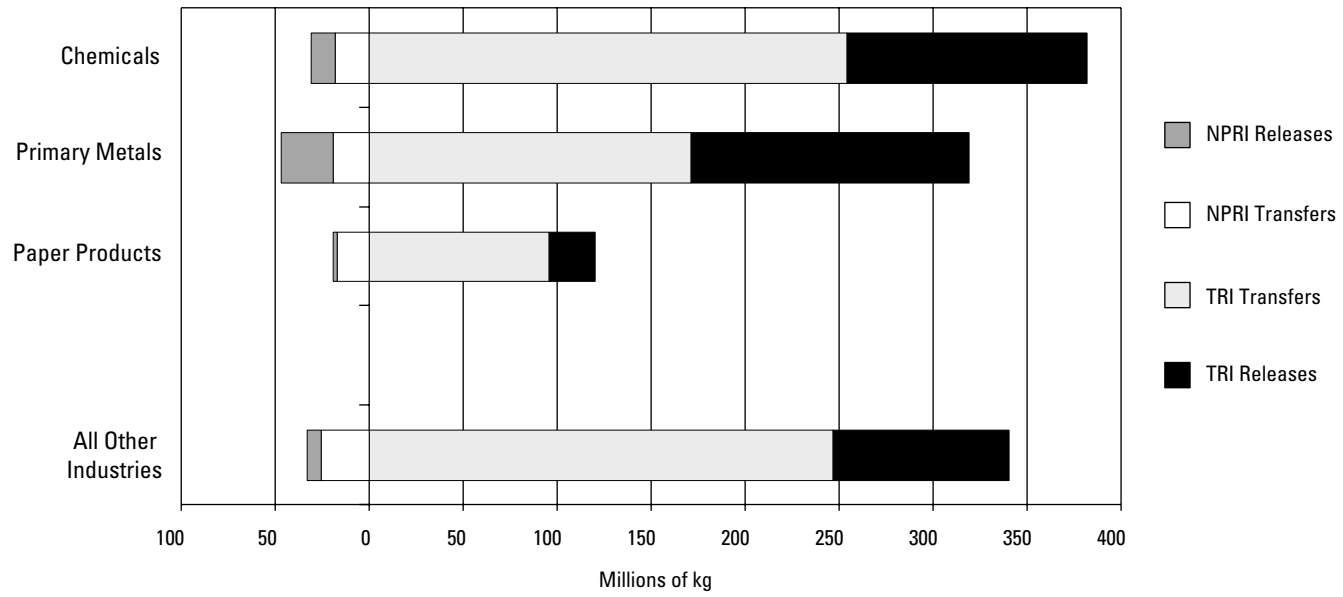
North American Top Three Industries for Total Releases and Transfers, 1997



➤ Canada and US data only. Mexico data not collected for 1997.

Figure 5–10
M 1997

Releases and Transfers by North American Top Industries, 1997



➤ Canada and US data only. Mexico data not collected for 1997.

5.2.2 NPRI and TRI Releases and Transfers

This section compares reporting of releases and transfers by Canadian and US facilities for 1997. It notes significant similarities and differences between the two PRTRs for the matched data set.

Overview

Total releases and transfers were 130.0 million kg for NPRI, with on-site releases of 80.4 million kg and off-site transfers of 49.5 million kg. For TRI, total releases and transfers were 1.16 billion kg, with on-site releases of 767.3 million kg and off-site transfers of 394.0 million kg (**Table 5–10**).

NPRI facilities transferred a larger percentage of their total reported amounts than did TRI facilities and, conversely, TRI facilities released a larger percentage. The balance of releases to transfers was 62 percent to 38 percent in NPRI and 66 percent to 34 percent in TRI (**Figure 5–11**).

Further NPRI-TRI differences occurred in the distribution of types of releases and transfers. NPRI facilities were much more likely to release listed substances to air and to send metals to treatment/sewage/disposal than were TRI facilities. Air emissions accounted for 48 percent of NPRI's total releases and transfers and 39 percent of the TRI total. In NPRI, 25 percent of all releases and transfers consisted of transfers of metals; in TRI, these were 16 percent of the total.

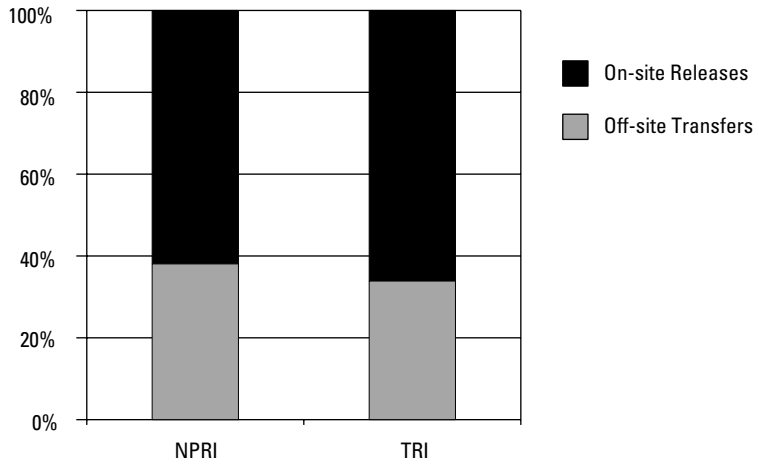
At the same time, TRI facilities were more than twice as likely to transfer nonmetals off-site to sewage/POTWs than NPRI facilities. These transfers to sewage/POTWs amounted to four percent of NPRI's total releases and transfers and nine percent of TRI's total.

Table 5–10
M 1997

Total Releases and Transfers, NPRI and TRI, 1997

	NPRI		TRI	
	Number		Number	
Total Facilities	1,430		19,125	
Total Forms	4,599		58,252	
On-site Releases	**kg**	**%**	**kg**	**%**
Total Air Emissions	62,838,622	48.4	449,375,340	38.7
Surface Water Discharges	4,224,169	3.3	94,618,694	8.1
Underground Injection	4,197,660	3.2	74,649,654	6.4
On-site Land Releases	9,062,108	7.0	148,658,503	12.8
Total Releases	**80,448,924**	**61.9**	**767,302,191**	**66.1**
Off-site Transfers				
Treatment (except metals)	9,925,693	7.6	92,058,224	7.9
Sewage/To POTWs (except metals)	5,260,842	4.0	100,954,738	8.7
Disposal (except metals)	2,533,015	1.9	20,484,603	1.8
Treatment/Sewage/Disposal of Metals	31,788,711	24.5	180,542,191	15.5
Total Transfers	**49,508,261**	**38.1**	**394,039,756**	**33.9**
Total Releases and Transfers	**129,957,185**	**100.0**	**1,161,341,947**	**100.0**

Figure 5–11
M 1997
Distribution of Total Releases and Transfers, NPRI and TRI, 1997



Top Facilities

The top 50 NPRI facilities reported 58 percent of all releases and transfers to that PRTR in 1997. In TRI, the 50 facilities with the largest totals reported 29 percent of the TRI total. As noted in other chapters, these populations of 50 facilities represented 3.5 percent of Canadian facilities but only 0.3 percent of US facilities in the matched data set (**Figure 5–12**).

The top 50 NPRI facilities reported roughly equal amounts of releases and transfers. In TRI, however, releases amounted to 72 percent of the amounts reported by the 50 facilities with the largest total releases and transfers (**Figure 5–13**).

The top 50 NPRI facilities reported releasing on-site 38.5 million kg and transferring off-site 36.5 million kg, for a total of 75.1 million kg (**Table 5–11**). Nearly half of all NPRI releases and three-quarters of all NPRI transfers came from the top 50 facilities. They reported 80 percent (7.2 million kg) of NPRI on-site land releases and 84 percent (26.5 million kg) of transfers of metals to sewage/treatment/disposal. These facilities also reported 98 percent (4.1 million kg) of NPRI's underground injection, which is not widely practiced in Canada.

The top 50 TRI facilities reported releasing on-site 245.5 million kg and transferring off-site 96.4 million kg, for a total of 341.9 million kg (**Table 5–12**). These facilities reported one-third of TRI releases and one-quarter of TRI transfers in the matched data set. These releases included two-thirds of the underground injection (51.2 million kg) and on-site land releases (99.7 million kg) in TRI. These facilities reported less than one-third of all transfer types in TRI.

Figure 5–12
M 1997

NPRI and TRI Total Releases and Transfers, Top 50 Facilities and All Others, 1997

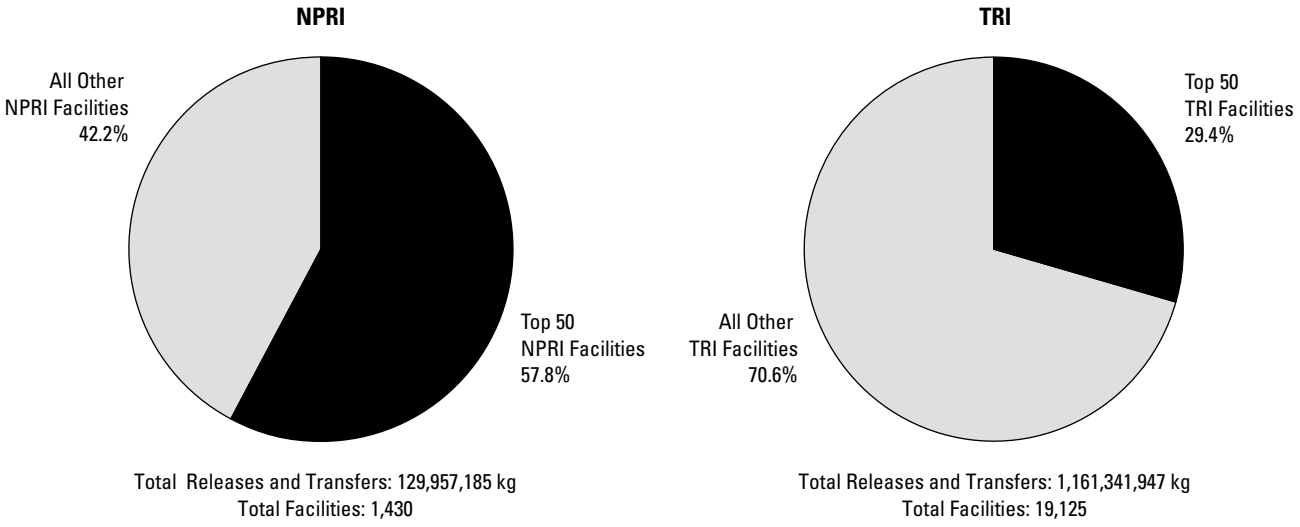


Figure 5–13
M 1997

Distribution of Total Releases and Transfers of Top 50 Facilities, NPRI and TRI, 1997

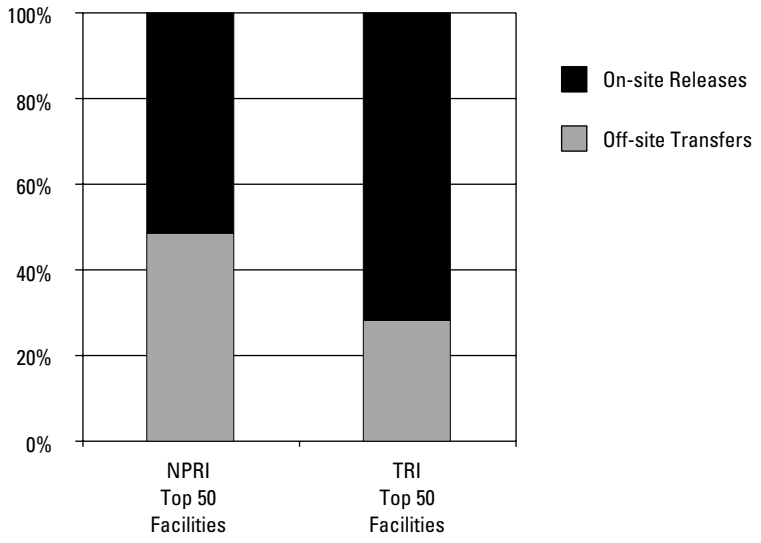


Table 5–11

M 1997

The 50 NPRI Facilities with the Largest Total Releases and Transfers, 1997

Rank	Facility	City, Province	SIC Codes Canada	SIC Codes US	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.	Hamilton, ON	29	33	18	424,762	6,176	0	125	431,063
2	Co-Steel Lasco	Whitby, ON	29	33	6	14,253	362	0	1,245,254	1,259,869
3	Inco Limited, Copper Cliff Smelter Complex	Copper Cliff, ON	29	33	7	4,259,786	0	0	649,000	4,908,786
4	Dominion Colour Corp., Kikuchi Color & Chemicals Corp.	Ajax, ON	37	28	6	0	0	0	0	29
5	Celanese Canada Inc.	Edmonton, AB	37	28	11	294,315	0	3,542,000	593	3,836,908
6	Ispat Sidbec Inc. Aciérie, Ispat Mexicana	Contrecoeur, QC	29	33	5	48,835	550	0	2,300,405	2,349,790
7	Stelco McMaster Ltée, Stelco Inc.	Contrecoeur, QC	29	33	5	16,600	0	0	0	17,750
8	Nova Chemicals (Canada) Ltd., St. Clair Site	Corunna, ON	37	28	7	2,045,900	480	0	0	2,046,380
9	Aimco Solrec Ltd.	Milton, ON	37	28	6	35,641	0	0	0	35,641
10	Lake Erie Steel Company Ltd., Stelco Inc.	Nanticoke, ON	29	33	16	103,757	31,645	0	442,030	577,432
11	Bayer Inc., Bayer AG	Sarnia, ON	37	28	17	1,397,853	22,937	0	0	1,421,799
12	Gerdau MRM Steel Inc., Grupo Gerdau	Selkirk, MB	29	33	7	22,992	165	0	1,759,790	1,782,947
13	Fraser Papers Inc., Noranda Forest Inc.	Edmundston, NB	27	26	9	178,060	0	0	0	178,060
14	Ivaco Rolling Mills	L'Orignal, ON	29	33	7	8,552	1	0	0	9,447
15	Slater Steels, Hamilton Specialty Bar Division	Hamilton, ON	29	33	10	8,721	0	0	200	10,521
16	General Motors of Canada Ltd., Oshawa Car Assembly Plant	Oshawa, ON	32	37	13	1,299,755	0	0	0	1,299,855
17	Sammi Atlas Inc., Aciers inoxydables Atlas	Tracy, QC	29	33	11	24,567	524,450	0	0	549,017
18	Zalev Brothers Limited	Windsor, ON	29	33	8	422	7	0	0	429
19	Irving Pulp & Paper, Ltd / Irving Tissue Company	Saint John, NB	27	26	4	246,211	824,078	0	0	1,070,289
20	Agrium Products Inc., Redwater Fertilizer Operations	Redwater, AB	37	28	15	205,010	160,160	570,160	0	935,330
21	AltaSteel Ltd., Stelco Inc.	Edmonton, AB	29	33	6	12,053	47	0	717,505	729,605
22	Daishowa-Marubeni International, Peace River Pulp Div.	Peace River, AB	27	26	10	845,060	15,550	0	96,347	956,957
23	Kronos Canada, Inc.	Varennes, QC	37	28	8	15,433	32,500	0	0	47,933
24	Maple Roll Leaf Co., Illinois Tool Works Canada Inc.	Windsor, ON	37	28	10	750,109	0	0	0	750,109
25	Avenor Inc., Thunder Bay Operations	Thunder Bay, ON	27	26	8	874,078	724	0	0	874,802
26	Agrium, Fort Saskatchewan Nitrogen Operations	Fort Saskatchewan, AB	37	28	4	761,100	0	900	0	762,000
27	Sorevco, Société en commandite, Ispat Sidbec	Coteau-du-Lac, QC	29	33	1	0	0	0	0	0
28	Canadian General-Tower Ltd., Vinyl Manufacturer	Cambridge, ON	16	30	8	817,865	0	0	0	817,865
29	Morbern Incorporated	Cornwall, ON	16	30	3	757,500	0	0	0	757,500
30	Graphic Packaging Canada, Toronto Facility, ACX Technologies	Mississauga, ON	28	27	2	797,000	0	0	0	797,000
31	Imperial Oil, IOL Sarnia Refinery	Sarnia, ON	36	29	23	474,924	280,405	0	4,784	760,113
32	Methanex Corporation	Medicine Hat, AB	37	28	3	790,620	0	0	80	790,700
33	Hudson Bay Mining and Smelting Co., Metallurgical Complex	Flin Flon, MB	29	33	6	740,792	3,780	0	0	744,572
34	Les Produits chimiques Delmar Inc.	LaSalle, QC	37	28	4	83,100	0	0	0	83,100
35	Witco Canada Inc., West Hill Plant	Scarborough, ON	36	29	2	474,000	0	0	0	474,000
36	Sunworthy Wallcoverings, Borden Co. Ltd.	Brampton, ON	27	26	2	707,900	0	0	0	707,900
37	International Wallcoverings Ltd.	Brampton, ON	27	26	4	669,500	0	0	0	669,500
38	Stelco Inc., Hilton Works	Hamilton, ON	29	33	21	312,873	23,490	0	500	338,723
39	Gerdau Courtice Steel Inc., Gerdau Canada	Cambridge, ON	29	33	7	10,782	0	0	0	10,782
40	St. Anne-Nackawic Pulp Company Ltd.	Nackawic, NB	27	26	4	588,500	11,130	0	6,870	606,500
41	Avenor Inc., Dryden Mill	Dryden, ON	27	26	7	597,481	1,610	0	2,001	601,092
42	Dominion Castings Ltd., NACO Inc.	Hamilton, ON	29	33	4	1,476	100	0	0	1,776
43	Paintplas Inc.	Ajax, ON	32	30	10	552,000	0	0	0	552,000
44	Weyerhaeuser Saskatchewan Ltd., Prince Albert Pulp & Paper	Prince Albert, SK	27	26	5	521,402	20,700	0	0	542,102
45	Imperial Oil, Sarnia Chemical Plant	Sarnia, ON	37	28	18	391,146	2,259	0	0	393,911
46	Ford Motor Company, Oakville Assembly Plant	Oakville, ON	32	37	11	531,275	0	0	0	531,275
47	Papiers Domtar - Centre d'affaires Windsor	Windsor, QC	27	26	6	470,060	56,100	0	0	527,484
48	Métallurgie Noranda Inc, Fonderie Horne	Rouyn Noranda, QC	29	33	12	499,280	15,840	0	0	515,120
49	Noranda Mining and Exploration Inc., Brunswick Smelting Div.	Belledune, NB	29	33	6	37,280	968	0	0	38,248
50	Cartons St-Laurent Inc.	LaTuque, QC	27	26	8	391,679	39,052	0	0	430,731
	Subtotal				**411**	**25,112,260**	**2,075,266**	**4,113,060**	**7,225,484**	**38,534,742**
	% of Total				**8.9**	**40.0**	**49.1**	**98.0**	**79.7**	**47.9**
	Total				**4,599**	**62,838,622**	**4,224,169**	**4,197,660**	**9,062,108**	**80,448,924**

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	0	0	0	0	0	4,908,786	Sulfuric acid (air)
4	0	3,732,000	0	224,300	3,956,300	3,956,329	Nitric acid and nitrate compounds (transfers to sewage)
5	0	0	64,384	41,000	105,384	3,942,292	Methanol, Methyl ethyl ketone (UIJ)
6	0	0	0	0	0	2,349,790	Zinc and compounds (land)
7	0	0	0	2,298,300	2,298,300	2,316,050	Zinc and compounds (transfers of metals)
8	37,400	0	29,390	0	66,790	2,113,170	Cyclohexane (air)
9	2,028,917	0	0	0	2,028,917	2,064,558	Xylene, Toluene, Methyl ethyl ketone (transfers to treatment)
10	0	0	0	1,480,000	1,480,000	2,057,432	Zinc and compounds (transfers of metals)
11	485,300	0	133,000	0	618,300	2,040,099	Cyclohexane (air, transfers to treatment), Chloromethane (air), Hydrochloric acid (air)
12	0	0	0	0	0	1,782,947	Zinc and compounds (land)
13	1,453,630	0	139,450	0	1,593,080	1,771,140	Methanol (transfers to treatment)
14	0	0	0	1,647,700	1,647,700	1,657,147	Zinc and compounds (transfers of metals)
15	0	15,075	241	1,481,088	1,496,404	1,506,925	Zinc/Lead and compounds (transfers of metals)
16	5,063	0	0	18,402	23,465	1,323,320	Xylene, Toluene (air)
17	38,150	0	0	584,310	622,460	1,171,477	Nitric acid and nitrate compounds (water), Chromium/Nickel and compounds (transfers of metals)
18	0	0	0	1,104,869	1,104,869	1,105,298	Zinc/Copper and compounds (transfers of metals)
19	0	0	0	0	0	1,070,289	Methanol (water)
20	85,133	0	4,580	3,600	93,313	1,028,643	Nitric acid and nitrate compounds (UIJ, water)
21	0	0	0	241,888	241,888	971,493	Zinc/Manganese and compounds (land)
22	0	0	0	0	0	956,957	Methanol (air)
23	0	0	0	855,000	855,000	902,933	Manganese and compounds (transfers of metals)
24	145,965	0	0	0	145,965	896,074	Methyl ethyl ketone, Toluene, Methanol (air)
25	0	0	0	0	0	874,802	Methanol (air)
26	81,600	0	0	0	81,600	843,600	Methanol (air)
27	0	0	0	840,570	840,570	840,570	Zinc and compounds (transfers of metals)
28	11,220	0	1,138	3,034	15,392	833,257	Methyl ethyl ketone (air)
29	60,000	0	0	0	60,000	817,500	Methyl ethyl ketone (air)
30	20,345	0	0	0	20,345	817,345	Methanol (air)
31	633	0	43,642	4	44,279	804,392	Nitric acid and nitrate compounds (water), Methanol, Vanadium, Methyl isobutyl ketone, Methyl ethyl ketone (air), Asbestos (transfers to disposal)
32	640	4,510	0	0	5,150	795,850	Methanol (air)
33	0	0	0	0	0	744,572	Zinc/Lead and compounds (air)
34	639,700	0	0	0	639,700	722,800	Toluene, Methanol (transfers to treatment)
35	0	248,000	0	0	248,000	722,000	Methanol (air, transfers to sewage)
36	0	0	12,800	0	12,800	720,700	Methyl ethyl ketone, Toluene (air)
37	0	0	0	0	0	669,500	Methyl ethyl ketone, Toluene (air)
38	10,300	71,000	237,300	9,900	328,500	667,223	Benzene (air), Asbestos (transfers to disposal), Phenol (transfers to sewage)
39	0	1,320	9,520	621,538	632,378	643,160	Zinc and compounds (transfers of metals)
40	0	0	0	0	0	606,500	Chlorine dioxide, Methanol, Chlorine (air)
41	0	0	0	0	0	601,092	Methanol (air)
42	0	0	0	571,557	571,557	573,333	Chromium and compounds (transfers of metals)
43	0	0	0	0	0	552,000	Xylene, Toluene, Methyl isobutyl ketone (air)
44	0	0	0	0	0	542,102	Methanol, Chlorine (air)
45	0	0	146,560	0	146,560	540,471	Hydrochloric acid (air), Phosphoric acid (transfers to disposal), Ethylene (air)
46	390	190	230	7,580	8,390	539,665	Xylene, 1,2,4-Trimethylbenzene, n-Butyl alcohol (air)
47	0	0	0	0	0	527,484	Methanol (air)
48	0	0	0	0	0	515,120	Lead/Copper/Zinc and compounds (air)
49	0	0	0	467,400	467,400	505,648	Lead/Cadmium and compounds (transfers of metals)
50	0	0	7	71,666	71,673	502,404	Methanol, Manganese and compounds (air)
	5,105,251	**4,072,218**	**822,292**	**26,542,031**	**36,541,792**	**75,076,534**	
	51.4	**77.4**	**32.5**	**83.5**	**73.8**	**57.8**	
	9,925,693	**5,260,842**	**2,533,015**	**31,788,711**	**49,508,261**	**129,957,185**	

* Chemicals accounting for more than 70% of total releases and transfers from the facility.

➤ UIJ=underground injection

Table 5–12

M 1997

The 50 TRI Facilities with the Largest Total Releases and Transfers, 1997

Rank	Facility	City, State	US SIC Code	Number of Forms	Total Air Emissions (kg)	Surface Water Discharges (kg)	Under-ground Injection (kg)	On-site Land Releases (kg)	Total Releases (kg)
1	Magnesium Corp. of America, Renco Group Inc.	Rowley, UT	33	6	28,270,233	0	0	0	28,270,233
2	ASARCO Inc.	East Helena, MT	33	10	47,346	2,280	0	17,100,454	17,150,080
3	Zinc Corp. of America, Horsehead Ind. Inc.	Monaca, PA	33	9	224,918	195	0	0	225,113
4	PCS Nitrogen Fertilizer L.P., Potash Corp. of Saskatchewan	Geismar, LA	28	12	48,716	13,487,112	0	291,886	13,827,714
5	Phelps Dodge Hidalgo Inc., Phelps Dodge Corp.	Playas, NM	33	13	288,368	3,644	0	12,053,733	12,345,745
6	Armco Inc. (Route 8 S.)	Butler, PA	33	14	98,510	11,793,413	0	0	11,891,923
7	Kennecott Utah Copper, Kennecott Holdings Corp.	Magna, UT	33	14	109,489	4,441	0	10,908,661	11,022,591
8	USS Clairton Works, USX Corp.	Clairton, PA	33	19	110,326	51,803	0	0	162,129
9	Solutia Inc.	Gonzalez, FL	28	18	103,557	826	9,712,998	0	9,817,381
10	DuPont	Victoria, TX	28	29	176,213	791	8,861,812	5,445	9,044,261
11	Cyprus Miami Mining Corp., Cyprus Climax Metals Co.	Claypool, AZ	33	13	92,972	0	0	8,503,492	8,596,464
12	American Chrome & Chemicals, Harrisons & Crosfield American	Corpus Christi, TX	28	2	2,131	703	0	6,575,964	6,578,798
13	Air Prods. Inc., Air Prods. & Chemicals Inc.	Pasadena, TX	28	12	29,252	0	0	0	29,252
14	Lenzing Fibers Corp.	Lowland, TN	28	5	7,619,166	2,879	0	142,766	7,764,811
15	Cytec Ind. Inc., Fortier Plant	Westwego, LA	28	24	71,934	3,167	7,594,695	0	7,669,796
16	Nucor-Yamato Steel Co., Nucor Corp.	Blytheville, AR	33	8	7,224	0	0	0	7,224
17	U.S. Steel, USS Gary Works, USX Corp.	Gary, IN	33	33	777,508	13,242	0	6,463,719	7,254,469
18	Courtaulds Fibers Inc., Courtaulds Finance U.S. Inc.	Axis, AL	28	4	6,848,254	9,265	0	175,510	7,033,029
19	Northwestern Steel & Wire Co.	Sterling, IL	33	6	60,613	7,982	0	6,716,100	6,784,695
20	BASF Corp.	Freeport, TX	28	26	143,873	6,353,578	5,407	0	6,502,858
21	Steel Dynamics Inc.	Butler, IN	33	7	6,642	0	0	0	6,642
22	Rouge Steel Co., Rouge Ind. Inc.	Dearborn, MI	33	7	33,356	2,111	0	0	35,467
23	Hoechst-Celanese Chemical, Clear Lake Plant, Hoechst Corp.	Pasadena, TX	28	20	386,059	0	1,517,577	0	1,903,636
24	GM Powertrain Defiance, General Motors Corp.	Defiance, OH	33	20	333,612	18,744	0	5,620,881	5,973,237
25	Nucor Steel, Nucor Corp.	Crawfordsville, IN	33	9	30,560	42	0	660	31,262
26	Elkem Metals Co.	Marietta, OH	33	6	174,841	205,442	0	4,752,382	5,132,665
27	ASARCO Inc., Glover Plant	Annapolis, MO	33	7	28,690	10	0	4,892,495	4,921,195
28	CPI Kraft Div., Consolidated Papers Inc.	Wisconsin Rapids, WI	26	14	1,154,037	340	0	96,599	1,250,976
29	BP Chemicals Inc., BP America Inc.	Lima, OH	28	27	142,400	0	4,146,788	0	4,289,188
30	BP Chemicals Inc., Green Lake, BP America Inc.	Port Lavaca, TX	28	17	54,412	306	4,198,418	3,985	4,257,121
31	Occidental Chemical Corp., Occidental Petroleum Corp.	Castle Hayne, NC	28	1	2,843	14	0	4,126,984	4,129,841
32	DuPont	Pass Christian, MS	28	11	282,458	0	3,809,524	0	4,091,982
33	Regal Ware Inc.	Kewaskum, WI	34	6	0	0	0	0	0
34	PCS Phosphate Co. Inc., Potash Corp. of Saskatchewan	Aurora, NC	28	6	163,429	0	0	3,805,895	3,969,324
35	Doe Run Co., Renco Group Inc.	Herculaneum, MO	33	9	119,063	183	0	3,839,901	3,959,147
36	Nucor Steel	Plymouth, UT	33	7	4,421	0	0	2,334	6,755
37	Stone Container Corp.	Panama City, FL	26	10	793,382	0	0	19,618	813,000
38	Rubicon Inc.	Geismar, LA	28	24	144,879	79	3,274,650	0	3,419,608
39	Pharmacia & Upjohn Co.	Portage, MI	28	25	88,132	38,292	1,282,573	0	1,408,997
40	Vicksburg Chemical Co.	Vicksburg, MS	28	3	34,454	3,668,877	0	0	3,703,331
41	National Steel Corp., Great Lakes Div.	Ecorse, MI	33	18	85,003	16,367	0	0	101,370
42	DuPont	New Johnsonville, TN	28	11	33,946	32,986	3,516,553	57	3,583,542
43	Boise Cascade Corp.	Saint Helens, OR	26	9	240,408	0	0	0	240,408
44	Simpson Pasadena Paper Co., Simpson Investment Co.	Pasadena, TX	26	8	211,227	0	0	0	211,227
45	Eastman Kodak Co., Kodak Park	Rochester, NY	38	46	2,750,339	288,950	0	18,603	3,057,892
46	Tennessee Eastman Div., Eastman Chemical Co.	Kingsport, TN	28	63	2,375,308	53,946	0	235,359	2,664,613
47	Monsanto Co.	Luling, LA	28	14	38,598	90,123	3,277,869	0	3,406,590
48	Hercules Inc.	Hopewell, VA	28	12	379,837	0	0	0	379,837
49	FMC Corp.	Pocatello, ID	28	12	13,048	338	0	3,362,448	3,375,834
50	Mulberry Phosphates Inc., Mulberry Corp.	Mulberry, FL	28	4	12,939	3,170,390	0	0	3,183,329
	Subtotal			**710**	**55,248,926**	**39,322,861**	**51,198,864**	**99,715,931**	**245,486,582**
	% of Total			**1.2**	**12.3**	**41.6**	**68.6**	**67.1**	**32.0**
	Total			**58,252**	**449,375,340**	**94,618,694**	**74,649,654**	**148,658,503**	**767,302,191**

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	0	0	0	0	0	28,270,233	Chlorine (air)
2	0	0	0	547,191	547,191	17,697,271	Zinc and compounds (land)
3	0	0	0	13,855,648	13,855,648	14,080,761	Zinc and compounds (transfers of metals)
4	0	0	0	0	0	13,827,714	Phosphoric acid (water)
5	0	0	0	113	113	12,345,858	Zinc/Copper and compounds (land)
6	22,976	0	544	131,125	154,645	12,046,568	Nitric acid and nitrate compounds (water)
7	0	0	0	192,057	192,057	11,214,648	Copper/Zinc/Lead and compounds (land)
8	9,944,975	0	58	0	9,945,033	10,107,162	Ethylene (transfers to treatment)
9	0	0	10	1,584	1,594	9,818,975	Nitric acid and nitrate compounds (UIJ)
10	345,419	0	0	196	345,615	9,389,876	Nitric acid and nitrate compounds (UIJ)
11	0	0	0	0	0	8,596,464	Copper and compounds (land)
12	0	0	0	1,434,288	1,434,288	8,013,086	Chromium and compounds (land)
13	183,178	7,767,699	11	13,156	7,964,044	7,993,296	Nitric acid and nitrate compounds (transfers to sewage)
14	0	0	0	0	0	7,764,811	Carbon disulfide (air)
15	2,944	0	109	18,662	21,715	7,691,511	Acetonitrile, Acrylic acid, Acrylamide (UIJ)
16	0	0	0	7,543,045	7,543,045	7,550,269	Zinc and compounds (transfers of metals)
17	0	0	118	294,304	294,422	7,548,891	Zinc and compounds (land)
18	0	0	0	0	0	7,033,029	Carbon disulfide (air)
19	0	0	0	30,658	30,658	6,815,353	Zinc/Manganese and compounds (land)
20	116,507	0	8,555	6,738	131,800	6,634,658	Nitric acid and nitrate compounds (water)
21	0	0	0	6,529,560	6,529,560	6,536,202	Zinc and compounds (transfers of metals)
22	0	0	0	6,086,892	6,086,892	6,122,359	Zinc and compounds (transfers of metals)
23	115,728	3,997,034	195	0	4,112,957	6,016,593	Ethylene glycol (transfers to sewage)
24	3,560	1,734	230	505	6,029	5,979,266	Zinc and compounds (land)
25	14,957	0	0	5,609,771	5,624,728	5,655,990	Zinc and compounds (transfers of metals)
26	0	0	0	56,236	56,236	5,188,901	Manganese and compounds (land)
27	0	0	0	0	0	4,921,195	Zinc/Lead and compounds (land)
28	3,202,562	0	0	35,533	3,238,095	4,489,071	Methanol (transfers to treatment)
29	7,342	0	404	345	8,091	4,297,279	Acetonitrile, Acrylamide, Cyanide compounds (UIJ)
30	1,058	0	3,617	207	4,882	4,262,003	Acetonitrile, Acrylamide, Acrylonitrile (UIJ)
31	0	0	0	6,349	6,349	4,136,190	Chromium and compounds (land)
32	8,163	0	0	0	8,163	4,100,145	Manganese and compounds (UIJ)
33	0	0	4,078,005	0	4,078,005	4,078,005	Aluminum oxide (transfers to disposal)
34	0	0	0	0	0	3,969,324	Phosphoric acid (land)
35	0	0	0	451	451	3,959,598	Zinc and compounds (land)
36	0	0	0	3,922,477	3,922,477	3,929,232	Zinc and compounds (transfers of metals)
37	0	3,082,333	0	25,122	3,107,455	3,920,455	Methanol (transfers to sewage)
38	287,265	0	38,984	4	326,253	3,745,861	Nitric acid and nitrate compounds, Methanol, Nitrobenzene (UIJ)
39	1,656,263	655,802	6,191	7,301	2,325,557	3,734,554	Dichloromethane (transfers to treatment), Methanol (UIJ)
40	0	0	0	0	0	3,703,331	Nitric acid and nitrate compounds (water)
41	0	10,970	0	3,497,819	3,508,789	3,610,159	Zinc and compounds (transfers of metals)
42	0	0	0	0	0	3,583,542	Manganese and compounds (UIJ)
43	0	3,327,347	1,280	3,628	3,332,255	3,572,663	Methanol (transfers to sewage)
44	0	3,361,224	0	0	3,361,224	3,572,451	Methanol (transfers to sewage)
45	400,499	569	4,024	24,750	429,842	3,487,734	Dichloromethane, Hydrochloric acid, Methanol (air)
46	820,875	116	0	0	820,991	3,485,604	Hydrochloric acid, Methanol, Sulfuric acid, Toluene, Hydrogen fluoride (air), Xylene, Acetonitrile (transfers to treatment)
47	9,574	0	0	7,256	16,830	3,423,420	Formaldehyde (UIJ)
48	0	3,022,319	0	0	3,022,319	3,402,156	Nitric acid and nitrate compounds, Ethylene glycol (transfers to sewage)
49	0	0	0	790	790	3,376,624	Zinc and compounds, Phosphorus (land)
50	0	0	0	0	0	3,183,329	Phosphoric acid (water)
	17,143,845	**25,227,147**	**4,142,335**	**49,883,761**	**96,397,088**	**341,883,670**	
	18.6	**25.0**	**20.2**	**27.6**	**24.5**	**29.4**	
	92,058,224	**100,954,738**	**20,484,603**	**180,542,191**	**394,039,756**	**1,161,341,947**	

* Chemicals accounting for more than 70% of total releases and transfers from the facility.

➤ UIJ = underground injection

Table 5–13
M 1997

NPRI Total Releases and Transfers by All Facilities and by Facilities with Largest Amounts, by Province, 1997

	All NPRI Facilities				Top 50 Facilities		Top 50 Facilities as % of All Facilities	
Province	Number of Facilities	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Number of Facilities	Total Releases and Transfers (kg)	Facilities (%)	Total Releases and Transfers (%)
Alberta	107	11,987,370	1,166,942	13,154,312	6	8,538,835	5.6	64.9
British Columbia	77	5,459,128	890,409	6,349,537	0	0	0.0	0.0
Manitoba	44	3,397,552	357,194	3,754,746	2	2,527,519	4.5	67.3
New Brunswick	25	2,357,036	2,098,146	4,455,182	4	3,953,577	16.0	88.7
Newfoundland	8	412,606	0	412,606	0	0	0.0	0.0
Nova Scotia	23	1,063,517	472,606	1,536,123	0	0	0.0	0.0
Ontario	767	39,955,770	35,395,295	75,351,065	28	49,665,873	3.7	65.9
Prince Edward Island	3	219,770	34,694	254,464	0	0	0.0	0.0
Quebec	356	14,649,326	9,078,464	23,727,790	9	9,848,628	2.5	41.5
Saskatchewan	20	946,849	14,511	961,360	1	542,102	5.0	56.4
Total	**1,430**	**80,448,924**	**49,508,261**	**129,957,185**	**50**	**75,076,534**	**3.5**	**57.8**

Geographic Distribution of Top Facilities

Twenty-eight of the 50 NPRI facilities reporting the largest transfers and releases were located in Ontario (**Table 5–13**). Their releases and transfers totaled 49.7 million kg. Nine facilities in Quebec were among the top 50, with 9.8 million kg of releases and transfers. Six facilities in Alberta released and transferred 8.5 million kg. In five provinces, facilities among the top 50 reported more than half of the releases and transfers: Alberta (65 percent), Manitoba (67 percent), New Brunswick (89 percent), Ontario (66 percent) and Saskatchewan (56 percent).

Seven of the top TRI facilities were located in Texas, where they reported releases and transfers of 45.9 million kg, or 38 percent of the state's total (**Table 5–14**). Four Louisiana facilities were in the top 50 and they reported 28.7 million kg of releases and transfers, 42 percent of the Louisiana total. Altogether, 23 states had one or more of the top TRI facilities. Facilities among the top 50 in TRI reported more than half of the releases and transfers in five states: Arizona (57 percent), Idaho (51 percent), Montana (92 percent), New Mexico (91 percent) and Utah (94 percent).

Table 5–14

M 1997

TRI Total Releases and Transfers by All Facilities and by Facilities with Largest Amounts, by State, 1997

State	All TRI Facilities				Top 50 Facilities		Top 50 Facilities as % of All Facilities	
	Number of Facilities	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Number of Facilities	Total Releases and Transfers (kg)	Facilities (%)	Total Releases and Transfers (%)
Alabama	461	30,199,535	11,316,489	41,516,024	1	7,033,029	0.2	16.9
Alaska	6	540,492	1,133	541,625	0	0	0.0	0.0
Arizona	175	13,436,541	1,765,417	15,201,958	1	8,596,464	0.6	56.5
Arkansas	326	10,227,944	12,860,185	23,088,129	1	7,550,269	0.3	32.7
California	1,154	8,921,534	11,897,413	20,818,947	0	0	0.0	0.0
Colorado	151	1,331,351	970,229	2,301,580	0	0	0.0	0.0
Connecticut	278	2,314,384	6,184,467	8,498,851	0	0	0.0	0.0
Delaware	60	1,011,075	1,502,816	2,513,891	0	0	0.0	0.0
District of Columbia	1	0	2	2	0	0	0.0	0.0
Florida	457	32,013,775	8,217,166	40,230,941	3	16,922,759	0.7	42.1
Georgia	609	20,373,823	8,596,443	28,970,266	0	0	0.0	0.0
Hawaii	10	123,864	3,258	127,122	0	0	0.0	0.0
Idaho	50	6,229,364	340,740	6,570,104	1	3,376,624	2.0	51.4
Illinois	1,166	31,144,870	19,112,546	50,257,416	1	6,815,353	0.1	13.6
Indiana	913	27,811,195	23,853,714	51,664,909	3	19,741,083	0.3	38.2
Iowa	356	7,830,048	5,641,192	13,471,240	0	0	0.0	0.0
Kansas	245	7,228,250	3,879,211	11,107,461	0	0	0.0	0.0
Kentucky	380	12,243,252	6,808,052	19,051,304	0	0	0.0	0.0
Louisiana	261	63,224,378	4,373,587	67,597,965	4	28,688,506	1.5	42.4
Maine	75	2,947,091	849,997	3,797,088	0	0	0.0	0.0
Maryland	165	4,446,359	3,923,483	8,369,842	0	0	0.0	0.0
Massachusetts	422	2,079,208	5,029,094	7,108,302	0	0	0.0	0.0
Michigan	786	20,000,568	26,034,295	46,034,863	3	13,467,072	0.4	29.3
Minnesota	429	5,371,218	5,314,124	10,685,342	0	0	0.0	0.0
Mississippi	264	24,753,247	1,232,243	25,985,490	2	7,803,476	0.8	30.0
Missouri	502	22,779,721	6,806,404	29,586,125	2	8,880,793	0.4	30.0
Montana	23	18,699,623	553,382	19,253,005	1	17,697,271	4.3	91.9
Nebraska	141	2,140,998	4,410,219	6,551,217	0	0	0.0	0.0
Nevada	43	1,821,377	13,540	1,834,917	0	0	0.0	0.0
New Hampshire	97	970,539	417,204	1,387,743	0	0	0.0	0.0
New Jersey	498	6,022,954	12,863,215	18,886,169	0	0	0.0	0.0
New Mexico	32	13,287,600	231,464	13,519,064	1	12,345,858	3.1	91.3
New York	600	11,707,417	7,565,135	19,272,552	1	3,487,734	0.2	18.1
North Carolina	736	29,035,377	4,973,031	34,008,408	2	8,105,514	0.3	23.8
North Dakota	29	509,847	85,306	595,153	0	0	0.0	0.0
Ohio	1,464	36,992,382	31,794,582	68,786,964	3	15,465,446	0.2	22.5
Oklahoma	261	6,067,878	2,510,321	8,578,199	0	0	0.0	0.0
Oregon	227	9,677,021	7,336,782	17,013,803	1	3,572,663	0.4	21.0
Pennsylvania	1,120	33,713,706	46,128,523	79,842,229	3	36,234,491	0.3	45.4
Puerto Rico	134	2,894,302	3,615,562	6,509,864	0	0	0.0	0.0
Rhode Island	116	705,748	500,366	1,206,114	0	0	0.0	0.0
South Carolina	439	19,349,981	8,850,818	28,200,799	0	0	0.0	0.0
South Dakota	64	1,343,396	1,189,050	2,532,446	0	0	0.0	0.0
Tennessee	568	35,877,974	8,553,230	44,431,204	3	14,833,957	0.5	33.4
Texas	1,080	83,883,000	37,017,533	120,900,533	7	45,881,963	0.6	38.0
Utah	125	41,835,001	4,582,453	46,417,454	3	43,414,113	2.4	93.5
Vermont	33	174,940	127,329	302,269	0	0	0.0	0.0
Virgin Islands	2	537,535	159,608	697,143	0	0	0.0	0.0
Virginia	387	19,348,059	10,668,654	30,016,713	1	3,402,156	0.3	11.3
Washington	254	8,735,877	4,246,444	12,982,321	0	0	0.0	0.0
West Virginia	125	7,865,320	4,221,960	12,087,280	0	0	0.0	0.0
Wisconsin	798	11,955,575	14,882,171	26,837,746	2	8,567,076	0.3	31.9
Wyoming	27	3,565,677	28,174	3,593,851	0	0	0.0	0.0
Total	**19,125**	**767,302,191**	**394,039,756**	**1,161,341,947**	**50**	**341,883,670**	**0.3**	**29.4**

Releases and Transfers by Chemical

Top Chemicals

Releases and transfers of the top 25 chemicals in NPRI totaled 120.6 million kg, 93 percent of the NPRI total (**Table 5–15**). Zinc and its compounds, with 25.7 million kg, and methanol, with 21.9 million kg, headed the list of top chemicals. Releases and transfers of these two substances amounted to 37 percent of all NPRI releases and transfers in the matched data set. Most of the zinc and its compounds—19.9 million kg—was transferred off-site, while most of the methanol—19.0 million kg—was released on-site. NPRI facilities also released and transferred more than eight million kg each of three other substances: toluene (8.4 million kg), nitric acid and nitrate compounds (8.2 million kg), and xylene (8.1 million kg).

Table 5–15

M 1997

The 25 NPRI Chemicals with the Largest Total Releases and Transfers, 1997

Rank	CAS Number	Chemical	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	% of Total
1	—	Zinc (and its compounds)	322	5,813,918	19,888,014	25,701,932	19.8
2	67-56-1	Methanol	259	19,031,512	2,906,563	21,938,075	16.9
3	108-88-3	Toluene	241	6,151,767	2,260,993	8,412,760	6.5
4	—	Nitric acid and nitrate compounds	138	3,089,698	5,062,691	8,152,389	6.3
5	1330-20-7	Xylene (mixed isomers)	232	6,401,451	1,710,953	8,112,404	6.2
6	—	Manganese (and its compounds)	257	1,909,572	4,862,688	6,772,260	5.2
7	78-93-3	Methyl ethyl ketone	130	5,133,281	795,946	5,929,227	4.6
8	7664-93-9	Sulfuric acid	78	4,463,666	0	4,463,666	3.4
9	—	Lead (and its compounds)	129	1,251,363	2,915,080	4,166,443	3.2
10	110-82-7	Cyclohexane	36	2,893,761	330,714	3,224,475	2.5
11	—	Chromium (and its compounds)	236	776,821	1,990,561	2,767,382	2.1
12	75-09-2	Dichloromethane	55	2,303,223	260,108	2,563,331	2.0
13	50-00-0	Formaldehyde	91	1,828,117	302,732	2,130,849	1.6
14	74-85-1	Ethylene	42	1,992,363	60	1,992,423	1.5
15	—	Copper (and its compounds)	261	660,947	1,111,567	1,772,514	1.4
16	7664-39-3	Hydrogen fluoride	33	1,725,590	29	1,725,619	1.3
17	71-36-3	n-Butyl alcohol	78	1,200,412	391,354	1,591,766	1.2
18	71-43-2	Benzene	48	1,479,788	27,302	1,507,090	1.2
19	7647-01-0	Hydrochloric acid	78	1,401,424	0	1,401,424	1.1
20	10049-04-4	Chlorine dioxide	45	1,199,244	0	1,199,244	0.9
21	1332-21-4	Asbestos (friable)	36	53,026	1,103,142	1,156,168	0.9
22	100-42-5	Styrene	80	818,325	321,545	1,139,870	0.9
23	115-07-1	Propylene	32	972,363	0	972,363	0.7
24	107-21-1	Ethylene glycol	147	355,513	565,199	920,712	0.7
25	7782-50-5	Chlorine	120	917,863	230	918,093	0.7
		Subtotal	**3,204**	**73,825,008**	**46,807,471**	**120,632,479**	**92.8**
		% of Total	**69.7**	**91.8**	**94.5**	**92.8**	
		Total	**4,599**	**80,448,924**	**49,508,261**	**129,957,185**	**100.0**

Table 5–16

M 1997

The 25 TRI Chemicals with the Largest Total Releases and Transfers, 1997

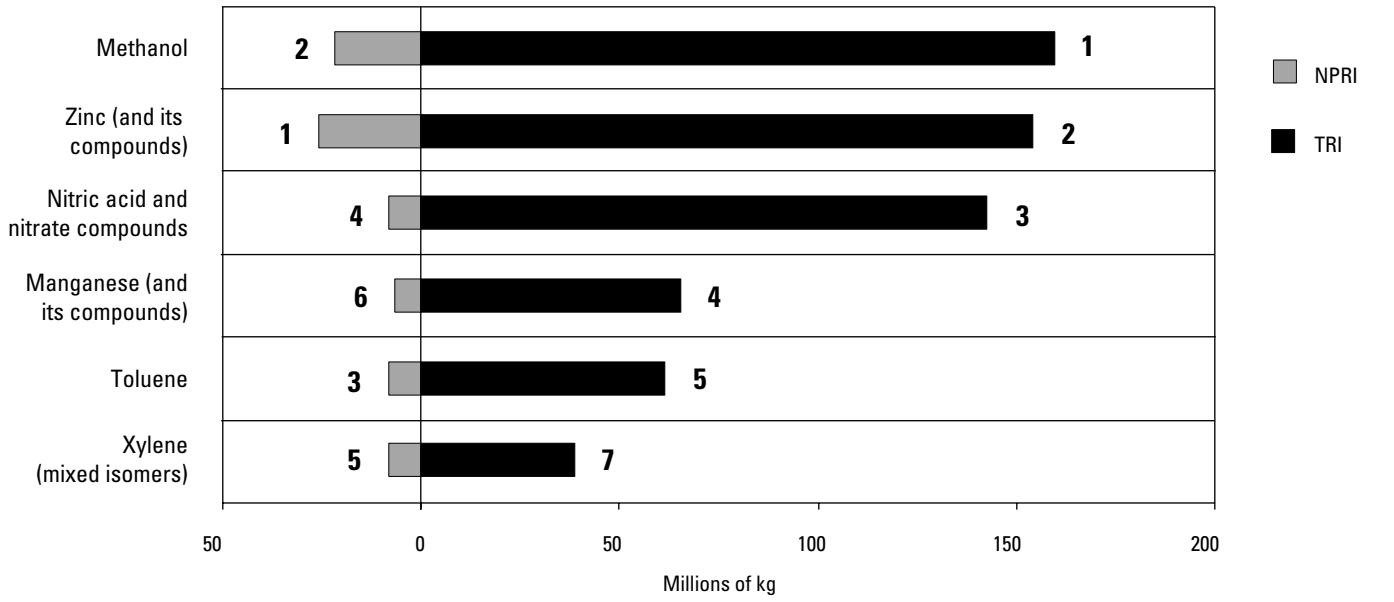
Rank	CAS Number	Chemical	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	% of Total
1	67-56-1	Methanol	2,218	99,355,089	60,218,372	159,573,461	13.7
2	—	Zinc (and its compounds)	3,044	59,247,400	95,103,244	154,350,644	13.3
3	—	Nitric acid and nitrate compounds	2,667	97,316,227	45,344,123	142,660,350	12.3
4	—	Manganese (and its compounds)	2,827	36,787,267	28,686,838	65,474,105	5.6
5	108-88-3	Toluene	3,020	51,645,746	9,811,506	61,457,252	5.3
6	7664-38-2	Phosphoric acid	2,721	34,265,979	4,835,539	39,101,518	3.4
7	1330-20-7	Xylene (mixed isomers)	2,867	33,620,731	5,194,431	38,815,162	3.3
8	—	Copper (and its compounds)	4,177	21,179,453	13,536,196	34,715,649	3.0
9	7782-50-5	Chlorine	1,214	29,370,174	629,438	29,999,612	2.6
10	75-09-2	Dichloromethane	783	21,506,464	6,085,342	27,591,806	2.4
11	78-93-3	Methyl ethyl ketone	1,941	24,088,906	3,268,722	27,357,628	2.4
12	—	Lead (and its compounds)	1,606	8,818,161	17,600,736	26,418,897	2.3
13	—	Chromium (and its compounds)	3,288	14,485,603	11,726,757	26,212,360	2.3
14	7647-01-0	Hydrochloric acid	840	26,161,189	0	26,161,189	2.3
15	74-85-1	Ethylene	302	13,692,620	9,886,584	23,579,204	2.0
16	75-15-0	Carbon disulfide	92	23,370,147	139,037	23,509,184	2.0
17	100-42-5	Styrene	1,491	20,309,017	3,083,829	23,392,846	2.0
18	107-21-1	Ethylene glycol	1,236	4,513,272	15,375,202	19,888,474	1.7
19	71-36-3	n-Butyl alcohol	988	11,146,670	1,983,085	13,129,755	1.1
20	75-05-8	Acetonitrile	100	8,976,372	4,111,538	13,087,910	1.1
21	50-00-0	Formaldehyde	809	9,884,585	1,506,988	11,391,573	1.0
22	7664-93-9	Sulfuric acid	534	9,478,028	0	9,478,028	0.8
23	79-01-6	Trichloroethylene	617	7,924,638	664,435	8,589,073	0.7
24	108-95-2	Phenol	755	4,709,843	3,435,076	8,144,919	0.7
25	108-10-1	Methyl isobutyl ketone	836	7,262,405	757,957	8,020,362	0.7
		Subtotal	**40,973**	**679,115,986**	**342,984,975**	**1,022,100,961**	**88.0**
		% of Total	**70.3**	**88.5**	**87.0**	**88.0**	
		Total	**58,252**	**767,302,191**	**394,039,756**	**1,161,341,947**	**100.0**

Releases and transfers of the top 25 chemicals in TRI totaled 1.02 billion kg, or 88 percent of the TRI total (**Table 5–16**). Methanol ranked first in TRI with 159.6 million kg, slightly more than the 154.4 million kg of zinc and its compounds, and nitric acid and nitrate compounds ranked third, with 142.7 million kg. Together, these three substances represented 39 percent of TRI total releases and transfers. TRI facilities reported more than 60 million kg each of two more substances: manganese and its compounds (65.5 million kg) and toluene (61.5 million kg).

The top five NPRI and top five TRI chemicals overlapped, with four substances in common: methanol, zinc and its compounds, nitric acid and nitrate compounds and toluene (**Figure 5–14**).

Figure 5–14
M 1997

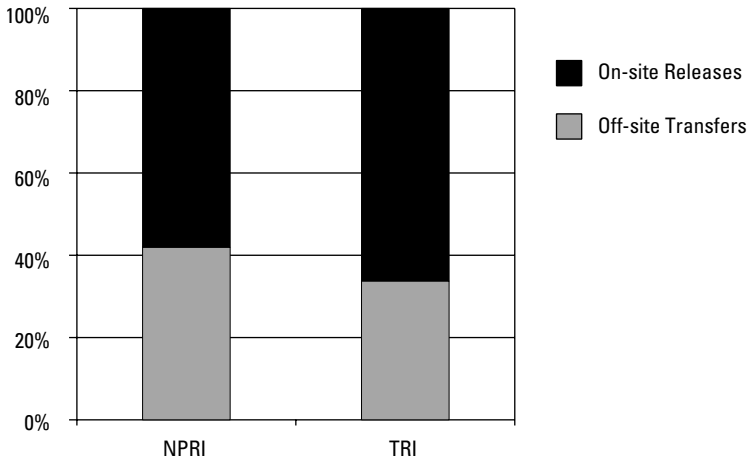
Comparisons for Top Five Chemicals under NPRI and TRI for Total Releases and Transfers, 1997



➤ Numbers indicate rank for total releases and transfers in matched data set.

Figure 5–15
M 1997

Distribution of NPRI and TRI Total Releases and Transfers of Known or Suspected Carcinogens†, 1997



† Carcinogenic substances are those chemicals or chemical compounds listed in either the International Agency for Research on Cancer (IARC) Monographs or the US National Toxicological Program (NTP) Annual Report on Carcinogens.

➤ A chemical (and its compounds) is included if the chemical or any of its compounds is designated carcinogenic.

Carcinogens

NPRI facilities released 58 percent of total releases and transfers of the designated carcinogens, compared to 66 percent in TRI. Correspondingly, transfers of carcinogens represented 42 percent of total releases and transfers as reported to NPRI compared to 34 percent in TRI (**Figure 5–15**, see previous page).

From NPRI sources, lead and its compounds was the carcinogen with the largest releases and transfers, 4.2 million kg, which came to 22 percent of carcinogens released and transferred. Chromium and its compounds, with 2.8 million kg, was second largest, at 15 percent of the total, and dichloromethane came third, with 14 percent (2.6 million kg). Formaldehyde ranked fourth with 11 percent, or 2.1 million kg (**Table 5–17**).

Table 5–17
M 1997

NPRI Total Releases and Transfers of Known or Suspected Carcinogens†, 1997

CAS Number	Chemical	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	% of Total for Carcinogens
—	Lead (and its compounds)	129	1,251,363	2,915,080	4,166,443	22.3
—	Chromium (and its compounds)	236	776,821	1,990,561	2,767,382	14.8
75-09-2	Dichloromethane	55	2,303,223	260,108	2,563,331	13.7
50-00-0	Formaldehyde	91	1,828,117	302,732	2,130,849	11.4
71-43-2	Benzene	48	1,479,788	27,302	1,507,090	8.1
1332-21-4	Asbestos (friable)	36	53,026	1,103,142	1,156,168	6.2
100-42-5	Styrene	80	818,325	321,545	1,139,870	6.1
—	Nickel (and its compounds)	150	364,094	515,592	879,686	4.7
79-01-6	Trichloroethylene	32	695,270	37,282	732,552	3.9
108-05-4	Vinyl acetate	10	283,107	4,105	287,212	1.5
75-07-0	Acetaldehyde	18	268,195	7,074	275,269	1.5
67-66-3	Chloroform	14	221,835	5,879	227,714	1.2
—	Arsenic (and its compounds)	48	149,053	67,092	216,145	1.2
—	Cadmium (and its compounds)	15	41,353	123,627	164,980	0.9
106-99-0	1,3-Butadiene	13	105,819	12,621	118,440	0.6
127-18-4	Tetrachloroethylene	27	52,407	24,659	77,066	0.4
117-81-7	Di(2-ethylhexyl) phthalate	33	19,849	45,440	65,289	0.4
75-01-4	Vinyl chloride	8	43,991	1	43,992	0.2
—	Cobalt (and its compounds)	25	20,614	10,372	30,986	0.2
107-06-2	1,2-Dichloroethane	6	19,603	589	20,192	0.1
75-21-8	Ethylene oxide	9	16,159	0	16,159	0.1
75-56-9	Propylene oxide	3	13,005	0	13,005	0.1
56-23-5	Carbon tetrachloride	4	336	12,429	12,765	0.1
26471-62-5	Toluenediisocyanate (mixed isomers)	24	774	8,315	9,089	0.0
106-46-7	1,4-Dichlorobenzene	4	8,100	400	8,500	0.0
107-13-1	Acrylonitrile	8	6,469	0	6,469	0.0
139-13-9	Nitrilotriacetic acid	16	2,868	2,902	5,770	0.0
123-91-1	1,4-Dioxane	3	3,998	0	3,998	0.0
79-06-1	Acrylamide	5	527	2,684	3,211	0.0
121-14-2	2,4-Dinitrotoluene	1	816	0	816	0.0
96-09-3	Styrene oxide	2	297	0	297	0.0
140-88-5	Ethyl acrylate	6	161	80	241	0.0
77-78-1	Dimethyl sulfate	1	10	0	10	0.0
584-84-9	Toluene-2,4-diisocyanate	1	10	0	10	0.0
106-89-8	Epichlorohydrin	1	4	3	7	0.0
101-14-4	4,4'-Methylenebis(2-chloroaniline)	1	6	0	6	0.0
302-01-2	Hydrazine	1	0	0	0	0.0
101-77-9	4,4'-Methylenedianiline	1	0	0	0	0.0
62-56-6	Thiourea	1	0	0	0	0.0
	Subtotal	**1,166**	**10,849,393**	**7,801,616**	**18,651,009**	**100.0**
	% of Total	**25.4**	**13.5**	**15.8**	**14.4**	
	Total for All Matched Chemicals	**4,599**	**80,448,924**	**49,508,261**	**129,957,185**	

† Carcinogenic substances are those chemicals or chemical compounds listed in either the International Agency for Research on Cancer (IARC) Monographs or the US National Toxicological Program (NTP) Annual Report on Carcinogens.

➤ A chemical (and its compounds) is included if the chemical or any of its compounds is designated carcinogenic.

From TRI sources, dichloromethane had the largest total among carcinogens, with 27.6 million kg, or 16 percent of carcinogen releases and transfers. Lead and its compounds ranked second, with 26.4 million kg, followed closely by chromium and its compounds, with 26.2 million kg. These amounts were each approximately 15 percent of the total for carcinogens. Styrene was fourth, with 13 percent, or 23.4 million kg (**Table 5–18**).

Table 5–18
M 1997

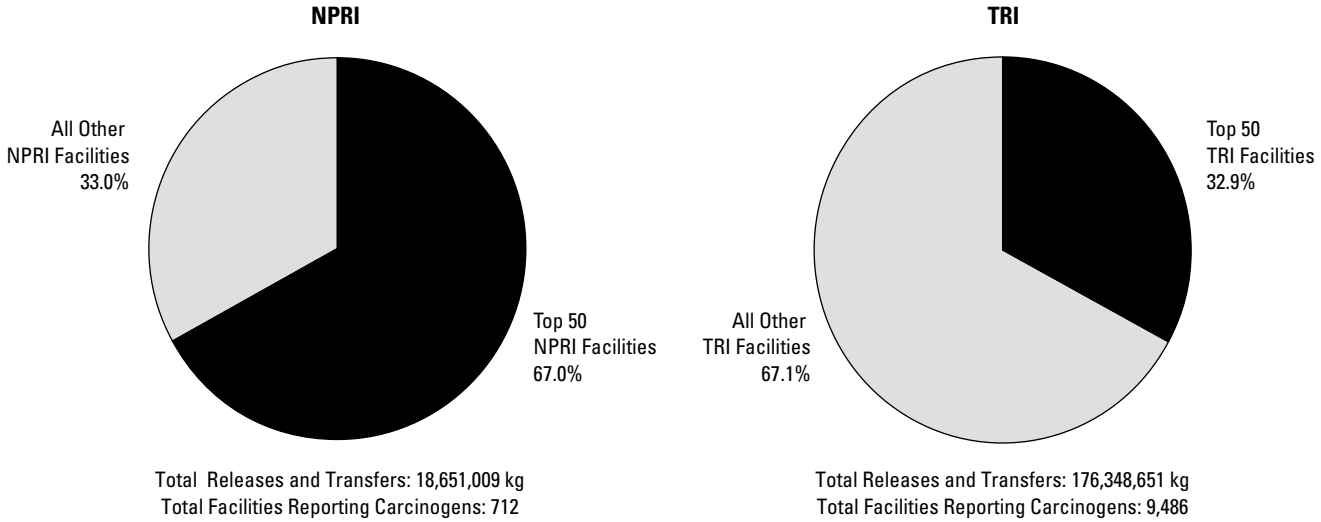
TRI Total Releases and Transfers of Known or Suspected Carcinogens†, 1997

CAS Number	Chemical	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	% of Total for Carcinogens
75-09-2	Dichloromethane	783	21,506,464	6,085,342	27,591,806	15.6
—	Lead (and its compounds)	1,606	8,818,161	17,600,736	26,418,897	15.0
—	Chromium (and its compounds)	3,288	14,485,603	11,726,757	26,212,360	14.9
100-42-5	Styrene	1,491	20,309,017	3,083,829	23,392,846	13.3
50-00-0	Formaldehyde	809	9,884,585	1,506,988	11,391,573	6.5
79-01-6	Trichloroethylene	617	7,924,638	664,435	8,589,073	4.9
—	Nickel (and its compounds)	2,947	2,551,439	5,199,851	7,751,290	4.4
75-07-0	Acetaldehyde	248	6,063,429	543,398	6,606,827	3.7
71-43-2	Benzene	449	4,148,494	1,045,633	5,194,127	2.9
67-66-3	Chloroform	143	3,346,096	839,939	4,186,035	2.4
—	Arsenic (and its compounds)	390	2,742,175	1,335,280	4,077,455	2.3
127-18-4	Tetrachloroethylene	359	3,054,561	488,164	3,542,725	2.0
79-06-1	Acrylamide	77	3,357,462	111,744	3,469,206	2.0
107-13-1	Acrylonitrile	109	2,384,811	531,447	2,916,258	1.7
1332-21-4	Asbestos (friable)	63	236,623	1,963,542	2,200,165	1.2
108-05-4	Vinyl acetate	186	1,563,459	549,214	2,112,673	1.2
106-99-0	1,3-Butadiene	184	1,231,099	144,951	1,376,050	0.8
107-06-2	1,2-Dichloroethane	78	418,669	868,755	1,287,424	0.7
—	Cadmium (and its compounds)	147	415,845	684,109	1,099,954	0.6
—	Cobalt (and its compounds)	517	357,314	586,218	943,532	0.5
98-95-3	Nitrobenzene	14	318,675	589,636	908,311	0.5
106-89-8	Epichlorohydrin	77	151,045	619,599	770,644	0.4
56-23-5	Carbon tetrachloride	65	177,280	523,206	700,486	0.4
117-81-7	Di(2-ethylhexyl) phthalate	296	139,264	560,238	699,502	0.4
75-56-9	Propylene oxide	117	262,657	299,264	561,921	0.3
75-01-4	Vinyl chloride	43	417,294	83,377	500,671	0.3
75-21-8	Ethylene oxide	147	410,700	60,069	470,769	0.3
26471-62-5	Toluenediisocyanate (mixed isomers)	174	23,777	421,558	445,335	0.3
123-91-1	1,4-Dioxane	44	155,170	266,885	422,055	0.2
106-46-7	1,4-Dichlorobenzene	23	121,521	89,422	210,943	0.1
140-88-5	Ethyl acrylate	93	83,209	74,121	157,330	0.1
101-77-9	4,4'-Methylenedianiline	26	11,050	39,954	51,004	0.0
302-01-2	Hydrazine	42	5,181	20,622	25,803	0.0
79-46-9	2-Nitropropane	3	12,026	11	12,037	0.0
62-56-6	Thiourea	29	3,004	7,083	10,087	0.0
139-13-9	Nitrilotriacetic acid	9	4,478	5,506	9,984	0.0
584-84-9	Toluene-2,4-diisocyanate	61	2,954	7,013	9,967	0.0
96-45-7	Ethylene thiourea	13	130	4,457	4,587	0.0
64-67-5	Diethyl sulfate	36	3,365	942	4,307	0.0
101-14-4	4,4'-Methylenebis(2-chloroaniline)	24	1,028	3,061	4,089	0.0
77-78-1	Dimethyl sulfate	37	2,042	1,056	3,098	0.0
91-08-7	Toluene-2,6-diisocyanate	28	1,271	1,429	2,700	0.0
95-80-7	2,4-Diaminotoluene	3	888	125	1,013	0.0
121-14-2	2,4-Dinitrotoluene	4	858	85	943	0.0
94-59-7	Safrole	2	229	113	342	0.0
606-20-2	2,6-Dinitrotoluene	1	210	50	260	0.0
90-94-8	Michler's ketone	1	182	0	182	0.0
96-09-3	Styrene oxide	2	5	0	5	0.0
	Subtotal	**15,905**	**117,109,437**	**59,239,214**	**176,348,651**	**100.0**
	% of Total	**27.3**	**15.3**	**15.0**	**15.2**	
	Total for All Matched Chemicals	**58,252**	**767,302,191**	**394,039,756**	**1,161,341,947**	

† Carcinogenic substances are those chemicals or chemical compounds listed in either the International Agency for Research on Cancer (IARC) Monographs or the US National Toxicological Program (NTP) Annual Report on Carcinogens.
➤ A chemical (and its compounds) is included if the chemical or any of its compounds is designated carcinogenic.

Figure 5–16
M 1997

NPRI and TRI Total Releases and Transfers of Known or Suspected Carcinogens†, Top 50 Facilities and All Others, 1997



† Carcinogenic substances are those chemicals or chemical compounds listed in either the International Agency for Research on Cancer (IARC) Monographs or the US National Toxicological Program (NTP) Annual Report on Carcinogens.
➤ A chemical (and its compounds) is included if the chemical or any of its compounds is designated carcinogenic.

The 50 NPRI facilities with the largest amounts for designated carcinogens reported two-thirds of the NPRI total. The 50 TRI facilities with the largest amounts reported one-third of the TRI total (**Figure 5–16**).

NPRI's top facilities for carcinogen releases and transfers reported 12.5 million kg of these substances. By type of release or transfer, the largest amounts were 4.8 million kg released to air and 4.6 million kg of metals transferred to treatment/sewage/disposal. TRI's top facilities for carcinogen releases and transfers reported 58.0 million kg. The largest release/transfer types for the TRI facilities were 22.3 million kg of on-site land releases and 12.5 million kg of metals transfers (**Tables 5–19** and **5–20**).

Table 5–19

M 1997

The 50 NPRI Facilities with the Largest Total Releases and Transfers of Known or Suspected Carcinogens†, 1997

Rank	Facility	City, Province	SIC Codes Canada	SIC Codes US	Number of Forms	Total Air Emissions (kg)	Surface Water Discharges (kg)	Under-ground Injection (kg)	On-site Land Releases (kg)	Total Releases (kg)
1	Inco Limited, Copper Cliff Smelter Complex	Copper Cliff, ON	29	33	4	248,650	0	0	649,000	897,650
2	Dofasco Inc.	Hamilton, ON	29	33	5	315,968	446	0	82	316,496
3	Co-Steel Lasco	Whitby, ON	29	33	3	1,220	99	0	91,254	92,573
4	Dominion Castings Ltd., NACO Inc.	Hamilton, ON	29	33	2	1,476	100	0	0	1,676
5	Celanese Canada Inc.	Edmonton, AB	37	28	6	151,422	0	227,000	0	378,422
6	Noranda Mining and Exploration Inc., Brunswick Smelting Div.	Belledune, NB	29	33	3	17,150	837	0	0	17,987
7	Stelco Inc., Hilton Works	Hamilton, ON	29	33	6	237,840	2,690	0	0	242,390
8	Sammi Atlas Inc., Aciers inoxydables Atlas	Tracy, QC	29	33	3	23,500	370	0	0	23,870
9	Metalex Products Ltd.	Richmond, BC	29	33	2	342	0	0	0	342
10	Fonderies canadiennes d'Acier Ltée, Atchison Casting Corp.	Montréal, QC	31	35	2	0	0	0	0	0
11	Slater Steels, Hamilton Specialty Bar Division	Hamilton, ON	29	33	5	1,955	0	0	100	2,455
12	Tonolli Canada Limited	Mississauga, ON	29	33	1	2,305	50	0	0	2,355
13	Novopharm Limited	Scarborough, ON	37	28	1	313,250	0	0	0	313,250
14	Carpenter Canada Ltd.	Woodbridge, ON	16	30	2	296,820	0	0	0	296,925
15	Bayer Inc., Bayer AG	Sarnia, ON	37	28	5	81,872	31	0	0	82,673
16	Métallurgie Noranda Inc, Fonderie Horne	Rouyn Noranda, QC	29	33	5	278,510	2,520	0	0	281,030
17	MacMillan Bloedel Pembroke LP, MacMillan Bloedel Ltd.	Pembroke, ON	25	24	1	279,000	0	0	0	279,000
18	Petro-Canada, Burrard Products Terminal	Port Moody, BC	36	29	2	1,308	11	0	0	1,319
19	Domfoam International Inc.	St-Léonard, QC	16	30	2	245,996	0	0	0	245,996
20	Ispat Sidbec Inc. Aciérie, Ispat Mexicana	Contrecoeur, QC	29	33	2	4,625	412	0	229,755	234,792
21	Hudson Bay Mining and Smelting Co., Metallurgical Complex	Flin Flon, MB	29	33	3	233,458	996	0	0	234,454
22	Novopharm Limited	Markham, ON	37	28	1	226,993	0	0	0	226,993
23	Dominion Colour Corp., Kikuchi Color & Chemicals Corp.	Ajax, ON	37	28	2	0	0	0	0	0
24	Valle Foam Industries Inc., Valle 1	Brampton, ON	16	30	2	218,200	0	0	0	218,252
25	Abitibi-Consolidated Inc., Division Port-Alfred	La Baie, QC	27	26	2	13,030	199,400	0	0	212,430
26	Sandvik Steel Canada, Sandvik Steel, Inc.	Arnprior, ON	29	33	1	203,760	0	0	0	203,760
27	Vitafoam Products Canada Ltd., Vita-Toronto	Downsview, ON	16	30	3	201,660	0	0	0	202,260
28	Uniboard Canada Inc., Division Sayabec, UniKunz Canada Inc.	Sayabec, QC	25	24	1	62,136	0	0	0	62,136
29	Gerdau MRM Steel Inc., Grupo Gerdau	Selkirk, MB	29	33	2	2,045	78	0	167,150	169,273
30	Algoma Steel Inc, Algoma Steel Main Works	Sault Ste. Marie, ON	29	33	6	165,794	2,112	0	0	167,918
31	Stelco McMaster Ltée, Stelco Inc.	Contrecoeur, QC	29	33	2	0	0	0	0	990
32	Foamex Canada Inc., Foamex L.P.	Toronto, ON	16	30	2	156,995	0	0	0	157,075
33	Dow Chemical Canada Inc.	Varennes, QC	16	30	2	953	0	0	0	953
34	Dow Chemical Canada Inc.	Sarnia, ON	37	28	17	53,503	2	0	46,576	100,758
35	Weyerhaeuser Canada Ltd., Edson O.S.B. Mill	Edson, AB	25	24	2	131,500	0	0	0	131,500
36	Ivaco Rolling Mills	L'Orignal, ON	29	33	3	0	0	0	0	579
37	Atlas Steels Inc., Atlas Specialty Steels	Welland, ON	29	33	2	236	463	0	0	699
38	Ispat Sidbec Inc., Sidbec-Feruni, Ispat Mexicana	Contrecoeur, QC	29	33	3	0	0	0	125,530	125,530
39	Mirolin Industries, MRL Incorporated	Toronto, ON	16	30	2	119,860	0	0	0	119,860
40	Weyerhaeuser Canada Ltd., Drayton Valley O.S.B. Mill	Drayton Valley, AB	25	24	2	115,430	0	0	0	115,430
41	Chemrec Inc.	Cowansville, QC	37	28	3	1,900	0	0	0	2,700
42	AltaSteel Ltd., Stelco Inc.	Edmonton, AB	29	33	3	3,312	5	0	87,410	90,727
43	Carpenter Canada Ltd., Calgary Division	Calgary, AB	16	30	2	103,050	0	0	0	103,060
44	Philip Services Corp., Philip Enterprises Inc.	Guelph, ON	29	33	1	0	0	0	0	100
45	Domtar Papers, Cornwall Business Unit	Cornwall, ON	27	26	1	100,000	3	0	0	100,003
46	Shell Canada Products Ltd., Sarnia Manufacturing Centre	Corunna, ON	36	29	4	51,720	12	0	179	52,160
47	Daishowa-Marubeni International, Peace River Pulp Div.	Peace River, AB	27	26	1	92,090	2,250	0	0	94,340
48	Bombardier Inc., Bombardier Produits récréatifs	St-Antoine-de-Tilly, QC	39	39	1	47,600	0	0	0	47,600
49	Gerdau Courtice Steel Inc., Gerdau Canada	Cambridge, ON	29	33	2	1,569	0	0	0	1,569
50	Zalev Brothers Limited	Windsor, ON	29	33	5	78	0	0	0	78
	Subtotal				**145**	**4,810,081**	**212,887**	**227,000**	**1,397,036**	**6,654,388**
	% of Total				**12.4**	**54.9**	**80.2**	**82.8**	**91.8**	**61.3**
	Total for All NPRI Matched Carcinogens				**1,166**	**8,754,031**	**265,491**	**274,086**	**1,522,430**	**10,849,393**

† Carcinogenic substances are those chemicals or chemical compounds listed in either the International Agency for Research on Cancer (IARC) Monographs or the US National Toxicological Program (NTP) Annual Report on Carcinogens.

➤ A chemical (and its compounds) is included if the chemical or any of its compounds is designated carcinogenic.

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	0	0	0	0	0	897,650	Chromium and compounds (land)
2	0	63	0	302,700	302,763	619,259	Benzene (air), Lead and compounds (transfers of metals)
3	0	0	0	496,278	496,278	588,851	Lead and compounds (transfers of metals)
4	0	0	0	545,510	545,510	547,186	Chromium and compounds (transfers of metals)
5	0	0	64,033	41,000	105,033	483,455	Vinyl acetate, Acetaldehyde, Formaldehyde (UIJ)
6	0	0	0	465,000	465,000	482,987	Lead and compounds (transfers of metals)
7	0	0	230,000	400	230,400	472,790	Benzene (air), Asbestos (transfers to disposal)
8	0	0	0	401,290	401,290	425,160	Chromium/Nickel and compounds (transfers of metals)
9	0	0	0	421,667	421,667	422,009	Lead and compounds (transfers of metals)
10	0	0	0	324,258	324,258	324,258	Chromium and compounds (transfers of metals)
11	0	0	0	316,350	316,350	318,805	Lead and compounds (transfers of metals)
12	0	0	0	311,202	311,202	313,557	Lead and compounds (transfers of metals)
13	0	0	0	0	0	313,250	Dichloromethane (air)
14	0	0	0	0	0	296,925	Dichloromethane (air)
15	67,300	0	133,000	0	200,300	282,973	Asbestos (transfers to disposal), 1,3-Butadiene (air)
16	0	0	0	0	0	281,030	Lead and compounds (air)
17	0	0	0	0	0	279,000	Formaldehyde (air)
18	0	0	271,000	0	271,000	272,319	Asbestos (transfers to disposal)
19	0	0	0	0	0	245,996	Dichloromethane (air)
20	0	0	0	0	0	234,792	Lead and compounds (land)
21	0	0	0	0	0	234,454	Lead and compounds (air)
22	0	0	0	0	0	226,993	Dichloromethane (air)
23	0	0	0	223,000	223,000	223,000	Lead and compounds (transfers of metals)
24	0	0	0	0	0	218,252	Dichloromethane (air)
25	0	0	0	0	0	212,430	Formaldehyde (water)
26	0	0	0	0	0	203,760	Trichloroethylene (air)
27	0	0	0	0	0	202,260	Dichloromethane (air)
28	0	0	127,000	0	127,000	189,136	Formaldehyde (transfers to disposal, air)
29	0	0	0	0	0	169,273	Lead and compounds (land)
30	0	0	0	0	0	167,918	Benzene (air)
31	0	0	0	166,500	166,500	167,490	Lead and compounds (transfers of metals)
32	1	0	0	0	1	157,076	Dichloromethane (air)
33	138,383	0	680	0	139,063	140,016	Styrene (transfers to treatment)
34	30,931	0	0	0	30,931	131,689	Asbestos, Styrene (land), Benzene (air)
35	0	0	0	0	0	131,500	Formaldehyde (air)
36	0	0	0	129,110	129,110	129,689	Lead and compounds (transfers of metals)
37	0	0	0	128,180	128,180	128,879	Chromium and compounds (transfers of metals)
38	0	0	0	0	0	125,530	Lead and compounds (land)
39	0	0	0	0	0	119,860	Dichloromethane, Styrene (air)
40	0	0	0	0	0	115,430	Formaldehyde (air)
41	105,500	0	0	0	105,500	108,200	Dichloromethane, Trichloroethylene (transfers to treatment)
42	0	0	0	17,233	17,233	107,960	Lead and compounds (land)
43	0	0	0	0	0	103,060	Dichloromethane (air)
44	0	0	0	100,000	100,000	100,100	Nickel and compounds (transfers of metals)
45	0	0	0	0	0	100,003	Benzene (air)
46	0	0	43,700	48	43,748	95,908	Asbestos (transfers to disposal), Benzene (air)
47	0	0	0	0	0	94,340	Chloroform (air)
48	22,965	0	23,276	0	46,241	93,841	Styrene (air, transfers to disposal)
49	0	0	0	91,952	91,952	93,521	Lead and compounds (transfers of metals)
50	0	0	0	93,029	93,029	93,107	Lead/Nickel and compounds (transfers of metals)
	365,080	**63**	**892,689**	**4,574,707**	**5,832,539**	**12,486,927**	
	49.1	**0.2**	**63.8**	**81.4**	**74.8**	**67.0**	
	743,079	**37,373**	**1,398,840**	**5,622,324**	**7,801,616**	**18,651,009**	

* Chemicals accounting for more than 70% of total releases and transfers of carcinogens from the facility.

➤ UIJ = underground injection

Table 5–20

M 1997

The 50 TRI Facilities with the Largest Total Releases and Transfers of Known or Suspected Carcinogens†, 1997

Rank	Facility	City, State	US SIC Code	Number of Forms	Total Air Emissions (kg)	Surface Water Discharges (kg)	Under-ground Injection (kg)	On-site Land Releases (kg)	Total Releases (kg)
1	American Chrome & Chemicals, Harrisons & Crosfield American	Corpus Christi, TX	28	1	2,018	113	0	6,575,964	6,578,095
2	Kennecott Utah Copper, Kennecott Holdings Corp.	Magna, UT	33	5	27,487	452	0	4,073,128	4,101,067
3	Occidental Chemical Corp., Occidental Petroleum Corp.	Castle Hayne, NC	28	1	2,843	14	0	4,126,984	4,129,841
4	Monsanto Co.	Luling, LA	28	2	15,601	0	3,221,043	0	3,236,644
5	ASARCO Inc.	East Helena, MT	33	4	23,355	1,262	0	1,739,278	1,763,895
6	Pharmacia & Upjohn Co.	Portage, MI	28	4	55,706	830	8,784	0	65,320
7	American Microtrace Corp., Tetra Techs. Inc.	Fairbury, NE	28	2	11	46	0	0	57
8	BP Chemicals Inc., Green Lake, BP America Inc.	Port Lavaca, TX	28	5	20,563	0	1,690,118	656	1,711,337
9	ASARCO Inc., Glover Plant	Annapolis, MO	33	4	21,141	5	0	1,582,218	1,603,364
10	Angus Chemical Co.	Sterlington, LA	28	4	12,481	1,956	1,126,995	0	1,141,432
11	Glenbrook Nickel Co., Cominco American Inc.	Riddle, OR	33	1	34,921	7	0	1,062,717	1,097,645
12	Zinc Corp. of America, Horsehead Ind. Inc.	Monaca, PA	33	4	5,149	14	0	0	5,163
13	Aquaglass Corp., Masco Corp.	Adamsville, TN	30	1	1,057,867	0	0	0	1,057,867
14	Solutia Inc., Chocolate Bayou	Alvin, TX	28	3	13,064	0	1,025,986	0	1,039,050
15	Eastman Kodak Co., Kodak Park	Rochester, NY	38	9	980,987	25,565	0	6,803	1,013,355
16	BP Chemicals Inc., BP America Inc.	Lima, OH	28	10	27,171	0	965,267	0	992,438
17	Cytec Ind. Inc., Fortier Plant	Westwego, LA	28	5	4,009	235	979,139	0	983,383
18	Quemetco Inc., RSR Corp.	City of Industry, CA	33	3	722	1	0	0	723
19	Pharmacia & Upjohn Caribe Inc., Pharmacia & Upjohn Inc.	Arecibo, PR	28	2	396,123	0	0	0	396,123
20	Foamex L.P., Div. of Kihi	Corry, PA	30	2	903,448	0	0	0	903,448
21	ASARCO Inc.	Omaha, NE	33	2	1,818	338	0	680	2,836
22	Quemetco Inc., RSR Corp.	Indianapolis, IN	33	3	1,416	0	0	0	1,416
23	Phelps Dodge Hidalgo Inc., Phelps Dodge Corp.	Playas, NM	33	6	13,177	267	0	833,526	846,970
24	Borden Chemicals & Plastics LP	Geismar, LA	28	7	815,549	187	9	0	815,745
25	C & D Techs. Inc.	Conyers, GA	36	1	430	0	0	363	793
26	Nucor-Yamato Steel Co., Nucor Corp.	Blytheville, AR	33	4	663	0	0	0	663
27	Boeing Co.	Wichita, KS	Mult.	6	595,943	452	0	0	596,395
28	Carpenter Co., Tupelo Div.	Verona, MS	30	2	704,215	0	0	0	704,215
29	Abbott Health Prods. Inc., Abbott Labs.	Barceloneta, PR	28	1	689,524	0	0	0	689,524
30	New Haven Fndy., Wesley Ind. Inc.	New Haven, MI	33	5	19,138	2	0	0	19,140
31	Cyprus Miami Mining Corp., Cyprus Climax Metals Co.	Claypool, AZ	33	7	8,074	0	0	672,109	680,183
32	Shell Oil Co.	Deer Park, TX	Mult.	17	90,956	3	0	164	91,123
33	Northwestern Steel & Wire Co.	Sterling, IL	33	2	4,921	345	0	593,651	598,917
34	Doe Run Co., Renco Group Inc.	Herculaneum, MO	33	5	99,783	98	0	494,901	594,782
35	Carpenter Co.	Russellville, KY	Mult.	5	571,776	0	0	0	571,776
36	Sterling Chemicals Inc.	Texas City, TX	28	9	67,453	0	481,566	0	549,019
37	Wagner Brake, Cooper Ind. Inc.	Scottsville, KY	37	1	113	0	0	0	113
38	General Battery Corp., Reading Smelter Div., Exide Corp.	Reading, PA	33	3	713	251	0	0	964
39	ASARCO Inc., Ray Complex/Hayden Smelter	Hayden, AZ	33	4	16,091	0	0	40,230	56,321
40	Foamex Intl. Inc.	Milan, TN	30	2	521,285	0	0	0	521,285
41	Rubicon Inc.	Geismar, LA	28	9	40,207	8	268,481	0	308,696
42	Doe Run Co., Recycling Facility, Renco Group Inc.	Boss, MO	33	3	17,134	226	0	0	17,360
43	Pfizer Pharmaceuticals Inc., Pfizer Inc.	Barceloneta, PR	28	1	35,873	0	0	0	35,873
44	FMC Corp.	Pocatello, ID	28	4	2,924	0	0	477,785	480,709
45	Allegheny Ludlum Corp., Allegheny Teledyne Inc.	New Castle, IN	33	2	232	226	0	0	458
46	Shieldalloy Metallurgical, Metallurg Inc.	Newfield, NJ	33	1	174	4	0	0	178
47	Reichhold Chemicals Inc.	Jacksonville, FL	28	2	3,456	0	0	0	3,456
48	GE Co.	Ottawa, IL	28	4	446,033	117	0	115	446,265
49	Maynard Steel Casting Co.	Milwaukee, WI	33	2	454	0	0	0	454
50	Dow North America, Allyn's Point Plant, Dow Chemical Co.	Gales Ferry, CT	Mult.	3	1,512	0	0	0	1,512
	Subtotal			**195**	**8,375,704**	**33,024**	**9,767,388**	**22,281,272**	**40,457,388**
	% of Total			**1.2**	**10.8**	**5.7**	**86.1**	**80.3**	**34.5**
	Total for All TRI Matched Carcinogens			**15,905**	**77,430,341**	**579,642**	**11,349,487**	**27,749,967**	**117,109,437**

† Carcinogenic substances are those chemicals or chemical compounds listed in either the International Agency for Research on Cancer (IARC) Monographs or the US National Toxicological Program (NTP) Annual Report on Carcinogens.

➤ A chemical (and its compounds) is included if the chemical or any of its compounds is designated carcinogenic.

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	0	0	0	1,434,288	1,434,288	8,012,383	Chromium and compounds (land)
2	0	0	0	69,666	69,666	4,170,733	Lead/Arsenic and compounds (land)
3	0	0	0	6,349	6,349	4,136,190	Chromium and compounds (land)
4	6,803	0	0	0	6,803	3,243,447	Formaldehyde (UIJ)
5	0	0	0	279,650	279,650	2,043,545	Lead and compounds (land)
6	1,629,089	126,005	4,526	69	1,759,689	1,825,009	Dichloromethane (transfers to treatment)
7	0	0	0	1,723,356	1,723,356	1,723,413	Lead and compounds (transfers of metals)
8	504	0	0	207	711	1,712,048	Acrylamide, Acrylonitrile (UIJ)
9	0	0	0	0	0	1,603,364	Lead and compounds (land)
10	91	0	0	3,717	3,808	1,145,240	Formaldehyde (UIJ)
11	0	0	0	0	0	1,097,645	Nickel and compounds (land)
12	0	0	0	1,061,318	1,061,318	1,066,481	Lead/Nickel/Cadmium and compounds (transfers of metals)
13	0	0	0	0	0	1,057,867	Styrene (air)
14	0	0	0	0	0	1,039,050	Acrylonitrile (UIJ)
15	17,276	0	544	176	17,996	1,031,351	Dichloromethane (air)
16	2,373	0	177	230	2,780	995,218	Acrylamide (UIJ)
17	31	0	2	22	55	983,438	Acrylamide (UIJ)
18	0	0	0	934,969	934,969	935,692	Lead and compounds (transfers of metals)
19	498,866	38,957	0	0	537,823	933,946	Dichloromethane (transfers to treatment, air)
20	7,126	0	0	0	7,126	910,574	Dichloromethane (air)
21	0	0	0	893,671	893,671	896,507	Lead and compounds (transfers of metals)
22	0	0	0	879,880	879,880	881,296	Lead and compounds (transfers of metals)
23	0	0	0	113	113	847,083	Lead/Arsenic/Chromium and compounds (land)
24	18,796	0	12	1	18,809	834,554	Benzene (air)
25	0	0	0	810,519	810,519	811,312	Lead and compounds (transfers of metals)
26	0	0	0	735,580	735,580	736,243	Lead and compounds (transfers of metals)
27	33,401	0	0	98,927	132,328	728,723	Tetrachloroethylene (air)
28	992	0	0	0	992	705,207	Dichloromethane (air)
29	0	12	0	0	12	689,536	Dichloromethane (air)
30	0	0	0	666,122	666,122	685,262	Lead/Arsenic/Cobalt and compounds (transfers of metals)
31	0	0	0	0	0	680,183	Lead/Chromium and compounds (land)
32	559,185	0	327	0	559,512	650,635	Epichlorohydrin (transfers to treatment)
33	0	0	0	2,087	2,087	601,004	Chromium/Lead and compounds (land)
34	0	0	0	368	368	595,150	Lead and compounds (land)
35	4,402	0	0	0	4,402	576,178	Dichloromethane (air)
36	9,324	0	3,363	108	12,795	561,814	Acrylamide (UIJ)
37	0	0	557,771	0	557,771	557,884	Asbestos (transfers to disposal)
38	0	0	0	545,674	545,674	546,638	Lead and compounds (transfers of metals)
39	0	0	0	478,160	478,160	534,481	Arsenic and compounds (transfers of metals)
40	445	0	0	0	445	521,730	Dichloromethane (air)
41	192,526	0	5,468	4	197,998	506,694	Nitrobenzene (UIJ, transfers to treatment)
42	0	0	0	475,008	475,008	492,368	Lead and compounds (transfers of metals)
43	445,533	7,846	0	0	453,379	489,252	Dichloromethane (transfers to treatment)
44	0	0	0	23	23	480,732	Chromium/Cadmium and compounds (land)
45	0	0	0	476,191	476,191	476,649	Chromium/Nickel and compounds (transfers of metals)
46	0	0	0	468,822	468,822	469,000	Chromium and compounds (transfers of metals)
47	462,390	0	0	0	462,390	465,846	Styrene (transfers to treatment)
48	0	0	0	116	116	446,381	Styrene, Acrylonitrile (air)
49	0	0	0	436,890	436,890	437,344	Chromium and compounds (transfers of metals)
50	427,295	0	0	0	427,295	428,807	Styrene (transfers to treatment)
	4,316,448	**172,820**	**572,190**	**12,482,281**	**17,543,739**	**58,001,127**	
	27.7	**6.2**	**15.2**	**33.6**	**29.6**	**32.9**	
	15,568,226	**2,767,647**	**3,770,390**	**37,132,951**	**59,239,214**	**176,348,651**	

* Chemicals accounting for more than 70% of total releases and transfers of carcinogens from the facility.

➤ UIJ = underground injection

Metals

Transfers were a large majority of total amounts reported to NPRI for metals and their compounds. In TRI, however, transfers were a substantially smaller majority of the total. NPRI facilities transferred 73 percent of total releases and transfers of metals, while TRI facilities transferred 55 percent of their total (**Figure 5–17**, below).

Releases and transfers of metals and their compounds totaled 43.5 million kg in NPRI and 329.8 million kg in TRI. NPRI facilities released 11.8 million kg and transferred 31.8 million kg of these substances. TRI releases were 149.2 million kg, and transfers were 180.5 million kg (**Tables 5–21** and **5–22**).

Zinc and manganese and their compounds ranked first and second for total releases and transfers in both NPRI and TRI. Totals in NPRI were 25.7 million kg of zinc and its compounds and 6.8 million kg of manganese and its compounds. TRI facilities reported 154.4 million kg of zinc and its compounds and 65.5 million kg for manganese and its compounds. Lead and its compounds ranked third in NPRI, with 4.2 million kg, while copper and its compounds ranked third in TRI, with 34.7 million kg.

Table 5–21
M 1997

NPRI Total Releases and Transfers of Metals and Their Compounds, 1997

CAS Number	Chemical	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)
—	Zinc (and its compounds)	322	5,813,918	19,888,014	25,701,932
—	Manganese (and its compounds)	257	1,909,572	4,862,688	6,772,260
—	Lead (and its compounds)	129	1,251,363	2,915,080	4,166,443
—	Chromium (and its compounds)	236	776,821	1,990,561	2,767,382
—	Copper (and its compounds)	261	660,947	1,111,567	1,772,514
—	Nickel (and its compounds)	150	364,094	515,592	879,686
7429-90-5	Aluminum (fume or dust)	37	534,619	255,416	790,035
7440-62-2	Vanadium (fume or dust)	13	215,356	1,645	217,001
—	Arsenic (and its compounds)	48	149,053	67,092	216,145
—	Cadmium (and its compounds)	15	41,353	123,627	164,980
—	Selenium (and its compounds)	6	9,280	30,369	39,649
—	Cobalt (and its compounds)	25	20,614	10,372	30,986
—	Antimony (and its compounds)	30	7,301	12,933	20,234
—	Mercury (and its compounds)	3	244	3,486	3,730
—	Silver (and its compounds)	9	1,479	269	1,748
	Subtotal	**1,541**	**11,756,014**	**31,788,711**	**43,544,725**
	% of Total	**33.5**	**14.6**	**64.2**	**33.5**
	Total for All Matched NPRI Chemicals	**4,599**	**80,448,924**	**49,508,261**	**129,957,185**

Figure 5–17
M 1997

NPRI and TRI Total Releases and Transfers of Metals and Their Compounds, 1997

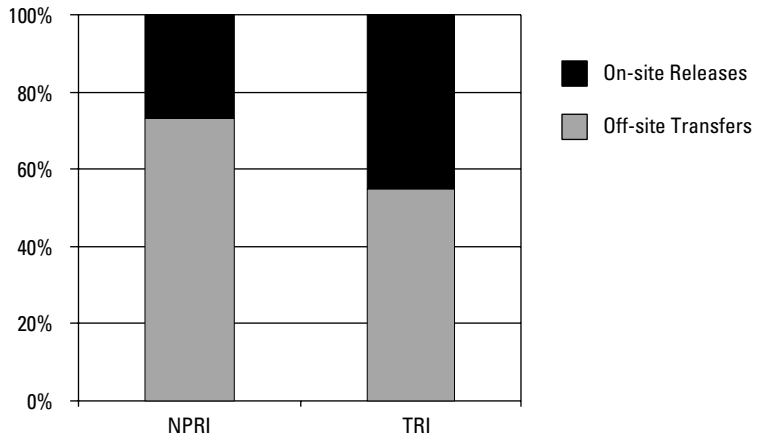


Table 5–22
M 1997

TRI Total Releases and Transfers of Metals and Their Compounds, 1997

CAS Number	Chemical	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)
—	Zinc (and its compounds)	3,044	59,247,400	95,103,244	154,350,644
—	Manganese (and its compounds)	2,827	36,787,267	28,686,838	65,474,105
—	Copper (and its compounds)	4,177	21,179,453	13,536,196	34,715,649
—	Lead (and its compounds)	1,606	8,818,161	17,600,736	26,418,897
—	Chromium (and its compounds)	3,288	14,485,603	11,726,757	26,212,360
—	Nickel (and its compounds)	2,947	2,551,439	5,199,851	7,751,290
7429-90-5	Aluminum (fume or dust)	325	1,743,571	3,813,654	5,557,225
—	Arsenic (and its compounds)	390	2,742,175	1,335,280	4,077,455
—	Antimony (and its compounds)	671	632,239	2,164,243	2,796,482
—	Cadmium (and its compounds)	147	415,845	684,109	1,099,954
—	Cobalt (and its compounds)	517	357,314	586,218	943,532
—	Selenium (and its compounds)	59	184,615	18,471	203,086
7440-62-2	Vanadium (fume or dust)	20	59,254	19,724	78,978
—	Silver (and its compounds)	139	28,548	43,822	72,370
—	Mercury (and its compounds)	29	10,327	23,048	33,375
	Subtotal	**20,186**	**149,243,211**	**180,542,191**	**329,785,402**
	% of Total	**34.7**	**19.5**	**45.8**	**28.4**
	Total for All Matched TRI Chemicals	**58,252**	**767,302,191**	**394,039,756**	**1,161,341,947**

The 50 NPRI facilities with the largest amounts for metals accounted for 93 percent of the NPRI total. The 50 TRI facilities with the largest amounts for metals reported 63 percent of the TRI total (**Figure 5–18**).

The top 50 NPRI facilities released and transferred 40.5 million kg of metals and their compounds. The largest components of this total were on-site land releases of 8.5 million kg and transfers to treatment/sewage/disposal of 29.4 million kg. In TRI, the top 50 facilities released and transferred 207.5 million kg of metals and their compounds, including 105.0 million kg released on-site to land and 91.3 million kg transferred off-site to treatment/sewage/disposal (**Tables 5–23** and **5–24**).

Figure 5–18
M 1997

NPRI and TRI Total Releases and Transfers of Metals and Their Compounds, Top 50 Facilities and All Others, 1997

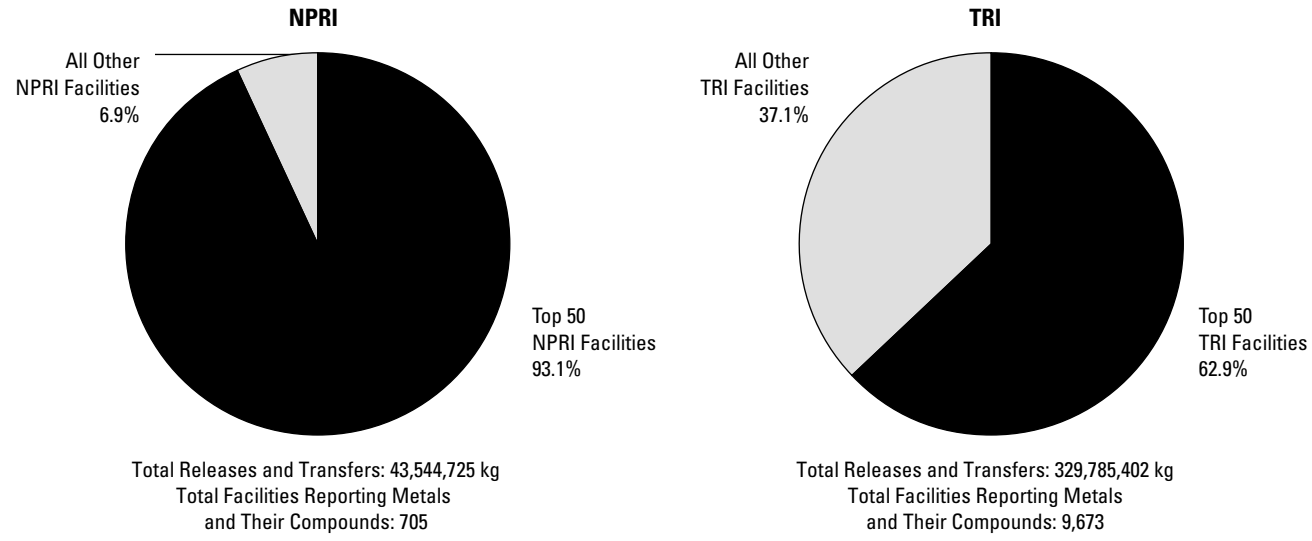


Table 5–23

M 1997

The 50 NPRI Facilities with the Largest Total Releases and Transfers of Metals and Their Compounds, 1997

Rank	Facility	City, Province	SIC Codes Canada	SIC Codes US	Number of Forms	Total Air Emissions (kg)	Surface Water Discharges (kg)	Under-ground Injection (kg)	On-site Land Releases (kg)	Total Releases (kg)
1	Dofasco Inc.	Hamilton, ON	29	33	6	16,758	6,173	0	0	22,931
2	Co-Steel Lasco	Whitby, ON	29	33	6	14,253	362	0	1,245,254	1,259,869
3	Ispat Sidbec Inc. Aciérie, Ispat Mexicana	Contrecoeur, QC	29	33	5	48,835	550	0	2,300,405	2,349,790
4	Stelco McMaster Ltée, Stelco Inc.	Contrecoeur, QC	29	33	5	16,600	0	0	0	17,750
5	Lake Erie Steel Company Ltd., Stelco Inc.	Nanticoke, ON	29	33	6	18,012	2,682	0	442,030	462,724
6	Gerdau MRM Steel Inc., Grupo Gerdau	Selkirk, MB	29	33	5	22,322	152	0	1,730,140	1,752,614
7	Ivaco Rolling Mills	L'Orignal, ON	29	33	7	8,552	1	0	0	9,447
8	Slater Steels, Hamilton Specialty Bar Division	Hamilton, ON	29	33	8	8,721	0	0	200	10,321
9	Zalev Brothers Limited	Windsor, ON	29	33	8	422	7	0	0	429
10	Inco Limited, Copper Cliff Smelter Complex	Copper Cliff, ON	29	33	6	365,986	0	0	649,000	1,014,986
11	AltaSteel Ltd., Stelco Inc.	Edmonton, AB	29	33	6	12,053	47	0	717,505	729,605
12	Kronos Canada, Inc.	Varennes, QC	37	28	2	0	32,500	0	0	32,500
13	Sorevco, Société en commandite, Ispat Sidbec	Coteau-du-Lac, QC	29	33	1	0	0	0	0	0
14	Hudson Bay Mining and Smelting Co., Metallurgical Complex	Flin Flon, MB	29	33	5	706,574	3,780	0	0	710,354
15	Gerdau Courtice Steel Inc., Gerdau Canada	Cambridge, ON	29	33	5	10,608	0	0	0	10,608
16	Sammi Atlas Inc., Aciers inoxydables Atlas	Tracy, QC	29	33	4	970	450	0	0	1,420
17	Dominion Castings Ltd., NACO Inc.	Hamilton, ON	29	33	3	1,476	100	0	0	1,776
18	Métallurgie Noranda Inc, Fonderie Horne	Rouyn Noranda, QC	29	33	11	482,280	15,840	0	0	498,120
19	Noranda Mining and Exploration Inc., Brunswick Smelting Div.	Belledune, NB	29	33	5	17,280	968	0	0	18,248
20	Metalex Products Ltd.	Richmond, BC	29	33	5	371	0	0	0	371
21	Ispat Sidbec Inc., Sidbec-Feruni, Ispat Mexicana	Contrecoeur, QC	29	33	5	0	0	0	402,950	402,950
22	Ford Motor Company, Windsor Casting Plant	Windsor, ON	29	33	5	2,280	3,662	0	0	5,942
23	Fonderies canadiennes d'Acier Ltée, Atchison Casting Corp.	Montréal, QC	31	35	3	0	0	0	0	0
24	Tonolli Canada Limited	Mississauga, ON	29	33	1	2,305	50	0	0	2,355
25	Atlas Steels Inc., Atlas Specialty Steels	Welland, ON	29	33	6	395	2,048	0	0	2,443
26	Sydney Steel Corporation	Sydney, NS	29	33	8	0	300	0	289,990	290,290
27	Recyclage d'aluminium Québec Inc., Philip Services Corp.	Bécancour, QC	29	33	1	0	0	0	275,000	275,000
28	Dominion Colour Corp., Kikuchi Color & Chemicals Corp.	Ajax, ON	37	28	3	0	0	0	0	0
29	Les Produits forestiers Donohue Inc, usine de pâte kraft	St-Félicien, QC	27	26	2	0	74,800	0	127,400	202,200
30	Recyclage d'aluminium Québec, Ragueneau, Philip Services Corp.	Baie-Comeau, QC	29	33	1	0	0	0	185,000	185,000
31	Falconbridge Ltd., Kidd Metallurgical Div.	Cochrane, ON	29	33	9	157,755	11,413	0	0	169,168
32	Philip Services Corp., Philip Enterprises Inc.	Guelph, ON	29	33	4	0	0	0	0	800
33	North Atlantic Refining Ltd.	Come By Chance, NF	36	29	4	132,922	0	0	0	132,922
34	CEZinc (Zinc électrolytique du Canada Limitée), Noranda Inc.	Salaberry-de-Valleyfield, QC	29	33	8	93,146	13,328	0	0	107,762
35	Dana Canada Inc., Spicer Driveshaft Division	Thorold, ON	32	37	2	0	0	0	0	0
36	F.F. Soucy Inc., Brant Allen Ind.	Rivière-du-Loup, QC	27	26	2	0	9,500	0	0	9,500
37	Stelwire Ltd., Parkdale Works	Hamilton, ON	30	34	3	750	25	0	0	927
38	Coatings 85 Ltd.	Mississauga, ON	30	34	1	0	0	0	0	0
39	Cartons St-Laurent Inc.	LaTuque, QC	27	26	2	1,532	36,834	0	0	38,366
40	Daishowa-Marubeni International, Peace River Pulp Div.	Peace River, AB	27	26	2	0	6,790	0	96,347	103,137
41	Inco Limited, Manitoba Division	Thompson, MB	29	33	4	75,252	18,525	0	0	93,777
42	Imperial Oil, IOL Sarnia Refinery	Sarnia, ON	36	29	4	87,952	110	0	4,784	92,846
43	Doorhandle Systems, Plating Plant, Ventra Group Inc.	Brampton, ON	32	34	3	0	0	0	0	0
44	Stelfil Ltée, Stelco Inc.	Lachine, QC	30	33	2	184	99	0	0	283
45	Weyerhaeuser Canada Limited, Kamloops Pulp Division	Kamloops, BC	27	26	1	0	28,500	0	0	28,500
46	Meridian Operations Inc., Richmond Division	Long-Sault, ON	55	37	3	44,898	0	0	0	44,898
47	Metal Koting, Continuous Colour Coat Ltd.	Rexdale, ON	30	34	2	0	0	0	0	301
48	Protec Finishing Ltd.	Mississauga, ON	30	34	1	0	0	0	0	0
49	Michelin North America (Canada) Inc., Granton, NS Plant	New Glasgow, NS	15	30	2	0	63	0	0	63
50	Métallurgie Noranda, Affinerie CCR, Noranda Inc.	Montréal-est, QC	29	33	9	3,657	0	0	0	4,357
	Subtotal				**212**	**2,355,101**	**269,659**	**0**	**8,466,005**	**11,097,650**
	% of Total				**13.8**	**90.1**	**76.9**	**0.0**	**96.7**	**94.4**
	Total for All NPRI Matched Metals				**1,541**	**2,614,044**	**350,766**	**576**	**8,751,998**	**11,756,014**

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	0	0	0	8,168,440	8,168,440	8,191,371	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	0	0	0	0	0	2,349,790	Zinc and compounds (land)
4	0	0	0	2,298,300	2,298,300	2,316,050	Zinc and compounds (transfers of metals)
5	0	0	0	1,480,000	1,480,000	1,942,724	Zinc and compounds (transfers of metals)
6	0	0	0	0	0	1,752,614	Zinc and compounds (land)
7	0	0	0	1,647,700	1,647,700	1,657,147	Zinc and compounds (transfers of metals)
8	0	0	0	1,481,088	1,481,088	1,491,409	Zinc/Lead and compounds (transfers of metals)
9	0	0	0	1,104,869	1,104,869	1,105,298	Zinc/Copper and compounds (transfers of metals)
10	0	0	0	0	0	1,014,986	Chromium/Nickel and compounds (air)
11	0	0	0	241,888	241,888	971,493	Zinc/Manganese and compounds (land)
12	0	0	0	855,000	855,000	887,500	Manganese and compounds (transfers of metals)
13	0	0	0	840,570	840,570	840,570	Zinc and compounds (transfers of metals)
14	0	0	0	0	0	710,354	Zinc/Lead and compounds (air)
15	0	0	0	621,538	621,538	632,146	Zinc and compounds (transfers of metals)
16	0	0	0	584,310	584,310	585,730	Chromium/Nickel/Manganese and compounds (transfers of metals)
17	0	0	0	571,557	571,557	573,333	Chromium and compounds (transfers of metals)
18	0	0	0	0	0	498,120	Lead/Copper/Zinc and compounds (air)
19	0	0	0	467,400	467,400	485,648	Lead and compounds (transfers of metals)
20	0	0	0	484,370	484,370	484,741	Lead and compounds (transfers of metals)
21	0	0	0	0	0	402,950	Zinc/Lead and compounds (land)
22	0	0	0	362,000	362,000	367,942	Zinc/Manganese and compounds (transfers of metals)
23	0	0	0	327,898	327,898	327,898	Chromium and compounds (transfers of metals)
24	0	0	0	311,202	311,202	313,557	Lead and compounds (transfers of metals)
25	0	0	0	305,118	305,118	307,561	Chromium/Zinc/Manganese and compounds (transfers of metals)
26	0	0	0	0	0	290,290	Zinc/Manganese and compounds (land)
27	0	0	0	0	0	275,000	Aluminum (land)
28	0	0	0	224,300	224,300	224,300	Lead and compounds (transfers of metals)
29	0	0	0	0	0	202,200	Manganese and compounds (land, water)
30	0	0	0	0	0	185,000	Aluminum (land)
31	0	0	0	0	0	169,168	Lead/Copper and compounds (air)
32	0	0	0	142,900	142,900	143,700	Nickel/Copper and compounds (transfers of metals)
33	0	0	0	0	0	132,922	Vanadium (air)
34	0	0	0	20,633	20,633	128,395	Zinc and compounds (air)
35	0	0	0	128,300	128,300	128,300	Manganese and compounds (transfers of metals)
36	0	0	0	107,600	107,600	117,100	Aluminum, Manganese and compounds (transfers of metals)
37	0	0	0	115,551	115,551	116,478	Zinc and compounds (transfers of metals)
38	0	0	0	112,972	112,972	112,972	Zinc and compounds (transfers of metals)
39	0	0	0	71,666	71,666	110,032	Manganese and compounds (transfers of metals, water)
40	0	0	0	0	0	103,137	Zinc and compounds (land)
41	0	0	0	0	0	93,777	Nickel and compounds (air)
42	0	0	0	4	4	92,850	Vanadium (air)
43	0	0	0	91,920	91,920	91,920	Chromium/Nickel and compounds (transfers of metals)
44	0	0	0	86,507	86,507	86,790	Zinc and compounds (transfers of metals)
45	0	0	0	52,900	52,900	81,400	Manganese and compounds (transfers of metals, water)
46	0	0	0	36,400	36,400	81,298	Aluminum (air), Copper and compounds (transfers of metals)
47	0	0	0	80,087	80,087	80,388	Zinc and compounds (transfers of metals)
48	0	0	0	78,503	78,503	78,503	Zinc and compounds (transfers of metals)
49	0	0	0	75,441	75,441	75,504	Zinc and compounds (transfers of metals)
50	0	0	0	68,234	68,234	72,591	Arsenic/Selenium and compounds (transfers of metals)
	0	**0**	**0**	**29,447,051**	**29,447,051**	**40,544,701**	
	—	**—**	**—**	**92.6**	**92.6**	**93.1**	
	0	**0**	**0**	**31,788,711**	**31,788,711**	**43,544,725**	

* Chemicals accounting for more than 70% of total releases and transfers of metals from the facility.

Table 5–24

M 1997

The 50 TRI Facilities with the Largest Total Releases and Transfers of Metals and Their Compounds, 1997

Rank	Facility	City, State	US SIC Code	Number of Forms	Total Air Emissions (kg)	Surface Water Discharges (kg)	Under-ground Injection (kg)	On-site Land Releases (kg)	Total Releases (kg)
1	ASARCO Inc.	East Helena, MT	33	9	40,338	2,280	0	17,100,454	17,143,072
2	Zinc Corp. of America, Horsehead Ind. Inc.	Monaca, PA	33	9	224,918	195	0	0	225,113
3	Phelps Dodge Hidalgo Inc., Phelps Dodge Corp.	Playas, NM	33	10	133,922	3,644	0	12,048,532	12,186,098
4	Kennecott Utah Copper, Kennecott Holdings Corp.	Magna, UT	33	8	71,865	4,215	0	10,900,498	10,976,578
5	Cyprus Miami Mining Corp., Cyprus Climax Metals Co.	Claypool, AZ	33	11	18,596	0	0	8,503,492	8,522,088
6	American Chrome & Chemicals, Harrisons & Crosfield American	Corpus Christi, TX	28	1	2,018	113	0	6,575,964	6,578,095
7	Nucor-Yamato Steel Co., Nucor Corp.	Blytheville, AR	33	7	7,224	0	0	0	7,224
8	U.S. Steel, USS Gary Works, USX Corp.	Gary, IN	33	11	140,596	7,755	0	6,450,341	6,598,692
9	Northwestern Steel & Wire Co.	Sterling, IL	33	4	55,261	1,179	0	6,716,100	6,772,540
10	Steel Dynamics Inc.	Butler, IN	33	6	6,612	0	0	0	6,612
11	Rouge Steel Co., Rouge Ind. Inc.	Dearborn, MI	33	7	33,356	2,111	0	0	35,467
12	Nucor Steel, Nucor Corp.	Crawfordsville, IN	33	6	964	42	0	660	1,666
13	GM Powertrain Defiance, General Motors Corp.	Defiance, OH	33	6	33,575	2,175	0	5,564,083	5,599,833
14	Elkem Metals Co.	Marietta, OH	33	5	174,615	205,442	0	4,752,382	5,132,439
15	ASARCO Inc., Glover Plant	Annapolis, MO	33	7	28,690	10	0	4,892,495	4,921,195
16	Occidental Chemical Corp., Occidental Petroleum Corp.	Castle Hayne, NC	28	1	2,843	14	0	4,126,984	4,129,841
17	Doe Run Co., Renco Group Inc.	Herculaneum, MO	33	8	118,721	183	0	3,839,901	3,958,805
18	Nucor Steel	Plymouth, UT	33	5	4,348	0	0	2,334	6,682
19	DuPont	Pass Christian, MS	28	6	0	0	3,809,524	0	3,809,524
20	National Steel Corp., Great Lakes Dlv.	Ecorse, MI	33	5	52,446	4,354	0	0	56,800
21	DuPont	New Johnsonville, TN	28	5	0	0	3,516,553	0	3,516,553
22	USS Mon Valley Works, USX Corp.	Braddock, PA	33	5	1,549	465	0	0	2,014
23	Nucor Steel Arkansas Plant, Nucor Corp.	Blytheville, AR	33	7	10,868	115	0	0	10,983
24	BHP Copper Metals Co., BHP Copper Co.	San Manuel, AZ	33	11	2,046,411	0	0	842,723	2,889,134
25	Cerro Wire & Cable Co. Inc.	Hartselle, AL	33	3	120	4	0	0	124
26	Granite City Steel, National Steel Corp.	Granite City, IL	33	6	22,216	5,704	0	2,667,815	2,695,735
27	Keystone Steel & Wire Co., Keystone Consolidated Ind. Inc.	Peoria, IL	33	5	34,992	398	0	210	35,600
28	Timken Co., Faircrest Steel Plant	Canton, OH	33	6	5,378	1	0	0	5,379
29	Birmingham Southeast LLC, Birmingham Steel Corp.	Cartersville, GA	33	5	12,563	0	0	0	12,563
30	Birmingham Steel Corp., Kankakee Illinois Steel Div.	Bourbonnais, IL	33	5	4,231	0	0	0	4,231
31	Ameristeel Corp., Jacksonville Mill Div.	Baldwin, FL	33	6	5,185	0	0	0	5,185
32	FMC Corp.	Pocatello, ID	28	9	4,674	338	0	2,167,628	2,172,640
33	USS Fairfield Works, USX Corp.	Fairfield, AL	33	8	6,353	794	0	2,133,209	2,140,356
34	Kerr-McGee Chemical LLC, Kerr-McGee Corp.	Hamilton, MS	Mult.	3	4,354	6,145	0	2,066,666	2,077,165
35	Southwire Co.	Carrollton, GA	Mult.	29	13,228	1,310	0	0	14,538
36	Bar Techs. Inc.	Johnstown, PA	33	5	4,815	4	0	0	4,819
37	Birmingham Steel Corp., Washington Steel Div.	Seattle, WA	33	5	10,815	0	0	0	10,815
38	American Microtrace Corp., Tetra Techs. Inc.	Fairbury, NE	28	5	27,463	4,549	0	0	32,012
39	ASARCO Inc.	Omaha, NE	33	5	5,008	539	0	1,362	6,909
40	Ameristeel Corp.	Charlotte, NC	33	6	20,292	0	0	0	20,292
41	Oregon Steel Mills Inc.	Portland, OR	33	6	2,737	47	0	0	2,784
42	Chemetals Inc., Comilog	New Johnsonville, TN	28	1	15,556	583	0	1,523,810	1,539,949
43	Acme Steel Co., Acme Metals Inc.	Riverdale, IL	Mult.	6	16,643	681	0	0	17,324
44	Louisiana Pigment Co. L.P.	Westlake, LA	28	1	9	122	0	1,405,896	1,406,027
45	Millennium Inorganic Chemicals, Plant 2, Millennium Chemical	Ashtabula, OH	28	1	0	63,492	0	0	63,492
46	Austeel Lemont Co. Inc.	Lemont, IL	33	5	12,521	226	0	766,139	778,886
47	Koppel Steel Corp., NS Group Inc.	Koppel, PA	33	5	3,957	22	0	0	3,979
48	Timken Co., Harrison Steel Plant	Canton, OH	33	7	2,602	114	0	0	2,716
49	Eveready Battery Co. Inc., Ralston Purina Co.	Marietta, OH	28	1	5,170	181	0	0	5,351
50	Roanoke Electric Steel Corp.	Roanoke, VA	33	7	2,422	137	0	0	2,559
	Subtotal			**311**	**3,453,040**	**319,683**	**7,326,077**	**105,049,678**	**116,148,478**
	% of Total			**1.5**	**35.1**	**11.5**	**96.4**	**81.4**	**77.8**
	Total for All TRI Matched Metals			**20,186**	**9,850,938**	**2,769,749**	**7,596,524**	**129,026,000**	**149,243,211**

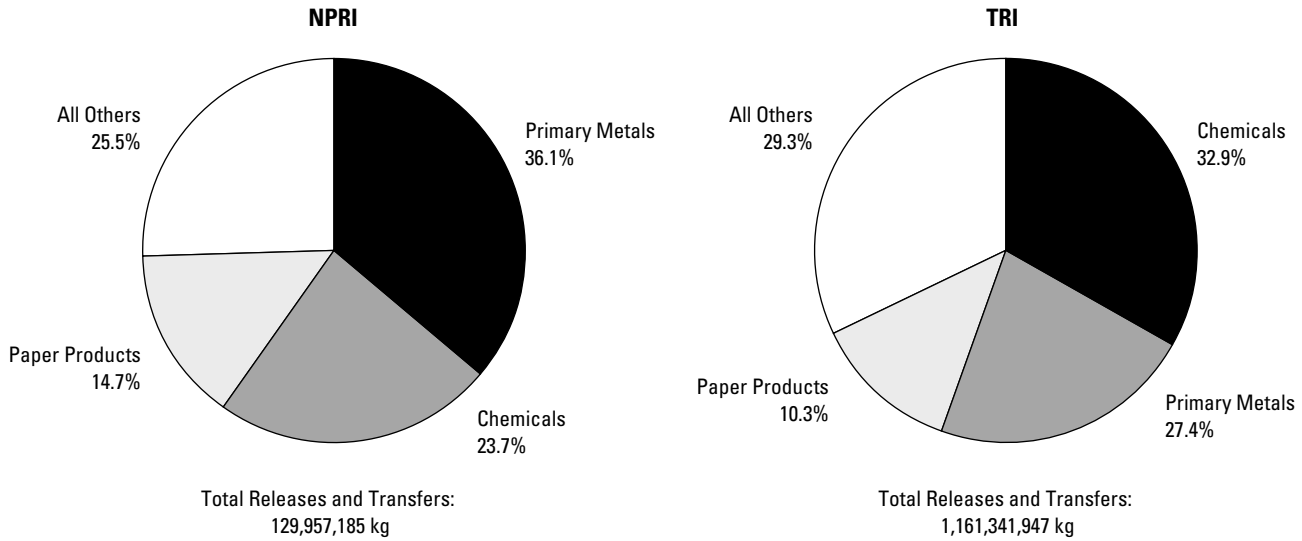
Rank	Treatment (except metals) (kg)	Sewage/POTWs (except metals) (kg)	Disposal (except metals) (kg)	Treatment/ Sewage/Disposal of Metals (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Major Chemicals Reported (Primary Media/Transfers)*
1	0	0	0	547,191	547,191	17,690,263	Zinc and compounds (land)
2	0	0	0	13,855,648	13,855,648	14,080,761	Zinc and compounds (transfers of metals)
3	0	0	0	113	113	12,186,211	Zinc/Copper and compounds (land)
4	0	0	0	192,057	192,057	11,168,635	Copper/Zinc/Lead and compounds (land)
5	0	0	0	0	0	8,522,088	Copper and compounds (land)
6	0	0	0	1,434,288	1,434,288	8,012,383	Chromium and compounds (land)
7	0	0	0	7,543,045	7,543,045	7,550,269	Zinc and compounds (transfers of metals)
8	0	0	0	294,304	294,304	6,892,996	Zinc and compounds (land)
9	0	0	0	30,658	30,658	6,803,198	Zinc/Manganese and compounds (land)
10	0	0	0	6,529,560	6,529,560	6,536,172	Zinc and compounds (transfers of metals)
11	0	0	0	6,086,892	6,086,892	6,122,359	Zinc and compounds (transfers of metals)
12	0	0	0	5,609,771	5,609,771	5,611,437	Zinc and compounds (transfers of metals)
13	0	0	0	505	505	5,600,338	Zinc and compounds (land)
14	0	0	0	56,236	56,236	5,188,675	Manganese and compounds (land)
15	0	0	0	0	0	4,921,195	Zinc/Lead and compounds (land)
16	0	0	0	6,349	6,349	4,136,190	Chromium and compounds (land)
17	0	0	0	451	451	3,959,256	Zinc and compounds (land)
18	0	0	0	3,922,477	3,922,477	3,929,159	Zinc and compounds (transfers of metals)
19	0	0	0	0	0	3,809,524	Manganese and compounds (UIJ)
20	0	0	0	3,497,819	3,497,819	3,554,619	Zinc and compounds (transfers of metals)
21	0	0	0	0	0	3,516,553	Manganese and compounds (UIJ)
22	0	0	0	3,090,268	3,090,268	3,092,282	Zinc and compounds (transfers of metals)
23	0	0	0	2,957,542	2,957,542	2,968,525	Zinc and compounds (transfers of metals)
24	0	0	0	36	36	2,889,170	Copper and compounds (air)
25	0	0	0	2,863,172	2,863,172	2,863,296	Copper and compounds (transfers of metals)
26	0	0	0	24	24	2,695,759	Zinc and compounds (land)
27	0	0	0	2,498,413	2,498,413	2,534,013	Zinc and compounds (transfers of metals)
28	0	0	0	2,486,113	2,486,113	2,491,492	Zinc and compounds (transfers of metals)
29	0	0	0	2,388,657	2,388,657	2,401,220	Zinc and compounds (transfers of metals)
30	0	0	0	2,384,320	2,384,320	2,388,551	Zinc and compounds (transfers of metals)
31	0	0	0	2,175,039	2,175,039	2,180,224	Zinc and compounds (transfers of metals)
32	0	0	0	790	790	2,173,430	Zinc/Chromium and compounds (land)
33	0	0	0	0	0	2,140,356	Zinc and compounds (land)
34	0	0	0	0	0	2,077,165	Manganese and compounds (land)
35	0	0	0	1,917,884	1,917,884	1,932,422	Zinc/Lead and compounds (transfers of metals)
36	0	0	0	1,925,941	1,925,941	1,930,760	Zinc and compounds (transfers of metals)
37	0	0	0	1,758,623	1,758,623	1,769,438	Zinc and compounds (transfers of metals)
38	0	0	0	1,723,356	1,723,356	1,755,368	Lead and compounds (transfers of metals)
39	0	0	0	1,742,791	1,742,791	1,749,700	Lead/Zinc and compounds (transfers of metals)
40	0	0	0	1,680,432	1,680,432	1,700,724	Zinc and compounds (transfers of metals)
41	0	0	0	1,620,869	1,620,869	1,623,653	Zinc and compounds (transfers of metals)
42	0	0	0	0	0	1,539,949	Manganese and compounds (land)
43	0	0	0	1,487,000	1,487,000	1,504,324	Zinc and compounds (transfers of metals)
44	0	0	0	1	1	1,406,028	Manganese and compounds (land)
45	0	0	0	1,292,517	1,292,517	1,356,009	Manganese and compounds (transfers of metals)
46	0	0	0	562,110	562,110	1,340,996	Zinc and compounds (land, transfers of metals)
47	0	0	0	1,332,607	1,332,607	1,336,586	Zinc and compounds (transfers of metals)
48	0	0	0	1,310,549	1,310,549	1,313,265	Zinc and compounds (transfers of metals)
49	0	0	0	1,306,122	1,306,122	1,311,473	Manganese and compounds (transfers of metals)
50	0	0	0	1,233,769	1,233,769	1,236,328	Zinc and compounds (transfers of metals)
	0	**0**	**0**	**91,346,309**	**91,346,309**	**207,494,787**	
	—	**—**	**—**	**50.6**	**50.6**	**62.9**	
	0	**0**	**0**	**180,542,191**	**180,542,191**	**329,785,402**	

* Chemicals accounting for more than 70% of total releases and transfers of metals from the facility.

➤ UIJ=underground injection

Figure 5–19
M 1997

Industries with Largest Total Releases and Transfers, NPRI and TRI, 1997



Releases and Transfers by Industry

The top three industries contributed roughly three-quarters of total releases and transfers in both NPRI and TRI in 1997, but their distribution differed significantly in the two PRTRs. The primary metals industry reported the largest totals in NPRI, amounting to 36 percent of NPRI's total releases and transfers. The chemical manufacturing sector reported the largest TRI amounts, representing 33 percent of the TRI total (**Figure 5–19**).

In NPRI, the primary metals industry reported 46.9 million kg (36 percent of the total), the largest amount by a substantial margin. Chemical manufacturing ranked second, with 30.8 million kg (24 percent). In TRI, the chemical manufacturing industry released and transferred 381.9 million kg (33 percent of the total), followed by primary metals with 318.7 million kg (27 percent). Paper products ranked third in both systems, reporting 19.1 million kg to NPRI and 120.1 million kg to TRI (**Tables 5–25** and **5–26**).

Transfers exceeded releases in several industries, including primary metals and industrial machinery, in NPRI. Two industries—food products and electronic/electrical equipment—reported transferring more than they released in both Canada and the United States.

Table 5–25

M 1997

NPRI Total Releases and Transfers by Industry (US SIC Code), 1997

Rank	US SIC Code	Industry	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	% of Total
1	33	Primary Metals	637	19,025,036	27,919,767	46,944,803	36.1
2	28	Chemicals	1,429	18,334,510	12,459,163	30,793,673	23.7
3	26	Paper Products	329	17,068,622	2,048,447	19,117,069	14.7
4	37	Transportation Equipment	376	6,147,046	879,806	7,026,852	5.4
5	30	Rubber and Plastics Products	263	5,945,315	927,044	6,872,359	5.3
6	29	Petroleum and Coal Products	365	4,671,163	1,121,630	5,792,793	4.5
7	34	Fabricated Metals Products	420	2,039,537	1,750,866	3,790,403	2.9
8	24	Lumber and Wood Products	192	2,219,981	206,520	2,426,501	1.9
9	27	Printing and Publishing	37	1,609,267	152,956	1,762,223	1.4
10	20	Food Products	134	503,468	752,763	1,256,231	1.0
11	32	Stone/Clay/Glass Products	102	868,511	93,052	961,563	0.7
12	25	Furniture and Fixtures	41	788,675	137,990	926,665	0.7
13	39	Misc. Manufacturing Industries	99	571,518	299,448	870,966	0.7
14	35	Industrial Machinery	66	269,113	448,543	717,656	0.6
15	36	Electronic/Electrical Equipment	92	82,010	274,229	356,239	0.3
16	22	Textile Mill Products	12	281,192	28,760	309,952	0.2
17	31	Leather Products	3	23,680	7,027	30,707	0.0
18	23	Apparel and Other Textile Products	1	280	0	280	0.0
19	38	Measurement/Photographic Instruments	1	0	250	250	0.0
		Total for All Matched Industries	**4,599**	**80,448,924**	**49,508,261**	**129,957,185**	**100.0**

Table 5–26

M 1997

TRI Total Releases and Transfers by Industry (US SIC Code), 1997

Rank	US SIC Code	Industry	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	% of Total
1	28	Chemicals	16,168	254,570,269	127,308,998	381,879,267	32.9
2	33	Primary Metals	6,086	171,007,781	147,718,667	318,726,448	27.4
3	26	Paper Products	2,094	95,270,022	24,799,677	120,069,699	10.3
4		Multiple Codes 20–39	3,840	42,133,850	21,755,280	63,889,130	5.5
5	30	Rubber and Plastics Products	3,001	39,109,825	6,303,337	45,413,162	3.9
6	37	Transportation Equipment	3,841	36,551,961	8,053,776	44,605,737	3.8
7	34	Fabricated Metals Products	6,665	20,721,712	17,503,446	38,225,158	3.3
8	29	Petroleum and Coal Products	2,701	23,348,244	4,391,613	27,739,857	2.4
9	20	Food Products	2,700	11,024,132	11,056,516	22,080,648	1.9
10	36	Electronic/Electrical Equipment	2,556	6,638,547	11,704,615	18,343,162	1.6
11	32	Stone/Clay/Glass Products	1,449	11,182,122	4,240,455	15,422,577	1.3
12	24	Lumber and Wood Products	1,536	10,867,571	249,478	11,117,049	1.0
13	25	Furniture and Fixtures	992	10,588,626	427,052	11,015,678	0.9
14	27	Printing and Publishing	368	10,582,679	285,188	10,867,867	0.9
15	35	Industrial Machinery	2,455	6,249,781	3,426,787	9,676,568	0.8
16	22	Textile Mill Products	488	7,536,066	1,400,523	8,936,589	0.8
17	38	Measurement/Photographic Instruments	522	4,676,856	1,606,489	6,283,345	0.5
18	39	Misc. Manufacturing Industries	612	3,863,478	816,796	4,680,274	0.4
19	31	Leather Products	110	464,848	921,985	1,386,833	0.1
20	21	Tobacco Products	28	662,668	929	663,597	0.1
21	23	Apparel and Other Textile Products	40	251,153	68,149	319,302	0.0
		Total	**58,252**	**767,302,191**	**394,039,756**	**1,161,341,947**	**100.0**

Table 5–27

M 1997

Average Total Releases and Transfers per Form, by Industry, NPRI and TRI, 1997

Rank	US SIC Code	Industry	NPRI (kg/form)	TRI (kg/form)	Ratio of Average per Form (NPRI/TRI)
1	35	Industrial Machinery	10,874	3,942	2.8
2	25	Furniture and Fixtures	22,602	11,105	2.0
3	24	Lumber and Wood Products	12,638	7,238	1.7
4	30	Rubber and Plastics Products	26,131	15,133	1.7
5	27	Printing and Publishing	47,628	29,532	1.6
6	37	Transportation Equipment	18,688	11,613	1.6
7	34	Fabricated Metals Products	9,025	5,735	1.6
8	29	Petroleum and Coal Products	15,871	10,270	1.5
9	22	Textile Mill Products	25,829	18,313	1.4
10	33	Primary Metals	73,697	52,370	1.4
11	39	Misc. Manufacturing Industries	8,798	7,648	1.2
12	20	Food Products	9,375	8,178	1.1
13	26	Paper Products	58,107	57,340	1.0
14	28	Chemicals	21,549	23,619	0.9
15	32	Stone/Clay/Glass Products	9,427	10,644	0.9
16	31	Leather Products	10,236	12,608	0.8
17	36	Electronic/Electrical Equipment	3,872	7,177	0.5
18	23	Apparel and Other Textile Products	280	7,983	0.0
19	38	Measurement/Photographic Instruments	250	12,037	0.0
21		Tobacco Products	—	23,700	—
		Multiple Codes 20–39*	—	16,638	—
		Total for All Matched Industries	**28,258**	**19,937**	**1.4**

* Multiple SIC codes reported only in TRI data.

Average Releases and Transfers

In the 1997 matched data set, total releases and transfers per form in NPRI averaged almost one and one-half times as much as in TRI. (Each form constitutes one facility's report for one of the listed matched substances.) Forms submitted to NPRI averaged 28,258 kg per form, compared to 19,937 kg per form in TRI (**Table 5–27**). NPRI total releases and transfers per form exceeded TRI averages in 13 of the industry sectors in the matched data set (**Figure 5–20**).

The difference was greatest in the industrial machinery and furniture sectors. Industrial machinery submissions to NPRI averaged 2.8 times the amount of releases and transfers per form as their submissions to TRI. In the furniture and fixtures industry, the NPRI average was twice that in TRI. Although these producers did not report the largest amounts in either system, their substantially higher averages in NPRI contributed significantly to the overall disparity.

Of the three industries reporting the largest amounts in 1997, the primary metals industry showed the largest difference between NPRI and TRI. This sector's releases and transfers averaged 1.4 times higher per form in NPRI than in TRI. The paper products industry exhibited little difference in averages in the two PRTRs (a ratio of 1.0), while the chemical manufacturing industry's forms averaged somewhat higher in TRI than in NPRI (an NPRI-to-TRI ratio of 0.9).

Figure 5–20
M 1997

Average Total Releases and Transfers per Form by Industry, NPRI and TRI, 1997

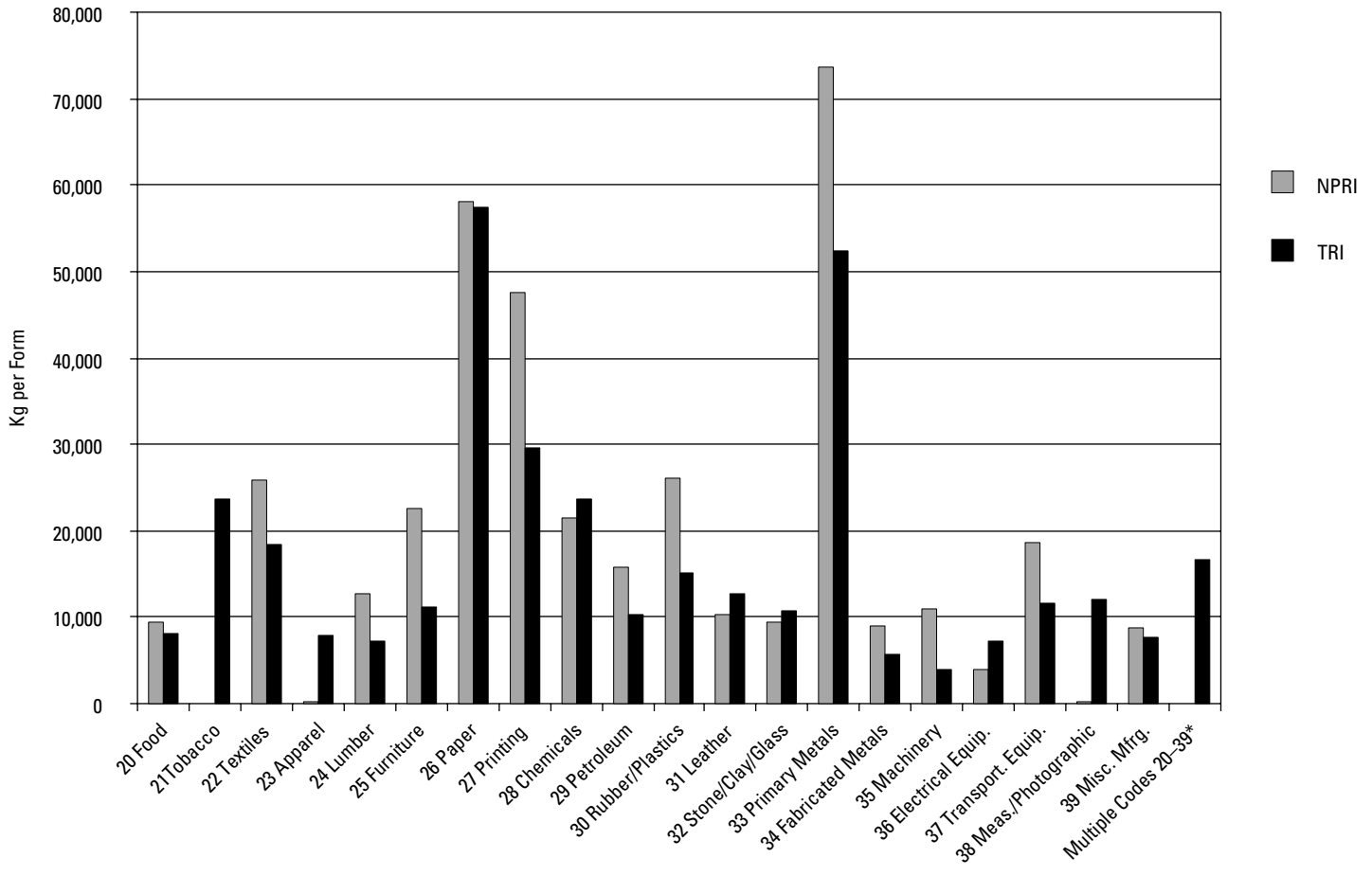


Table 5–28
M 1997

Average Releases and Transfers per Form and per Facility, NPRI and TRI, 1997

	NPRI			TRI				
	Number	Forms/Facility		Number	Forms/Facility			
Total Facilities	1,430	3.2		19,125	3.0			
Total Forms	4,599			58,252				
On-site Releases	**kg**	**kg/form**	**kg/facility**	**kg**	**kg/form**	**kg/facility**	**Ratio of Average per Form NPRI/TRI)**	**Ratio of Average per Facility (NPRI/TRI)**
Total Air Emissions	62,838,622	13,664	43,943	449,375,340	7,714	23,497	1.8	1.9
Surface Water Discharges	4,224,169	918	2,954	94,618,694	1,624	4,947	0.6	0.6
Underground Injection	4,197,660	913	2,935	74,649,654	1,281	3,903	0.7	0.8
On-site Land Releases	9,062,108	1,970	6,337	148,658,503	2,552	7,773	0.8	0.8
Total Releases	**80,448,924**	**17,493**	**56,258**	**767,302,191**	**13,172**	**40,120**	**1.3**	**1.4**
Off-site Transfers								
Treatment (except metals)	9,925,693	2,158	6,941	92,058,224	1,580	4,814	1.4	1.4
Sewage/POTWs (except metals)	5,260,842	1,144	3,679	100,954,738	1,733	5,279	0.7	0.7
Disposal (except metals)	2,533,015	551	1,771	20,484,603	352	1,071	1.6	1.7
Treatment/Sewage/Disposal of Metals	31,788,711	6,912	22,230	180,542,191	3,099	9,440	2.2	2.4
Total Transfers	**49,508,261**	**10,765**	**34,621**	**394,039,756**	**6,764**	**20,603**	**1.6**	**1.7**
Total Releases and Transfers	**129,957,185**	**28,258**	**90,879**	**1,161,341,947**	**19,937**	**60,724**	**1.4**	**1.5**

On a facility basis, NPRI averaged 90,879 kg of total releases and transfers per facility, compared to 60,724 kg per facility in TRI, again one and one-half times higher. The disparity in averages held for total releases and total transfers, as seen in earlier chapters, and for averages per facility as well as per form. The most substantial difference appeared in transfers of metals, where NPRI facilities averaged 2.2 times the amount per form and 2.4 times the amount per facility as their TRI counterparts. On-site surface water discharges were more than one and one-half times the average for TRI facilities as for NPRI facilities (NPRI-to-TRI ratio of 0.6—see **Table 5–28**).

Taking Stock 1996 presented results of an investigation into the differences between NPRI and TRI average releases and transfers per form, taking methanol and methyl ethyl ketone as case studies (see box on p. 180, *Taking Stock 1996,* based on the report, "Analysis of Differences between the Canadian NPRI and the United States TRI Releases and Transfers per Form: Case Studies on Reported NPRI and TRI Releases and Transfers of Methanol and Methyl Ethyl Ketone," prepared by Cheminfo Services, Inc., for the Commission for Environmental Cooperation, February 1999).

The investigation found two key factors contributing to the differences in averages:

- differences in industry structure, with associated differences in facility production capacity, and
- differences in pollution prevention and control practices, driven by the respective Canadian and US regulatory requirements.

The larger average per form in NPRI appeared only in some of the industry sectors that reported the two target chemicals, and within those sectors, often a small number of facilities accounted for the majority of the NPRI releases and transfers. NPRI facilities that manufactured methanol, for example, had nearly double the production capacity, on average, of TRI's methanol manufacturers. Further, most Canadian methanol is exported, contributing to higher releases from storage and loading, whereas more US methanol is piped to recipient facilities. Some US states and counties also require vapor control systems at TRI facilities to limit VOC emissions. These factors were found to have similar influences on the NPRI/TRI differences

in other industry subsectors. Factors that were not found to explain many of the differences were reporting thresholds and estimation methods.

In kraft paper mills, NPRI averages per form were smaller than those reported to TRI. The difference appeared to arise from the larger production capacity of the US mills and from their use of revised estimation methods (emission factors, as developed by the US trade associations, were revised in 1994), which have resulted in higher reportable amounts.

5.3 Changes in Releases and Transfers, 1995–1997, and Projections for 1998–1999

This section of *Taking Stock 1997* shows changes in the amounts of releases and transfers reported from 1995 to 1997, using the 1997 matched data set. As noted in **Chapter 2**, the chemicals and industries covered by NPRI and TRI did not change from 1995 to 1997. In addition, on the 1997 form, both NPRI and TRI facilities project expected releases and transfers for the next two years, 1998 and 1999.

5.3.1 Overview

From 1995 to 1997, North American facilities and forms in the matched data set decreased by about three percent, the result of opposing trends in NPRI, in which facilities and forms were up 10 percent, and TRI, which was down four percent (**Table 5–29**). Total releases and transfers increased slightly (1.2 percent) from 1995 to 1997, but were projected to decrease through 1999.

Table 5–29
M 1997

North American Total Releases and Transfers, 1995–1997

	North America				
	1995	1996	1997	Change 1995–1997	
	Number	Number	Number	Number	%
Total Facilities	21,308	20,914	20,555	-753	-3.5
Total Forms	64,918	63,275	62,851	-2,067	-3.2
On-site Releases	**kg**	**kg**	**kg**	**kg**	**%**
Total Air Emissions	606,027,858	563,409,745	512,213,962	-93,813,896	-15.5
Surface Water Discharges	86,945,023	81,681,095	98,842,863	11,897,840	13.7
Underground Injection	87,824,019	75,235,496	78,847,314	-8,976,705	-10.2
On-site Land Releases	146,726,294	153,435,348	157,720,611	10,994,317	7.5
Total Releases	**927,660,074**	**873,890,403**	**847,751,115**	**-79,908,959**	**-8.6**
Off-site Transfers					
Treatment (except metals)	88,579,464	85,286,158	101,983,917	13,404,453	15.1
Sewage/POTWs (except metals)	95,567,178	92,406,429	106,215,580	10,648,402	11.1
Disposal (except metals)	21,957,451	18,835,581	23,017,618	1,060,167	4.8
Treatment/Sewage/Disposal of Metals	142,393,601	161,601,777	212,330,902	69,937,301	49.1
Total Transfers	**348,497,694**	**358,129,945**	**443,548,017**	**95,050,323**	**27.3**
Total Releases and Transfers	**1,276,157,768**	**1,232,020,348**	**1,291,299,132**	**15,141,364**	**1.2**

➤ Canada and US data only. Mexico data not collected for 1997.

Changes in Releases and Transfers, 1995–1997

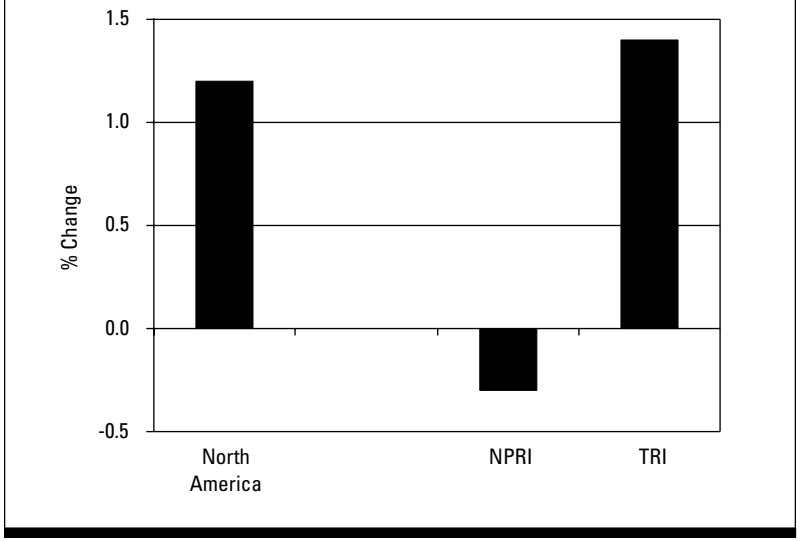
North American total releases and transfers increased 1.2 percent from 1995 to 1997. The NPRI total decreased slightly (0.3 percent reduction) while releases and transfers in TRI rose (1.4 percent increase—see **Figure 5–21**). NPRI's reduction in releases and transfers occurred even while the number of facilities and forms increased. Conversely, TRI's releases and transfers increased, despite a reduction in numbers of facilities and forms.

The overall North American increase, from 1.28 billion kg to 1.29 billion kg, principally reflected an increase in transfers of metals. North American facilities transferred 142.4 million kg of metals in 1995 and 212.3 million kg in 1997, a 49 percent increase. Combined with increases in transfers of nonmetal substances, the large increase in metals transfers outweighed the overall reduction in North American on-site releases to air and underground injection over the 1995–1997 period (**Table 5–29** and **Figure 5–22**). **Chapter 7** examines in more detail the primary metals industry and the large increase in metals transfers.

Canadian NPRI					US TRI				
1995	1996	1997	Change 1995–1997		1995	1996	1997	Change 1995–1997	
Number	Number	Number	Number	%	Number	Number	Number	Number	%
1,302	1,355	1,430	128	9.8	20,006	19,559	19,125	-881	-4.4
4,164	4,314	4,599	435	10.4	60,754	58,961	58,252	-2,502	-4.1
kg	kg	kg	kg	%					
66,987,712	64,152,247	62,838,622	-4,149,090	-6.2	539,040,146	499,257,498	449,375,340	-89,664,806	-16.6
12,330,846	5,128,041	4,224,169	-8,106,677	-65.7	74,614,177	76,553,054	94,618,694	20,004,517	26.8
3,556,927	4,812,379	4,197,660	640,733	18.0	84,267,092	70,423,117	74,649,654	-9,617,438	-11.4
9,607,743	8,950,491	9,062,108	-545,635	-5.7	137,118,551	144,484,857	148,658,503	11,539,952	8.4
92,620,108	**83,171,877**	**80,448,924**	**-12,171,184**	**-13.1**	**835,039,966**	**790,718,526**	**767,302,191**	**-67,737,775**	**-8.1**
7,456,650	9,140,966	9,925,693	2,469,043	33.1	81,122,814	76,145,192	92,058,224	10,935,410	13.5
4,177,909	4,893,811	5,260,842	1,082,933	25.9	91,389,269	87,512,618	100,954,738	9,565,469	10.5
4,242,480	2,282,803	2,533,015	-1,709,465	-40.3	17,714,971	16,552,778	20,484,603	2,769,632	15.6
21,871,665	25,199,373	31,788,711	9,917,046	45.3	120,521,936	136,402,404	180,542,191	60,020,255	49.8
37,748,704	**41,516,953**	**49,508,261**	**11,759,557**	**31.2**	**310,748,990**	**316,612,992**	**394,039,756**	**83,290,766**	**26.8**
130,368,812	**124,688,830**	**129,957,185**	**-411,627**	**-0.3**	**1,145,788,956**	**1,107,331,518**	**1,161,341,947**	**15,552,991**	**1.4**

Figure 5–21
M 1997

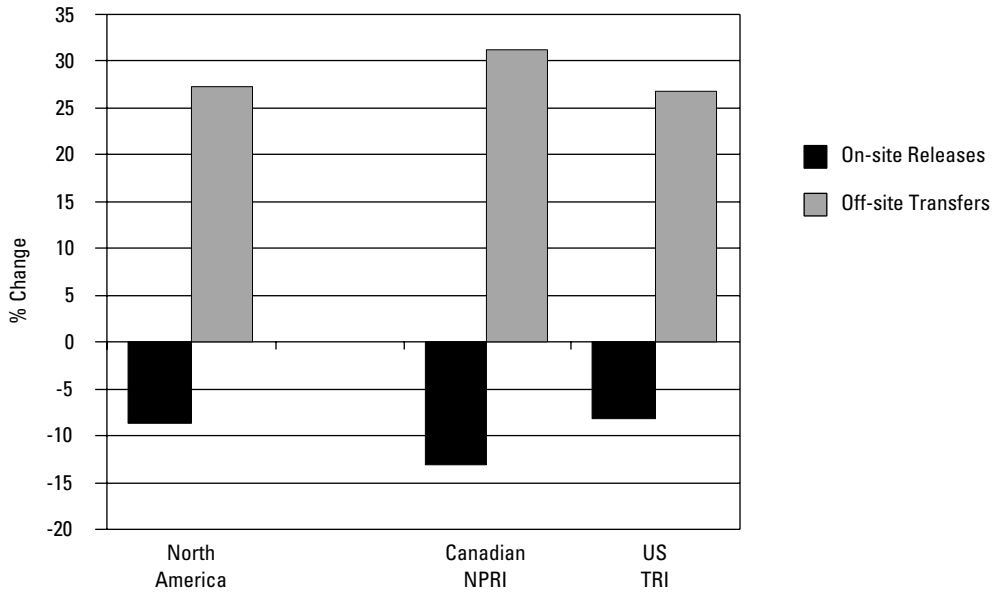
Percent Change in North American Total Releases and Transfers, 1995–1997



➤ Canada and US data only. Mexico data not collected for 1997.

Figure 5–22
M 1997

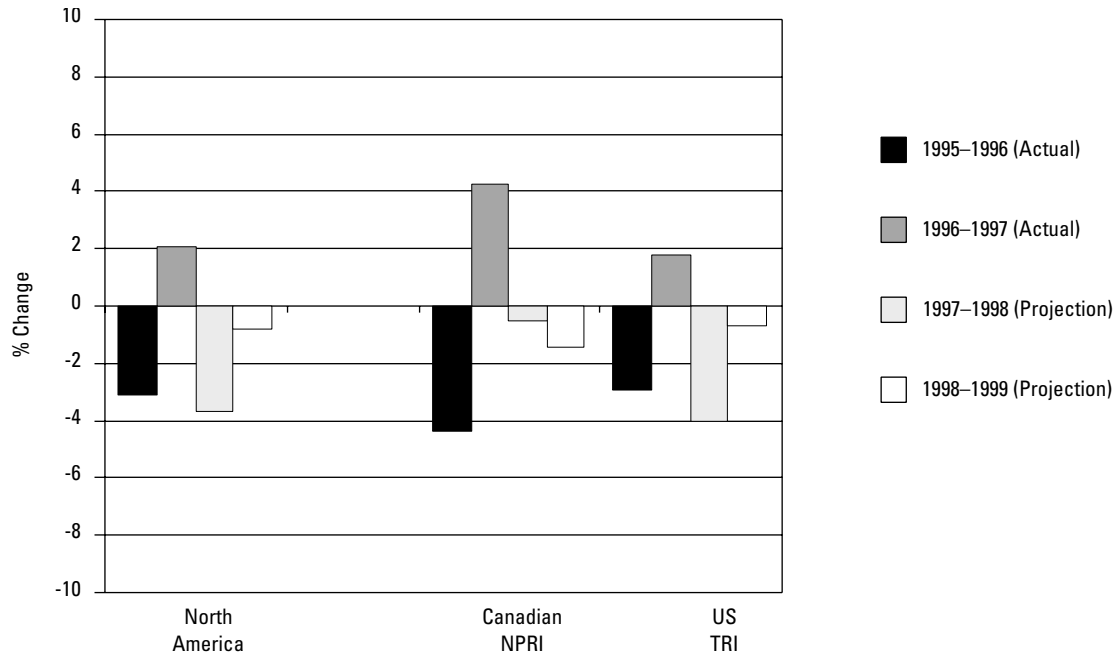
Percent Change in North American Releases and Transfers, 1995–1997



➤ Canada and US data only. Mexico data not collected for 1997.

Figure 5–23
M 1997

Percent Change in North American Releases and Transfers, Actual and Projected, 1995–1999



➤ Canada and US data only. Mexico data not collected for 1997.

Actual and Projected Changes, 1995–1999

While North American facilities projected reductions in total releases and transfers through 1999, the projected reductions did not reflect a continuing trend. Year-by-year data from 1995 showed total releases and transfers dropping in 1996 but increasing in 1997 for North America as a whole and for Canada and the United States (**Figure 5–23**).

TRI facilities enter their projections in a different section of their reporting form (Section 8 of TRI Form R) from where they report the specific releases and transfers (Sections 5 and 6) analyzed in *Taking Stock*. Therefore, total amounts for TRI releases and transfers in tables, figures and text that present both actual and projected data differ slightly from total releases and transfers analyzed throughout the rest of this report. NPRI facilities report their projections in a manner similar to their actual releases and transfers so the NPRI numbers do not differ.

Table 5–30
M 1997

North American Total Releases and Transfers, Actual and Projected, 1995–1999

	North America			Canadian NPRI			US TRI		
	Total Releases and Transfers (kg)	Change from Prior Year (kg)	% Change from Prior Year	Total Releases and Transfers (kg)	Change from Prior Year (kg)	% Change from Prior Year	Total Releases and Transfers (kg)	Change from Prior Year (kg)	% Change from Prior Year
1995 (Actual)	1,262,096,900			130,368,812			1,131,728,088		
1996 (Actual)	1,222,961,360	-39,135,540	-3.1	124,688,830	-5,679,982	-4.4	1,098,272,530	-33,455,558	-3.0
1997 (Actual)	1,248,067,173	25,105,813	2.1	129,957,185	5,268,355	4.2	1,118,109,988	19,837,458	1.8
1998 (Projection)	1,202,508,908	-45,558,265	-3.7	129,271,554	-685,631	-0.5	1,073,237,354	-44,872,634	-4.0
1999 (Projection)	1,193,012,810	-9,496,098	-0.8	127,399,099	-1,872,455	-1.4	1,065,613,711	-7,623,643	-0.7

- TRI data from Sections 8.1 plus 8.7 on TRI Form R.
- NPRI and TRI 1995 data from 1995 reporting forms; 1997 and 1999 data from 1997 reporting forms.
- Canada and US data only. Mexico data not collected for 1995–1997.

By this accounting, North American releases and transfers totaled 1.26 billion in 1995, dropped to 1.22 billion in 1996, and rose to 1.25 billion in 1997. North American facilities projected further decreases to 1.20 billion kg in 1998 and 1.19 billion kg in 1999. The projections also indicated a greater percentage reduction in NPRI in the second year out (1.4 percent reduction for 1998–1999), while TRI facilities expected to make a larger reduction in the first year (4.0 percent reduction for 1997–1998—see **Table 5–30**).

The North American total was expected to fall below its 1996 level as early as 1998. Canadian facilities, however, projected decreases at a slower pace. NPRI facilities projected a reduction to 127.4 million kg in 1999, still above their 1996 total of 124.7 million kg. TRI facilities expected to reduce their releases and transfers to 1.07 billion kg in 1999, compared to 1.10 billion reported in 1996.

Projections can be expected to understate future totals to some extent. Facilities that expect to reduce their releases and transfers below reporting thresholds or to cease operations in 1998 or 1999 would project zero amounts on their 1997 reporting forms. However, current databases have no projected information on facilities that will come on line or whose releases and transfers will rise above the reporting thresholds in future years. As seen in the "top 50 facilities" tables in this chapter, such changes can be influential (for example, **Table 5–50**, later in this chapter).

Average Releases and Transfers

From 1995 to 1997, the averages of total releases and transfers per form and per facility decreased in NPRI and increased in TRI, narrowing the difference between them. In 1995, NPRI averages were 1.7 times those in TRI. By 1997, NPRI averages were approximately one and one-half times as high as in TRI (**Table 5–31**).

In 1995, NPRI's total releases and transfers averaged 31,309 kg per form. By 1997, this average had declined to 28,258 kg per form. At the same time, TRI total releases and transfers increased from an average of 18,859 kg per form to 19,937 kg per form. A similar pattern prevailed in the averages per facility. NPRI's releases and transfers decreased from an average of 100,130 kg per facility to 90,879 kg. In TRI, this average rose from 57,272 kg of total releases and transfers per facility to 60,724 kg.

The largest changes in the NPRI-to-TRI ratio came in releases to surface waters and transfers of nonmetals to disposal. For surface water discharges, NPRI releases in 1995 averaged about two and one-half times those in TRI (ratios of 2.4 for forms and 2.5 for facility averages). By 1997, NPRI facilities released to surface waters approximately half as much, on average, per form and per facility as TRI facilities (a ratio of 0.6). In 1995, the NPRI-to-TRI ratio for transfers of nonmetals to disposal was 3.5 for averages per form and 3.7 for averages per facility. By 1997, these ratios had declined to 1.6 and 1.7, respectively.

Table 5–31

M 1997

Average Releases and Transfers per Form and per Facility, NPRI and TRI, 1995 and 1997

	NPRI		TRI		Ratio of Average per Form (NPRI/TRI)		NPRI		TRI		Ratio of Average per Facility (NPRI/TRI)	
	1995 (kg/form)	1997 (kg/form)	1995 (kg/form)	1997 (kg/form)	1995	1997	1995 (kg/facility)	1997 (kg/facility)	1995 (kg/facility)	1997 (kg/facility)	1995	1997
On-site Releases												
Total Air Emissions	16,087	13,664	8,873	7,714	1.8	1.8	51,450	43,943	26,944	23,497	1.9	1.9
Surface Water Discharges	2,961	918	1,228	1,624	2.4	0.6	9,471	2,954	3,730	4,947	2.5	0.6
Underground Injection	854	913	1,387	1,281	0.6	0.7	2,732	2,935	4,212	3,903	0.6	0.8
On-site Land Releases	2,307	1,970	2,257	2,552	1.0	0.8	7,379	6,337	6,854	7,773	1.1	0.8
Total Releases	**22,243**	**17,493**	**13,745**	**13,172**	**1.6**	**1.3**	**71,137**	**56,258**	**41,739**	**40,120**	**1.7**	**1.4**
Off-site Transfers												
Treatment (except metals)	1,791	2,158	1,335	1,580	1.3	1.4	5,727	6,941	4,055	4,814	1.4	1.4
Sewage/To POTWs (except metals)	1,003	1,144	1,504	1,733	0.7	0.7	3,209	3,679	4,568	5,279	0.7	0.7
Disposal (except metals)	1,019	551	292	352	3.5	1.6	3,258	1,771	885	1,071	3.7	1.7
Treatment/Sewage/Disposal of Metals	5,253	6,912	1,984	3,099	2.6	2.2	16,799	22,230	6,024	9,440	2.8	2.4
Total Transfers	**9,065**	**10,765**	**5,115**	**6,764**	**1.8**	**1.6**	**28,993**	**34,621**	**15,533**	**20,603**	**1.9**	**1.7**
Total Releases and Transfers	**31,309**	**28,258**	**18,859**	**19,937**	**1.7**	**1.4**	**100,130**	**90,879**	**57,272**	**60,724**	**1.7**	**1.5**

Table 5–32

M 1997

NPRI Releases and Transfers, 1995 and 1997

	1995					1997				
	Reported	Reported Both Years				Reported	Reported Both Years			
	1995 Only Number	Decrease Number	Same Number	Increase Number	Total Number	1997 Only Number	Decrease Number	Same Number	Increase Number	Total Number
Facilities	116	466	226	494	1,302	244	466	226	494	1,430
Forms	245	1,872	404	1,643	4,164	532	1,814	419	1,834	4,599
On-site Releases	**kg**	**kg**	**kg**	**kg**	**kg**	**kg**	**kg**	**kg**	**kg**	**kg**
Total Air Emissions	1,994,779	41,002,532	155,039	23,835,362	66,987,712	3,890,037	26,918,883	155,347	31,874,355	62,838,622
Surface Water Discharges	227,664	11,582,721	24,200	496,261	12,330,846	197,648	2,370,858	24,200	1,631,463	4,224,169
Underground Injection	0	59,226	0	3,497,701	3,556,927	900	70,527	0	4,126,233	4,197,660
On-site Land Releases	2,763	4,842,163	3,157	4,759,660	9,607,743	37,062	1,720,623	3,157	7,301,266	9,062,108
Total Releases	**2,233,332**	**57,543,982**	**192,697**	**32,650,097**	**92,620,108**	**4,137,369**	**31,125,335**	**192,696**	**44,993,524**	**80,448,924**
Off-site Transfers										
Treatment (except metals)	502,018	3,873,151	1,360	3,080,121	7,456,650	2,759,196	2,151,004	1,360	5,014,133	9,925,693
Sewage/To POTWs (except metals)	91,217	722,195	124	3,364,373	4,177,909	211,245	519,445	124	4,530,028	5,260,842
Disposal (except metals)	108,814	3,194,588	3,200	935,878	4,242,480	153,804	791,236	3,200	1,584,775	2,533,015
Treatment/Sewage/Disposal of Metals	105,271	11,404,801	40,061	10,321,532	21,871,665	236,371	8,429,290	40,062	23,082,988	31,788,711
Total Transfers	**807,320**	**19,194,735**	**44,745**	**17,701,904**	**37,748,704**	**3,360,616**	**11,890,975**	**44,746**	**34,211,924**	**49,508,261**
Total Releases and Transfers	**3,040,652**	**76,738,717**	**237,442**	**50,352,001**	**130,368,812**	**7,497,985**	**43,016,310**	**237,442**	**79,205,448**	**129,957,185**

Overall Change by Facilities with Increases and Facilities with Decreases

The population of all facilities that reported increases in total releases and transfers from 1995 to 1997 contributed the majority of all releases and transfers in 1997 in both NPRI and TRI. They reported 79.2 million kg of NPRI's 130.0 million kg total releases and transfers for 1997 and 643.5 million kg of the 1997 TRI total of 1.16 billion kg. These are facilities that reported in both years and their total releases and transfers increased. They do not include facilities that reported in 1997 but not in 1995 (**Tables 5–32** and **5–33**).

Facilities with increases thus accounted for 61 percent of NPRI's total releases and transfers and 55 percent of TRI's total in 1997, although they represented only about one-third of the total facilities in both systems. These "increaser" facilities reported half or more of all releases (56 percent of all releases in NPRI and 51 percent in TRI) and an even larger percentage of off-site transfers (69 percent of all transfers in NPRI and 64 percent in TRI—see **Figure 5–24**).

In NPRI, releases and transfers by the 466 facilities that reported decreases declined by a total of 33.7 million kg from 1995 to 1997, while amounts reported by the 494 facilities with increases rose by 28.9 million kg. In TRI, the 7,874 facilities with decreases reported a reduction of 248.1 million kg, while the 6,291 facilities with increases reported an overall increase of 268.5 million kg. Again, these do not include facilities that reported in 1995, but did not report in 1997, thus contributing to the overall net decrease.

	Change 1995–1997							
	Reported One Year Only		Decrease		Increase		Total	
	Number	%	Number	%	Number	%	Number	%
Facilities	128	110.3	0	0.0	0	0.0	128	9.8
Forms	287	117.1	-58	-3.1	191	11.6	435	10.4
On-site Releases	**kg**	**%**	**kg**	**%**	**kg**	**%**	**kg**	**%**
Total Air Emissions	1,895,258	95.0	-14,083,649	-34.3	8,038,993	33.7	-4,149,090	-6.2
Surface Water Discharges	-30,016	-13.2	-9,211,863	-79.5	1,135,202	228.8	-8,106,677	-65.7
Underground Injection	900	—	11,301	19.1	628,532	18.0	640,733	18.0
On-site Land Releases	34,299	1241.4	-3,121,540	-64.5	2,541,606	53.4	-545,635	-5.7
Total Releases	**1,904,037**	**85.3**	**-26,418,647**	**-45.9**	**12,343,427**	**37.8**	**-12,171,184**	**-13.1**
Off-site Transfers								
Treatment (except Metals)	2,257,178	449.6	-1,722,147	-44.5	1,934,012	62.8	2,469,043	33.1
Sewage/To POTWs (except Metals)	120,028	131.6	-202,750	-28.1	1,165,655	34.6	1,082,933	25.9
Disposal (except Metals)	44,990	41.3	-2,403,352	-75.2	648,897	69.3	-1,709,465	-40.3
Treatment/Sewage/Disposal of Metals	131,100	124.5	-2,975,511	-26.1	12,761,456	123.6	9,917,046	45.3
Total Transfers	**2,553,296**	**316.3**	**-7,303,760**	**-38.1**	**16,510,020**	**93.3**	**11,759,557**	**31.2**
Total Releases and Transfers	**4,457,333**	**146.6**	**-33,722,407**	**-43.9**	**28,853,447**	**57.3**	**-411,627**	**-0.3**

Table 5–33

M 1997

TRI Releases and Transfers, 1995 and 1997

	1995					1997				
	Reported	Reported Both Years				Reported	Reported Both Years			
	1995 Only Number	Decrease Number	Same Number	Increase Number	Total Number	1997 Only Number	Decrease Number	Same Number	Increase Number	Total Number
Facilities	3,056	7,874	2,785	6,291	20,006	2,175	7,874	2,785	6,291	19,125
Forms	5,537	28,695	4,886	21,636	60,754	3,995	26,444	4,973	22,840	58,252
On-site Releases										
Total Air Emissions	23,568,206	349,400,853	380,996	165,690,091	539,040,146	12,972,574	225,239,375	380,659	210,782,732	449,375,340
Surface Water Discharges	58,940	36,895,940	1,918	37,657,379	74,614,177	408,617	27,302,454	1,921	66,905,702	94,618,694
Underground Injection	6,902	67,004,696	0	17,255,494	84,267,092	1,665,815	42,060,063	0	30,923,776	74,649,654
On-site Land Releases	3,952,608	85,238,555	3,903	47,923,485	137,118,551	913,100	65,997,270	4,018	81,744,115	148,658,503
Total Releases	**27,586,656**	**538,540,044**	**386,817**	**268,526,449**	**835,039,966**	**15,960,106**	**360,599,162**	**386,598**	**390,356,325**	**767,302,191**
Off-site Transfers										
Treatment (except metals)	2,231,849	50,299,691	23,697	28,567,577	81,122,814	3,597,215	23,915,478	23,697	64,521,834	92,058,224
Sewage/To POTWs (except metals)	2,056,375	54,686,824	76,596	34,569,474	91,389,269	2,246,607	44,842,333	76,707	53,789,091	100,954,738
Disposal (except metals)	1,482,270	11,847,979	3,399	4,381,323	17,714,971	2,088,623	4,376,694	3,288	14,015,998	20,484,603
Treatment/Sewage/Disposal of Metals	3,391,246	78,012,640	125,348	38,992,702	120,521,936	8,079,974	51,531,924	125,567	120,804,726	180,542,191
Total Transfers	**9,161,740**	**194,847,134**	**229,040**	**106,511,076**	**310,748,990**	**16,012,419**	**124,666,429**	**229,259**	**253,131,649**	**394,039,756**
Total Releases and Transfers	**36,748,396**	**733,387,178**	**615,857**	**375,037,525**	**1,145,788,956**	**31,972,525**	**485,265,591**	**615,857**	**643,487,974**	**1,161,341,947**

	Change 1995–1997							
	Reported One Year Only		Decrease		Increase		Total	
	Number	%	Number	%	Number	%	Number	%
Facilities	-881	-28.8	0	0.0	0	0.0	-881	-4.4
Forms	-1,542	-27.8	-2,251	-7.8	1,204	5.6	-2,502	-4.1
On-site Releases	**kg**	**%**	**kg**	**%**	**kg**	**%**	**kg**	**%**
Total Air Emissions	-10,595,632	-45.0	-124,161,478	-35.5	45,092,641	27.2	-89,664,806	-16.6
Surface Water Discharges	349,677	593.3	-9,593,486	-26.0	29,248,323	77.7	20,004,517	26.8
Underground Injection	1,658,913	24035.3	-24,944,633	-37.2	13,668,282	79.2	-9,617,438	-11.4
On-site Land Releases	-3,039,508	-76.9	-19,241,285	-22.6	33,820,630	70.6	11,539,952	8.4
Total Releases	**-11,626,550**	**-42.1**	**-177,940,882**	**-33.0**	**121,829,876**	**45.4**	**-67,737,775**	**-8.1**
Off-site Transfers								
Treatment (except Metals)	1,365,366	61.2	-26,384,213	-52.5	35,954,257	125.9	10,935,410	13.5
Sewage/To POTWs (except Metals)	190,232	9.3	-9,844,491	-18.0	19,219,617	55.6	9,565,469	10.5
Disposal (except Metals)	606,353	40.9	-7,471,285	-63.1	9,634,675	219.9	2,769,632	15.6
Treatment/Sewage/Disposal of Metals	4,688,728	138.3	-26,480,716	-33.9	81,812,024	209.8	60,020,255	49.8
Total Transfers	**6,850,679**	**74.8**	**-70,180,705**	**-36.0**	**146,620,573**	**137.7**	**83,290,766**	**26.8**
Total Releases and Transfers	**-4,775,871**	**-13.0**	**-248,121,587**	**-33.8**	**268,450,449**	**71.6**	**15,552,991**	**1.4**

Figure 5–24
M 1997

Distribution of NPRI and TRI Total Releases and Transfers, 1995–1997: Facilities with Increases, Facilities with Decreases and Others

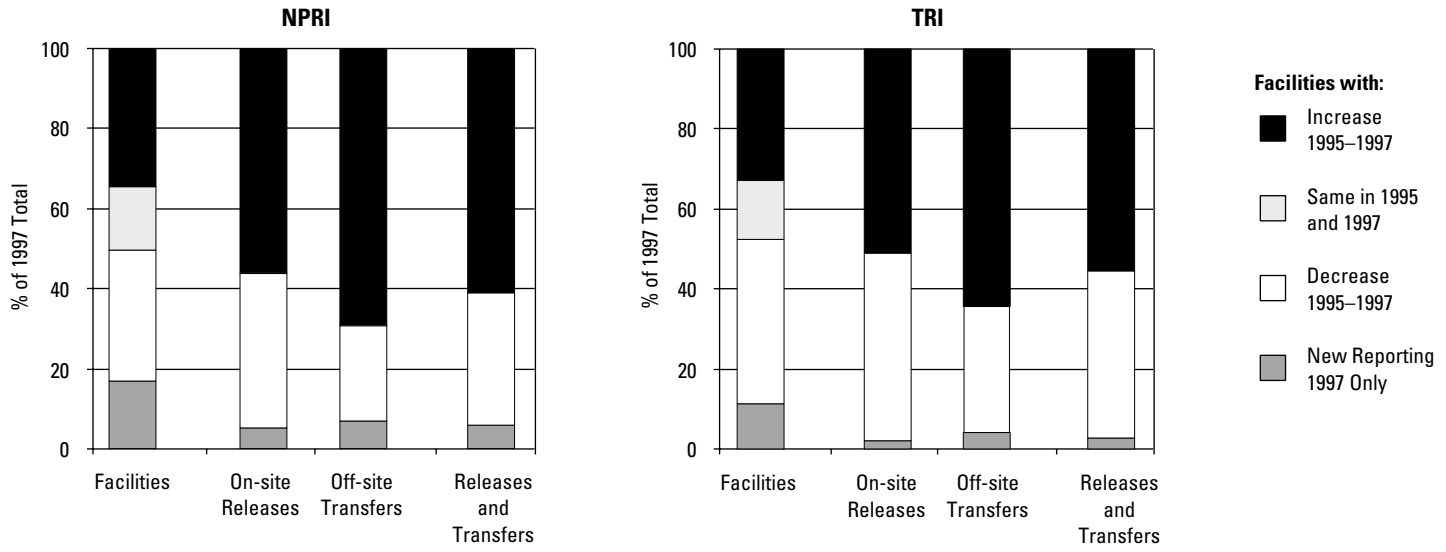


Table 5–34
M 1997

North American States and Provinces with Largest Total Releases and Transfers, 1995 and 1997

State	1995 Total Releases and Transfers (kg)	1995 Rank	1997 Total Releases and Transfers (kg)	1997 Rank	Change 1995–1997 kg	Change 1995–1997 %
Texas	143,078,732	1	120,900,533	1	-22,178,199	-15.5
Pennsylvania	62,710,387	5	79,842,229	2	17,131,842	27.3
Ontario	71,149,129	2	75,351,065	3	4,201,936	5.9
Ohio	67,858,916	3	68,786,964	4	928,048	1.4
Louisiana	64,297,788	4	67,597,965	5	3,300,177	5.1
All Others	867,062,816		878,820,376		11,757,560	1.4
Total	**1,276,157,768**		**1,291,299,132**		**15,141,364**	**1.2**

➤ Canada and US data only. Mexico data not collected for 1997.

5.3.2 Changes in Releases and Transfers by State and Province

Releases and Transfers, 1995–1997

Changes from 1995 to 1997 in releases and transfers led to changes in the rankings of the states and provinces. Texas remained first with the largest total releases and transfers in both years, despite a 22.2-million-kg reduction. The other four states and provinces with the largest total releases and transfers in 1997 all reported increases from 1995 to 1997. A large increase (17.1 million kg) brought the state of Pennsylvania from fifth for total releases and transfers in 1995 to second in 1997. Although the province of Ontario and the states of Ohio and Louisiana also reported increases, they stepped down in rank behind Pennsylvania (**Table 5–34**).

Comparing Canadian provinces, from 1995 to 1997, total releases and transfers increased in Ontario and Quebec, the provinces with the largest 1997 totals. Ontario facilities reported the largest increase among provinces, rising 4.2 million kg to a 1997 total of 75.4 million kg. Ontario's on-site releases decreased by 6.0 million kg in this period, but an increase of 10.2 million kg in off-site transfers outweighed that reduction. In contrast, the increase in Quebec amounted to 18,357 kg. Quebec facilities reported a total of 23.7 million kg in both 1995 and 1997, and the changes in releases (2.4 million kg reduction) and in transfers (2.4 million kg increase) offset each other (**Table 5–35**).

The second-largest increase among Canadian provinces appeared in Manitoba, where total releases and transfers more than doubled, climbing from 1.8 million in 1995 to 3.8 million kg in 1997. Nearly all of this increase occurred in releases. Prince Edward Island ranked third among provinces for increases, with total releases and transfers rising 241,044 kg. The bulk of this increase was reported in releases (a 206,750-kg increase).

In three provinces, releases and transfers decreased by more than one million kg each from 1995 to 1997. Among them was Alberta, which ranked third for total releases and transfers in 1997, with 13.2 million kg. Alberta's decrease of 3.1 million kg, almost all in releases, was the largest Canadian reduction. The second largest occurred in New Brunswick, a reduction of 1.9 million kg. New Brunswick facilities cut their reported releases by 2.4 million kg but increased their transfers by 539,585 kg. In British Columbia, a 1.7-million-kg reduction occurred in transfers, with a slight increase (20,183 kg) in releases. British Columbia ranked third in Canada for 1995–1997 reductions.

All provinces had the same ranking for total releases and transfers in 1997 as in 1995. The number of facilities reporting increased from 1995 to 1997 in all Canadian provinces.

Comparing US states, Texas, which had the largest total releases and transfers in both 1995 and 1997, also had the largest US reduction. Texas facilities reported a decrease of 22.2 million kg (almost entirely in releases), to 120.9 million kg total releases and transfers in 1997 (**Table 5–36**).

States with the next largest reductions—Alabama and North Carolina—had decreases of approximately 8.0 million kg each, from 1995 to 1997. Alabama facilities reported a reduction of 11.0 million kg in releases, partly offset by a 3.1-million-kg increase in transfers. With total releases and transfers of 41.5 million kg in 1997, Alabama ranked 10th among states, down from sixth in 1995. In North Carolina, both releases and transfers decreased—releases by 5.4 million kg and transfers by 2.4 million kg. North Carolina's 1997 total was 34.0 million kg, ranking 12th (down from 10th in 1995).

Pennsylvania, Ohio and Louisiana—with the largest total releases and transfers in 1997 after Texas—saw increases over 1995 levels. Pennsylvania had the largest increase of any state, 17.1 million kg, with increases in both releases (by 5.5 million kg) and transfers (by 11.6 million kg), contributing to a total for 1997 of 79.8 million kg. In Ohio, releases decreased by 5.6 million kg, but transfers increased by 6.5 million kg, giving the state an overall increase of 928,048 kg. Ohio's releases and transfers totaled 68.8 million kg in 1997, just ahead of Louisiana's total of 67.6 million kg. Louisiana facilities also reported larger releases (by 2.2 million kg) and larger transfers (by 1.1 million kg) in 1997, compared to 1995 reporting.

With its large increase, Pennsylvania rose from fourth to second among states for total releases and transfers. This meant that Ohio and Louisiana moved down in rank, despite their increases.

States with the largest increases, after Pennsylvania, were Utah, increasing by 11.7 million kg to 46.4 million kg total releases and transfers in 1997, and Arkansas, increasing by 10.9 million kg to a total of 23.1 million kg. Utah facilities reported larger amounts for both releases (by 7.8 million kg) and transfers (by 4.0 million kg), while Arkansas's increase occurred in transfers (11.1 million kg), with a small reduction (224,932 kg) in releases. Both states rose in rankings for total releases and transfers, Utah from 11th to seventh and Arkansas from 29th to 19th.

The number of facilities decreased in 42 US states and territories, remained the same in four and increased in seven.

Large percentage increases in total releases and transfers (more than 20 percent) occurred in 10 provinces and states. Eleven provinces and states had reductions of more than 20 percent (**Map 5–2**).

Table 5–35

M 1997

NPRI Total Releases and Transfers, by Province, 1995 and 1997
(Ordered by Total 1997 Releases and Transfers)

Province	1995 Number of Facilities	1995 On-site Releases (kg)	1995 Off-site Transfers (kg)	1995 Total Releases and Transfers (kg)	1995 Rank	1997 Number of Facilities	1997 On-site Releases (kg)	1997 Off-site Transfers (kg)	1997 Total Releases and Transfers (kg)	1997 Rank
Ontario	726	45,919,331	25,229,798	71,149,129	1	767	39,955,770	35,395,295	75,351,065	1
Quebec	320	17,044,512	6,664,921	23,709,433	2	356	14,649,326	9,078,464	23,727,790	2
Alberta	87	15,000,884	1,231,830	16,232,714	3	107	11,987,370	1,166,942	13,154,312	3
British Columbia	72	5,438,945	2,659,847	8,098,792	4	77	5,459,128	890,409	6,349,537	4
New Brunswick	20	4,792,326	1,558,561	6,350,887	5	25	2,357,036	2,098,146	4,455,182	5
Manitoba	37	1,530,130	289,145	1,819,275	6	44	3,397,552	357,194	3,754,746	6
Nova Scotia	21	1,583,093	107,917	1,691,010	7	23	1,063,517	472,606	1,536,123	7
Saskatchewan	14	1,013,664	6,257	1,019,921	8	20	946,849	14,511	961,360	8
Newfoundland	3	284,203	28	284,231	9	8	412,606	0	412,606	9
Prince Edward Island	2	13,020	400	13,420	10	3	219,770	34,694	254,464	10
Total	**1,302**	**92,620,108**	**37,748,704**	**130,368,812**		**1,430**	**80,448,924**	**49,508,261**	**129,957,185**	

Province	Change 1995–1997 Number	Change 1995–1997 kg	Change 1995–1997 kg	Change 1995–1997 kg	Rank	Percent Change 1995–1997 %	Percent Change 1995–1997 %	Percent Change 1995–1997 %	Percent Change 1995–1997 %	Rank
Ontario	41	-5,963,561	10,165,497	4,201,936	10	5.6	-13.0	40.3	5.9	7
Quebec	36	-2,395,186	2,413,543	18,357	6	11.3	-14.1	36.2	0.1	6
Alberta	20	-3,013,514	-64,888	-3,078,402	1	23.0	-20.1	-5.3	-19.0	3
British Columbia	5	20,183	-1,769,438	-1,749,255	3	6.9	0.4	-66.5	-21.6	2
New Brunswick	5	-2,435,290	539,585	-1,895,705	2	25.0	-50.8	34.6	-29.8	1
Manitoba	7	1,867,422	68,049	1,935,471	9	18.9	122.0	23.5	106.4	9
Nova Scotia	2	-519,576	364,689	-154,887	4	9.5	-32.8	337.9	-9.2	4
Saskatchewan	6	-66,815	8,254	-58,561	5	42.9	-6.6	131.9	-5.7	5
Newfoundland	5	128,403	-28	128,375	7	166.7	45.2	-100.0	45.2	8
Prince Edward Island	1	206,750	34,294	241,044	8	50.0	1587.9	8573.5	1796.2	10
Total	**128**	**-12,171,184**	**11,759,557**	**-411,627**		**9.8**	**-13.1**	**31.2**	**-0.3**	

Table 5–36

M 1997

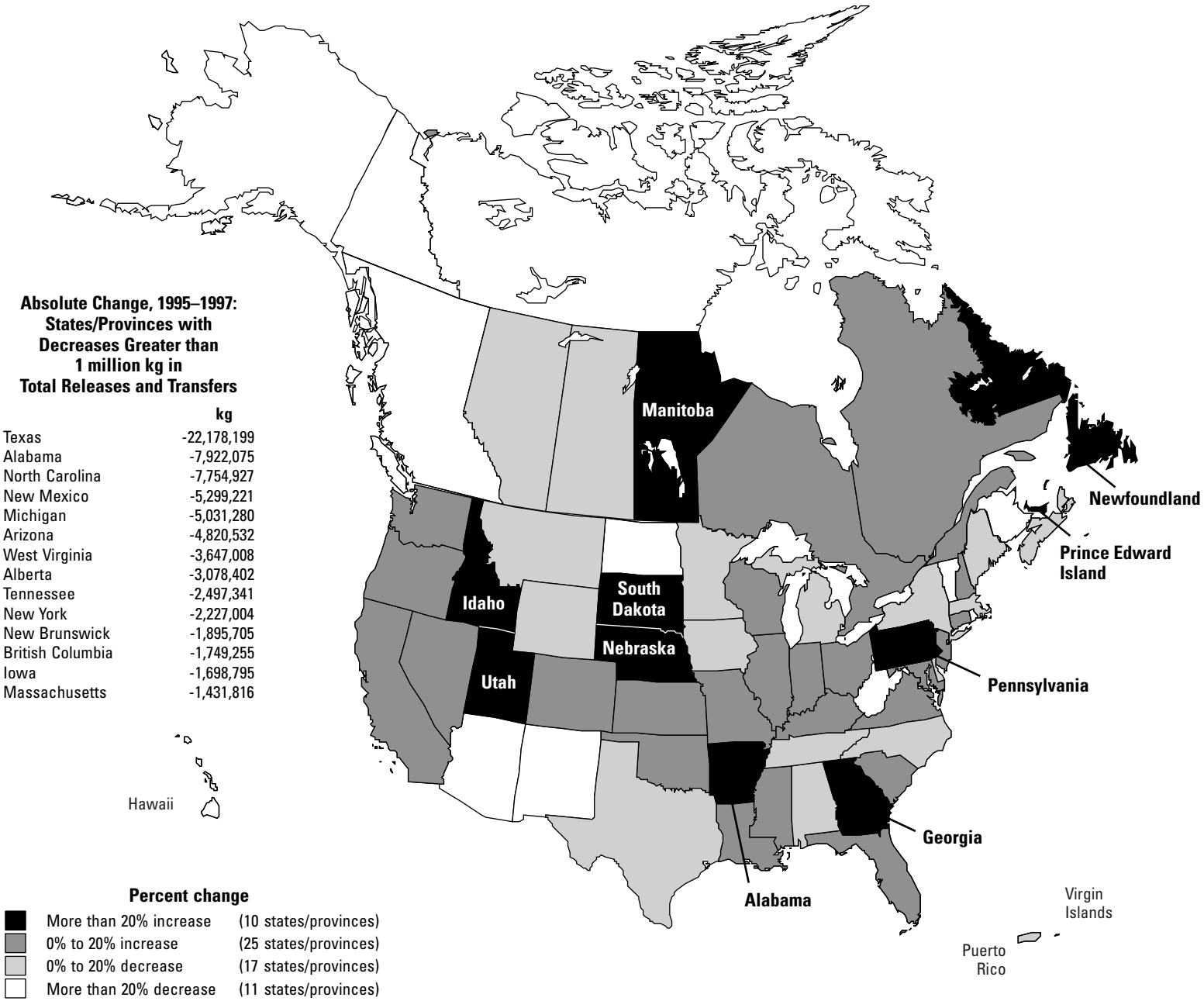
TRI Total Releases and Transfers, by State, 1995 and 1997
(Ordered by Total 1997 Releases and Transfers)

State	1995 Number of Facilities	1995 On-site Releases (kg)	1995 Off-site Transfers (kg)	1995 Total Releases and Transfers (kg)	1995 Rank	1997 Number of Facilities	1997 On-site Releases (kg)	1997 Off-site Transfers (kg)	1997 Total Releases and Transfers (kg)	1997 Rank
Texas	1,087	105,839,053	37,239,679	143,078,732	1	1,080	83,883,000	37,017,533	120,900,533	1
Pennsylvania	1,179	28,224,217	34,486,170	62,710,387	4	1,120	33,713,706	46,128,523	79,842,229	2
Ohio	1,527	42,573,363	25,285,553	67,858,916	2	1,464	36,992,382	31,794,582	68,786,964	3
Louisiana	276	61,044,458	3,253,330	64,297,788	3	261	63,224,378	4,373,587	67,597,965	4
Indiana	958	29,939,396	16,481,625	46,421,021	9	913	27,811,195	23,853,714	51,664,909	5
Illinois	1,233	34,483,295	14,057,811	48,541,106	7	1,166	31,144,870	19,112,546	50,257,416	6
Utah	135	34,082,808	626,564	34,709,372	11	125	41,835,001	4,582,453	46,417,454	7
Michigan	831	26,697,119	24,369,024	51,066,143	5	786	20,000,568	26,034,295	46,034,863	8
Tennessee	600	40,027,685	6,900,860	46,928,545	8	568	35,877,974	8,553,230	44,431,204	9
Alabama	465	41,233,206	8,204,893	49,438,099	6	461	30,199,535	11,316,489	41,516,024	10
Florida	458	28,517,751	5,009,425	33,527,176	12	457	32,013,775	8,217,166	40,230,941	11
North Carolina	783	34,432,863	7,330,472	41,763,335	10	736	29,035,377	4,973,031	34,008,408	12
Virginia	405	21,656,488	7,018,035	28,674,523	13	387	19,348,059	10,668,654	30,016,713	13
Missouri	521	21,856,481	6,212,336	28,068,817	14	502	22,779,721	6,806,404	29,586,125	14
Georgia	639	19,660,127	3,722,592	23,382,719	18	609	20,373,823	8,596,443	28,970,266	15
South Carolina	462	20,721,736	5,132,118	25,853,854	15	439	19,349,981	8,850,818	28,200,799	16
Wisconsin	804	13,100,770	10,492,770	23,593,540	17	798	11,955,575	14,882,171	26,837,746	17
Mississippi	283	21,620,941	2,345,718	23,966,659	16	264	24,753,247	1,232,243	25,985,490	18
Arkansas	340	10,452,876	1,713,939	12,166,815	29	326	10,227,944	12,860,185	23,088,129	19
California	1,232	8,906,945	11,228,782	20,135,727	20	1,154	8,921,534	11,897,413	20,818,947	20
New York	651	14,566,183	6,933,373	21,499,556	19	600	11,707,417	7,565,135	19,272,552	21
Montana	21	19,379,820	24,646	19,404,466	22	23	18,699,623	553,382	19,253,005	22
Kentucky	378	12,210,951	5,265,774	17,476,725	25	380	12,243,252	6,808,052	19,051,304	23
New Jersey	550	5,336,171	13,519,904	18,856,075	23	498	6,022,954	12,863,215	18,886,169	24
Oregon	232	9,354,325	6,709,624	16,063,949	26	227	9,677,021	7,336,782	17,013,803	25
Arizona	163	16,963,419	3,059,071	20,022,490	21	175	13,436,541	1,765,417	15,201,958	26
New Mexico	32	18,650,847	167,438	18,818,285	24	32	13,287,600	231,464	13,519,064	27
Iowa	371	10,327,183	4,842,852	15,170,035	28	356	7,830,048	5,641,192	13,471,240	28
Washington	261	10,271,201	1,604,528	11,875,729	30	254	8,735,877	4,246,444	12,982,321	29
West Virginia	132	11,139,089	4,595,199	15,734,288	27	125	7,865,320	4,221,960	12,087,280	30
Kansas	261	6,531,589	3,835,432	10,367,021	32	245	7,228,250	3,879,211	11,107,461	31
Minnesota	462	7,230,561	4,196,965	11,427,526	31	429	5,371,218	5,314,124	10,685,342	32
Oklahoma	253	6,449,451	1,815,935	8,265,386	34	261	6,067,878	2,510,321	8,578,199	33
Connecticut	298	3,573,272	3,835,532	7,408,804	36	278	2,314,384	6,184,467	8,498,851	34
Maryland	173	4,704,290	2,926,201	7,630,491	35	165	4,446,359	3,923,483	8,369,842	35
Massachusetts	453	3,018,643	5,521,475	8,540,118	33	422	2,079,208	5,029,094	7,108,302	36
Idaho	50	4,772,712	210,677	4,983,389	39	50	6,229,364	340,740	6,570,104	37
Nebraska	149	3,255,960	1,902,096	5,158,056	38	141	2,140,998	4,410,219	6,551,217	38
Puerto Rico	143	3,540,065	3,740,016	7,280,081	37	134	2,894,302	3,615,562	6,509,864	39
Maine	78	3,698,236	958,961	4,657,197	40	75	2,947,091	849,997	3,797,088	40
Wyoming	24	4,089,641	4,232	4,093,873	41	27	3,565,677	28,174	3,593,851	41
South Dakota	72	1,675,907	265,990	1,941,897	44	64	1,343,396	1,189,050	2,532,446	42
Delaware	62	1,472,223	1,472,524	2,944,747	42	60	1,011,075	1,502,816	2,513,891	43
Colorado	159	1,447,568	753,819	2,201,387	43	151	1,331,351	970,229	2,301,580	44
Nevada	40	1,494,614	36,883	1,531,497	46	43	1,821,377	13,540	1,834,917	45
New Hampshire	93	1,048,074	290,379	1,338,453	47	97	970,539	417,204	1,387,743	46
Rhode Island	138	1,119,455	570,220	1,689,675	45	116	705,748	500,366	1,206,114	47
Virgin Islands	2	549,643	86,683	636,326	50	2	537,535	159,608	697,143	48
North Dakota	31	659,870	270,237	930,107	49	29	509,847	85,306	595,153	49
Alaska	8	1,005,984	2,747	1,008,731	48	6	540,492	1,133	541,625	50
Vermont	36	284,806	140,501	425,307	51	33	174,940	127,329	302,269	51
Hawaii	11	146,635	77,264	223,899	52	10	123,864	3,258	127,122	52
District of Columbia	1	0	116	116	53	1	0	2	2	53
Total	**20,006**	**835,039,966**	**310,748,990**	**1,145,788,956**		**19,125**	**767,302,191**	**394,039,756**	**1,161,341,947**	

State	Change 1995–1997 Number of Facilities	On-site Releases (kg)	Off-site Transfers (kg)	Total Releases and Transfers (kg)	Rank	Percent Change 1995–1997 Number of Facilities (%)	On-site Releases (%)	Off-site Transfers (%)	Total Releases and Transfers (%)	Rank
Texas	-7	-21,956,053	-222,146	-22,178,199	1	-0.6	-20.7	-0.6	-15.5	14
Pennsylvania	-59	5,489,489	11,642,353	17,131,842	53	-5.0	19.4	33.8	27.3	49
Ohio	-63	-5,580,981	6,509,029	928,048	34	-4.1	-13.1	25.7	1.4	25
Louisiana	-15	2,179,920	1,120,257	3,300,177	47	-5.4	3.6	34.4	5.1	32
Indiana	-45	-2,128,201	7,372,089	5,243,888	48	-4.7	-7.1	44.7	11.3	42
Illinois	-67	-3,338,425	5,054,735	1,716,310	43	-5.4	-9.7	36.0	3.5	27
Utah	-10	7,752,193	3,955,889	11,708,082	52	-7.4	22.7	631.4	33.7	52
Michigan	-45	-6,696,551	1,665,271	-5,031,280	5	-5.4	-25.1	6.8	-9.9	20
Tennessee	-32	-4,149,711	1,652,370	-2,497,341	8	-5.3	-10.4	23.9	-5.3	22
Alabama	-4	-11,033,671	3,111,596	-7,922,075	2	-0.9	-26.8	37.9	-16.0	13
Florida	-1	3,496,024	3,207,741	6,703,765	50	-0.2	12.3	64.0	20.0	46
North Carolina	-47	-5,397,486	-2,357,441	-7,754,927	3	-6.0	-15.7	-32.2	-18.6	10
Virginia	-18	-2,308,429	3,650,619	1,342,190	38	-4.4	-10.7	52.0	4.7	31
Missouri	-19	923,240	594,068	1,517,308	40	-3.6	4.2	9.6	5.4	33
Georgia	-30	713,696	4,873,851	5,587,547	49	-4.7	3.6	130.9	23.9	47
South Carolina	-23	-1,371,755	3,718,700	2,346,945	45	-5.0	-6.6	72.5	9.1	38
Wisconsin	-6	-1,145,195	4,389,401	3,244,206	46	-0.7	-8.7	41.8	13.8	43
Mississippi	-19	3,132,306	-1,113,475	2,018,831	44	-6.7	14.5	-47.5	8.4	36
Arkansas	-14	-224,932	11,146,246	10,921,314	51	-4.1	-2.2	650.3	89.8	53
California	-78	14,589	668,631	683,220	31	-6.3	0.2	6.0	3.4	26
New York	-51	-2,858,766	631,762	-2,227,004	9	-7.8	-19.6	9.1	-10.4	19
Montana	2	-680,197	528,736	-151,461	20	9.5	-3.5	2145.3	-0.8	23
Kentucky	2	32,301	1,542,278	1,574,579	41	0.5	0.3	29.3	9.0	37
New Jersey	-52	686,783	-656,689	30,094	24	-9.5	12.9	-4.9	0.2	24
Oregon	-5	322,696	627,158	949,854	35	-2.2	3.4	9.3	5.9	34
Arizona	12	-3,526,878	-1,293,654	-4,820,532	6	7.4	-20.8	-42.3	-24.1	8
New Mexico	0	-5,363,247	64,026	-5,299,221	4	0.0	-28.8	38.2	-28.2	7
Iowa	-15	-2,497,135	798,340	-1,698,795	10	-4.0	-24.2	16.5	-11.2	17
Washington	-7	-1,535,324	2,641,916	1,106,592	37	-2.7	-14.9	164.7	9.3	39
West Virginia	-7	-3,273,769	-373,239	-3,647,008	7	-5.3	-29.4	-8.1	-23.2	9
Kansas	-16	696,661	43,779	740,440	33	-6.1	10.7	1.1	7.1	35
Minnesota	-33	-1,859,343	1,117,159	-742,184	14	-7.1	-25.7	26.6	-6.5	21
Oklahoma	8	-381,573	694,386	312,813	29	3.2	-5.9	38.2	3.8	29
Connecticut	-20	-1,258,888	2,348,935	1,090,047	36	-6.7	-35.2	61.2	14.7	44
Maryland	-8	-257,931	997,282	739,351	32	-4.6	-5.5	34.1	9.7	41
Massachusetts	-31	-939,435	-492,381	-1,431,816	11	-6.8	-31.1	-8.9	-16.8	12
Idaho	0	1,456,652	130,063	1,586,715	42	0.0	30.5	61.7	31.8	51
Nebraska	-8	-1,114,962	2,508,123	1,393,161	39	-5.4	-34.2	131.9	27.0	48
Puerto Rico	-9	-645,763	-124,454	-770,217	13	-6.3	-18.2	-3.3	-10.6	18
Maine	-3	-751,145	-108,964	-860,109	12	-3.8	-20.3	-11.4	-18.5	11
Wyoming	3	-523,964	23,942	-500,022	15	12.5	-12.8	565.7	-12.2	16
South Dakota	-8	-332,511	923,060	590,549	30	-11.1	-19.8	347.0	30.4	50
Delaware	-2	-461,148	30,292	-430,856	18	-3.2	-31.3	2.1	-14.6	15
Colorado	-8	-116,217	216,410	100,193	27	-5.0	-8.0	28.7	4.6	30
Nevada	3	326,763	-23,343	303,420	28	7.5	21.9	-63.3	19.8	45
New Hampshire	4	-77,535	126,825	49,290	25	4.3	-7.4	43.7	3.7	28
Rhode Island	-22	-413,707	-69,854	-483,561	16	-15.9	-37.0	-12.3	-28.6	6
Virgin Islands	0	-12,108	72,925	60,817	26	0.0	-2.2	84.1	9.6	40
North Dakota	-2	-150,023	-184,931	-334,954	19	-6.5	-22.7	-68.4	-36.0	4
Alaska	-2	-465,492	-1,614	-467,106	17	-25.0	-46.3	-58.8	-46.3	2
Vermont	-3	-109,866	-13,172	-123,038	21	-8.3	-38.6	-9.4	-28.9	5
Hawaii	-1	-22,771	-74,006	-96,777	22	-9.1	-15.5	-95.8	-43.2	3
District of Columbia	0	0	-114	-114	23	0.0	—	-98.3	-98.3	1
Total	**-881**	**-67,737,775**	**83,290,766**	**15,552,991**		**-4.4**	**-8.1**	**26.8**	**1.4**	

Map 5–2
M 1997

Percent Change in North American Total Releases and Transfers, 1995–1997: States and Provinces



➤ Canada and US data only. Mexico data not collected for 1997.

Table 5–37
M 1997

NPRI Actual and Projected Total Releases and Transfers, by Province, 1995–1999

Province	Total Releases and Transfers: Actual 1995 (kg)	Actual 1997 (kg)	Projected 1999 (kg)	Actual Change 1995–1997 (kg)	Projected Change 1997–1999 (kg)	Actual % Change 1995–1997	Projected % Change 1997–1999
Alberta	16,232,714	13,154,312	11,186,968	-3,078,402	-1,967,344	-19.0	-15.0
British Columbia	8,098,792	6,349,537	7,113,298	-1,749,255	763,761	-21.6	12.0
Manitoba	1,819,275	3,754,746	5,080,866	1,935,471	1,326,120	106.4	35.3
New Brunswick	6,350,887	4,455,182	4,098,665	-1,895,705	-356,517	-29.8	-8.0
Newfoundland	284,231	412,606	384,676	128,375	-27,930	45.2	-6.8
Nova Scotia	1,691,010	1,536,123	1,656,879	-154,887	120,756	-9.2	7.9
Ontario	71,149,129	75,351,065	73,043,606	4,201,936	-2,307,459	5.9	-3.1
Prince Edward Island	13,420	254,464	340,627	241,044	86,163	1796.2	33.9
Quebec	23,709,433	23,727,790	23,791,444	18,357	63,654	0.1	0.3
Saskatchewan	1,019,921	961,360	702,070	-58,561	-259,290	-5.7	-27.0
Total	**130,368,812**	**129,957,185**	**127,399,099**	**-411,627**	**-2,558,086**	**-0.3**	**-2.0**

➤ 1995 data from 1995 reporting forms; 1997 and 1999 data from 1997 reporting forms.

Actual and Projected Changes in Releases and Transfers, 1995–1999

NPRI and TRI facilities projected future reductions in total releases and transfers at a somewhat more rapid pace than had been achieved in the most recent years. NPRI facilities projected a two percent reduction in releases and transfers for 1997 to 1999, compared to a 0.3 percent actual reduction reported for 1995 to 1997. TRI facilities expected to reduce total releases and transfers by five percent from 1997 to 1999, compared to a one percent actual reduction for 1995 to 1997 (**Tables 5–37** and **5–38**).

On a province-by-province basis, NPRI facilities' projections generally continued the directions recorded for 1995 to 1997. Notable exceptions included Ontario and Newfoundland. In Ontario, NPRI facilities reported an increase of 4.2 million kg from 1995 to 1997 and projected a decrease of 2.3 million kg for 1997 to 1999. Ontario's projected three percent decrease contrasted with the province's recent six percent increase. Newfoundland facilities similarly projected a seven percent reduction for 1997 to 1999, despite a 45 percent increase since 1995.

Two provinces with decreasing releases and transfers from 1995 to 1997 projected increases through 1999: British Columbia (22 percent actual reduction, versus 12 percent projected increase) and Nova Scotia (nine percent actual reduction, versus eight percent projected increase). Of the remaining provinces, three projected continued increases and three projected continued decreases.

In most US states and territories (32 out of 53), facility projections for 1997–1999 were a continuation of their overall results for 1995–1997. Among these were 23 states and territories, including Texas, whose facilities expected to continue to reduce total releases and transfers. With a reduction of 24.6 million kg (a 17 percent decrease) from 1995 to 1997, Texas facilities projected a further reduction of 7.1 million kg (six percent) through 1999.

Pennsylvania, Ohio and Louisiana were among the 16 states and territories whose facilities expected to reverse recent increases in varying degrees. Pennsylvania facilities reported a 20 percent increase for 1995 to 1997 and projected a one percent reduction through 1999. Ohio's releases and transfers increased four percent from 1995 to 1997 and were projected to decline 12 percent over the next two years. With a five percent increase from 1995 to 1997, Louisiana facilities projected a seven percent reduction through 1999.

Table 5–38

M 1997

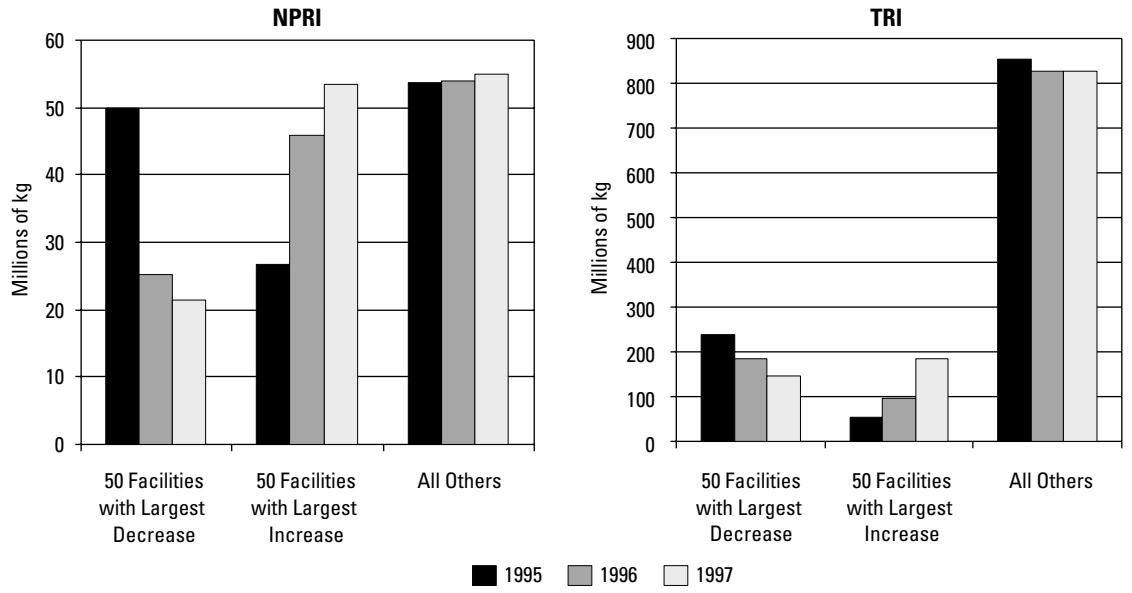
TRI Actual and Projected Total Releases and Transfers, by State, 1995–1999

State	Total Releases and Transfers: Actual 1995 (kg)	Actual 1997 (kg)	Projected 1999 (kg)	Actual Change 1995–1997 (kg)	Projected Change 1997–1999 (kg)	Actual % Change 1995–1997	Projected % Change 1997–1999
Alabama	45,637,086	39,091,378	38,829,839	-6,545,708	-261,539	-14.3	-0.7
Alaska	1,009,362	538,862	168,416	-470,500	-370,446	-46.6	-68.7
Arizona	19,832,634	15,168,902	10,951,269	-4,663,732	-4,217,633	-23.5	-27.8
Arkansas	17,561,438	22,000,125	26,019,178	4,438,687	4,019,053	25.3	18.3
California	19,428,804	19,379,409	22,124,727	-49,395	2,745,318	-0.3	14.2
Colorado	2,241,877	2,336,773	1,879,459	94,896	-457,314	4.2	-19.6
Connecticut	8,981,216	8,742,007	6,485,690	-239,209	-2,256,317	-2.7	-25.8
Delaware	2,925,478	2,515,102	2,707,016	-410,376	191,914	-14.0	7.6
District of Columbia	0	8	7	8	-1	—	-12.5
Florida	31,574,649	34,998,462	31,375,488	3,423,813	-3,622,974	10.8	-10.4
Georgia	22,586,370	27,303,407	25,405,146	4,717,037	-1,898,261	20.9	-7.0
Hawaii	229,448	126,056	127,887	-103,392	1,831	-45.1	1.5
Idaho	5,134,641	6,230,995	6,234,952	1,096,354	3,957	21.4	0.1
Illinois	46,832,925	46,168,374	44,893,800	-664,551	-1,274,574	-1.4	-2.8
Indiana	44,196,703	52,666,862	57,589,678	8,470,159	4,922,816	19.2	9.3
Iowa	14,981,666	12,301,719	11,843,160	-2,679,947	-458,559	-17.9	-3.7
Kansas	10,586,366	11,203,119	10,293,039	616,753	-910,080	5.8	-8.1
Kentucky	17,864,491	17,756,815	16,320,874	-107,676	-1,435,941	-0.6	-8.1
Louisiana	63,917,548	66,958,413	62,125,133	3,040,865	-4,833,280	4.8	-7.2
Maine	4,676,617	3,813,689	3,695,683	-862,928	-118,006	-18.5	-3.1
Maryland	7,414,123	8,566,174	8,352,421	1,152,051	-213,753	15.5	-2.5
Massachusetts	8,637,166	7,052,172	6,812,521	-1,584,994	-239,651	-18.4	-3.4
Michigan	50,961,634	44,587,534	37,737,867	-6,374,100	-6,849,667	-12.5	-15.4
Minnesota	11,959,686	10,845,107	10,462,492	-1,114,579	-382,615	-9.3	-3.5
Mississippi	22,323,239	25,176,615	28,029,656	2,853,376	2,853,041	12.8	11.3
Missouri	26,546,968	28,583,787	27,126,681	2,036,819	-1,457,106	7.7	-5.1
Montana	19,404,340	18,720,967	18,495,967	-683,373	-225,000	-3.5	-1.2
Nebraska	5,008,254	4,608,899	2,543,290	-399,355	-2,065,609	-8.0	-44.8
Nevada	1,536,403	1,840,452	1,533,431	304,049	-307,021	19.8	-16.7
New Hampshire	1,381,892	1,382,446	1,293,706	554	-88,740	0.0	-6.4
New Jersey	19,042,490	20,216,582	18,363,331	1,174,092	-1,853,251	6.2	-9.2
New Mexico	18,803,908	13,530,871	13,596,163	-5,273,037	65,292	-28.0	0.5
New York	21,927,409	19,040,881	14,347,760	-2,886,528	-4,693,121	-13.2	-24.6
North Carolina	41,263,019	34,074,658	31,422,891	-7,188,361	-2,651,767	-17.4	-7.8
North Dakota	912,661	618,417	430,800	-294,244	-187,617	-32.2	-30.3
Ohio	66,899,060	69,465,065	61,442,029	2,566,005	-8,023,036	3.8	-11.5
Oklahoma	8,266,991	8,429,711	8,605,518	162,720	175,807	2.0	2.1
Oregon	15,820,935	16,917,552	17,510,112	1,096,617	592,560	6.9	3.5
Pennsylvania	56,497,489	67,674,237	66,773,750	11,176,748	-900,487	19.8	-1.3
Puerto Rico	7,439,852	6,649,021	6,683,411	-790,831	34,390	-10.6	0.5
Rhode Island	1,670,899	1,083,059	867,487	-587,840	-215,572	-35.2	-19.9
South Carolina	25,524,014	27,662,394	26,399,101	2,138,380	-1,263,293	8.4	-4.6
South Dakota	1,908,830	2,504,018	2,506,812	595,188	2,794	31.2	0.1
Tennessee	47,587,989	44,125,521	40,327,575	-3,462,468	-3,797,946	-7.3	-8.6
Texas	144,116,732	119,536,246	112,472,936	-24,580,486	-7,063,310	-17.1	-5.9
Utah	34,110,943	43,269,702	44,708,373	9,158,759	1,438,671	26.8	3.3
Vermont	416,938	252,289	241,470	-164,649	-10,819	-39.5	-4.3
Virgin Islands	636,329	697,145	724,025	60,816	26,880	9.6	3.9
Virginia	29,063,786	30,967,283	29,362,111	1,903,497	-1,605,172	6.5	-5.2
Washington	11,820,369	12,712,843	11,458,561	892,474	-1,254,282	7.6	-9.9
West Virginia	15,588,885	11,965,822	11,077,496	-3,623,063	-888,326	-23.2	-7.4
Wisconsin	22,941,221	22,457,974	21,498,047	-483,247	-959,927	-2.1	-4.3
Wyoming	4,094,315	3,594,067	3,335,479	-500,248	-258,588	-12.2	-7.2
Total	**1,131,728,088**	**1,118,109,988**	**1,065,613,711**	**-13,618,100**	**-52,496,277**	**-1.2**	**-4.7**

➤ Data from Sections 8.1 plus 8.7 on TRI Form R; 1995 data from 1995 reporting forms; 1997 and 1999 data from 1997 reporting forms.

Figure 5–25
M 1997

NPRI and TRI Total Releases and Transfers, 1995–1997: Facilities with Largest Changes and All Others



5.3.3 NPRI and TRI Facilities with Largest Changes, 1995–1997

A few facilities accounted for the net change seen in both NPRI and TRI. Total releases and transfers in NPRI decreased slightly and the reduction can be largely attributed to the 50 facilities with the largest decreases reported. Similarly, the increase reported by the 50 TRI facilities reporting the largest increases in TRI total releases and transfers outweighed the overall reductions of other TRI facilities.

NPRI Facilities with Largest Decreases/Increases

The reduction in NPRI releases and transfers, although small (0.3 percent), was largely attributable to the facilities reporting the largest such changes. Fifty NPRI facilities making the largest reductions slightly overcame the influence of the largest increases and a small increase posted by all other NPRI facilities in the matched data set (**Figure 5–25**).

The 50 NPRI facilities making the largest reductions reported 49.9 million kg in 1995 and 21.4 million kg in 1997. This reduction of 28.5 million kg occurred principally in releases, which decreased from 36.9 million kg to 13.9 million kg. Most of the decrease appeared in 1996. A small reduction occurred in the number of forms the top facilities submitted, from 332 in 1995 to 317 in 1997. Six of the facilities did not report matched chemicals in 1997, although they had done so in 1995 (**Table 5–39**).

The 50 NPRI facilities with the largest increases reported 26.8 million kg in 1995 and 53.5 million kg in 1997, increasing 26.7 million kg over the comparison period. Most of this increase appeared in the reporting of transfers, which rose from 10.2 million kg to 26.1 million kg. The number of forms submitted by these facilities rose from 263 in 1995 to 326 in 1997. The 50 facilities included nine that did not report matched chemicals in 1995 but did in 1997 (**Table 5–40**).

TRI Facilities with Largest Decreases/Increases

The overall increase (1.4 percent) in TRI releases and transfers from 1995 to 1997 was primarily attributable to facilities reporting the largest such changes. Increases by the 50 facilities making the largest increases outweighed the effects of the largest reductions and an overall reduction by all other TRI facilities (**Figure 5–25**).

The facilities making the largest reductions in TRI releases and transfers reported 239.2 million kg in 1995 and 147.4 million kg in 1997, a reduction of 91.8 million kg. Releases reported by the 50 facilities declined from 175.5 million kg to 106.3 million kg. Little change occurred in the number of forms submitted (683 in 1995 and 676 in 1997). Four of the facilities did not report matched chemicals in 1997, having done so in 1995 (**Table 5–41**).

The 50 TRI facilities with large increases reported releasing and transferring a total of 54.5 million kg in 1995 and 185.8 million kg in 1997, an increase of 131.2 million kg. Their releases more than doubled, from 43.8 million kg to 101.9 million kg, but a larger increase—roughly sevenfold—occurred in transfers, which jumped from 10.7 to 83.9 million kg. The 50 facilities submitted 491 forms in 1995 and 595 forms in 1997, also a substantial increase. Among the facilities were five that did not report matched chemicals in 1995 but did so in 1997 (**Table 5–42**).

Table 5–39

M 1997

The 50 NPRI Facilities with Largest Decrease in Total Releases and Transfers, 1995–1997

Rank	Facility	City, Province	SIC Codes Canada	SIC Codes US	1995 Number of Forms	1995 Total Releases (kg)	1995 Total Transfers (kg)	1995 Total Releases and Transfers (kg)
1	Irving Pulp & Paper, Ltd / Irving Tissue Company	Saint John, NB	27	26	4	3,663,623	0	3,663,623
2	Methanex Corporation	Medicine Hat, AB	37	28	4	3,353,220	31,950	3,385,170
3	Sherritt International Corporation	Fort Saskatchewan, AB	37	28	13	2,275,064	16,370	2,291,434
4	Fort James Corporation, Fort James - Marathon, Ltd.	Marathon, ON	27	26	4	2,215,100	610	2,215,710
5	CXY Chemicals LP, Canadian Occidental Petroleum	Nanaimo, BC	37	28	2	244	1,988,000	1,988,244
6	Cartons St-Laurent Inc.	LaTuque, QC	27	26	4	2,407,638	944	2,408,582
7	Domtar Packaging, Red Rock Mill	Red Rock, ON	27	26	1	1,900,000	0	1,900,000
8	Algoma Steel Inc, Algoma Steel Main Works	Sault Ste. Marie, ON	29	33	17	1,598,360	0	1,598,360
9	Co-Steel Lasco	Whitby, ON	29	33	6	2,411,507	6,030,824	8,442,331
10	Dominion Castings Ltd., NACO Inc.	Hamilton, ON	29	33	3	1,227	1,485,964	1,487,191
11	Les Papiers Perkins Ltée, Cascades	Candiac, QC	27	26	1	793,700	0	793,700
12	Bayer Inc., Bayer AG	Sarnia, ON	37	28	15	2,336,921	381,350	2,718,271
13	Standard Products (Canada) Limited, Rubber Plant #1	Stratford, ON	15	30	3	951,015	17,365	968,380
14	AT Plastics Inc., Edmonton Site	Edmonton, AB	37	28	4	149,778	588,390	738,168
15	General Motors of Canada Ltd., Oshawa Truck Assembly Centre	Oshawa, ON	32	37	12	850,907	23,306	874,213
16	Titan Steel & Wire Co. Ltd., Mitsui & Co., Ltd.	Surrey, BC	30	33	7	8,060	411,095	419,155
17	Oakside Chemicals Limited, Oakside Investments Limited	London, ON	37	28	5	700	322,740	323,440
18	QIT-Fer et Titane Inc., RTZ Fer et Titane, Inc.	Tracy, QC	29	33	6	21,240	305,238	326,478
19	Chrysler Canada, Ltd., Windsor Assembly Plant	Windsor, ON	32	37	13	465,482	29,388	494,870
20	Norkraft Quévillon Inc., Domtar Inc.	Lebel-sur-Quévillon, QC	27	26	5	399,568	0	399,568
21	Pétromont, Société en commandite	Montréal-est, QC	37	28	1	350,611	0	350,611
22	Domtar Papers, Cornwall Business Unit	Cornwall, ON	27	26	6	598,950	200	599,150
23	Avenor Inc., Thunder Bay Operations	Thunder Bay, ON	27	26	7	1,123,783	0	1,123,783
24	Ford Motor Company, Ontario Truck	Oakville, ON	32	37	8	264,407	271,194	535,601
25	Sydney Steel Corporation	Sydney, NS	29	33	10	533,500	0	533,500
26	Rexam Metallising, Rexam Canada Ltd.	Brantford, ON	27	26	2	240,000	0	240,000
27	Ford Motor Company, St. Thomas Assembly Plant	St. Thomas, ON	32	37	12	626,463	20,007	646,470
28	Cami Automotive Inc.	Ingersoll, ON	32	37	12	389,808	5,966	395,774
29	Velcro Canada Inc., Velcro Industries B.V.	Brampton, ON	19	22	3	204,985	0	204,985
30	Skeena Cellulose Inc., Skeena Pulp Operations	Skeena, BC	27	26	4	616,600	0	616,600
31	Union Carbide Canada Inc., Prentiss Ethylene Glycol Plant	Lacombe County, AB	37	28	5	653,459	0	653,459
32	DuPont Canada Inc., Maitland Site	Maitland, ON	37	28	15	566,115	0	566,115
33	Abitibi Consolidated Inc., Division Belgo, Stone Consolidated	Shawinigan, QC	27	26	4	189,126	0	189,126
34	Imperial Oil, IOL Dartmouth Refinery	Dartmouth, NS	36	29	13	284,268	2,840	287,108
35	BASF Canada Inc., Windsor Site	Windsor, ON	37	28	7	75,616	281,483	357,099
36	Fletcher Challenge Canada, Elk Falls Mill	Campbell River, BC	27	26	4	612,600	0	612,600
37	Boler Group, Hendrickson Spring	Stratford, ON	32	34	2	94,600	81,000	175,600
38	Western Co-Operative Fertilizers Limited	Calgary, AB	37	28	1	0	154,000	154,000
39	Inco Limited, Copper Cliff Nickel Refinery	Copper Cliff, ON	29	33	7	153,630	0	153,630
40	3M Canada Company (Perth)	Perth, ON	35	32	5	209,287	381	209,668
41	Métallurgie Noranda Inc, Fonderie Horne	Rouyn Noranda, QC	29	33	13	663,045	0	663,045
42	Petro-Canada, Raffinerie de Montréal	Montréal, QC	36	29	15	308,871	0	308,871
43	Ford Motor Company, Essex Aluminum Plant	Windsor, ON	29	33	10	69,620	88,365	157,985
44	Versatech Industries, Apex Metals Inc.	Kitchener, ON	32	34	3	0	136,000	136,000
45	Canadian General-Tower Ltd., Vinyl Manufacturer	Cambridge, ON	16	30	7	959,979	4,459	964,438
46	Weyerhaeuser Saskatchewan Ltd., Prince Albert Pulp & Paper	Prince Albert, SK	27	26	4	672,732	0	672,732
47	Canac Kitchens Limited, Kohler Company	Thornhill, ON	25	24	16	205,317	0	205,317
48	Owens-Corning Canada Inc., Guelph Glass Plant	Guelph, ON	35	32	1	7,728	117,320	125,048
49	Formica Canada Inc, Formica Corp.	St-Jean-sur-Richelieu, QC	27	26	2	420,000	0	420,000
50	Doorhandle Systems, Plating Plant, Ventra Group Inc.	Brampton, ON	32	34	4	0	209,781	209,781
	Total				**332**	**36,898,454**	**13,006,530**	**49,904,984**

➤ Does not include ammonia, isopropyl alcohol, non-air emissions of hydrochloric acid and sulfuric acid, and chemicals not reported to TRI.

	1996				1997				Change 95–97	
Rank	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Total Releases and Transfers (kg)	Major Chemicals Reported with Decreases (Primary Media/Transfers with Decreases)*
1	4	2,183,425	0	2,183,425	4	1,070,289	0	1,070,289	-2,593,334	Methanol (water)
2	3	1,454,080	3,920	1,458,000	3	790,700	5,150	795,850	-2,589,320	Methanol (air)
3	10	179,700	8,710	188,410	8	224,280	1,540	225,820	-2,065,614	Methanol (air)
4	4	149,600	480	150,080	4	153,600	1,600	155,200	-2,060,510	Methanol (water)
5	**	**	**	**	2	276	272	548	-1,987,696	Asbestos (transfers to disposal)
6	8	402,093	80,841	482,934	8	430,731	71,673	502,404	-1,906,178	Methanol (water)
7	2	235,117	0	235,117	2	273,348	0	273,348	-1,626,652	Methanol (water)
8	16	261,169	0	261,169	19	210,235	0	210,235	-1,388,125	Manganese and compounds (land)
9	6	1,254,893	3,578,510	4,833,403	6	1,259,869	5,799,885	7,059,754	-1,382,577	Copper and compounds (land)
10	4	6,591	906,005	912,596	4	1,776	571,557	573,333	-913,858	Chromium and compounds (transfers of metals)
11	**	**	**	**	**	**	**	**	-793,700	Xylene (air)
12	16	1,725,826	400,240	2,126,066	17	1,421,799	618,300	2,040,099	-678,172	Chloromethane (air)
13	3	582,700	17,100	599,800	3	427,400	14,900	442,300	-526,080	Xylene (air)
14	6	213,487	0	213,487	5	289,000	0	289,000	-449,168	Vinyl acetate (transfers to treatment)
15	11	610,855	29,042	639,897	14	391,461	42,825	434,286	-439,927	Xylene, Toluene (air)
16	7	8,070	51,862	59,932	7	8,060	22,452	30,512	-388,643	Zinc and compounds (transfers of metals)
17	5	900	0	900	**	**	**	**	-323,440	Xylene (transfers to treatment)
18	3	12,900	52,000	64,900	2	6,660	0	6,660	-319,818	Zinc and compounds (transfers of metals)
19	14	461,699	47,630	509,329	12	147,592	40,341	187,933	-306,937	Xylene (air)
20	7	351,160	0	351,160	11	99,375	0	99,375	-300,193	Methanol (air)
21	2	131,106	0	131,106	2	63,938	0	63,938	-286,673	Ethylene (air)
22	6	386,122	200	386,322	6	342,683	200	342,883	-256,267	Methanol (water)
23	8	767,070	0	767,070	8	874,802	0	874,802	-248,981	Methanol (air)
24	10	217,576	41,061	258,637	9	282,315	6,653	288,968	-246,633	Toluene (transfers to treatment, air)
25	9	331,280	0	331,280	9	290,290	0	290,290	-243,210	Zinc/Manganese/Lead and compounds (land)
26	2	290,100	0	290,100	**	**	**	**	-240,000	Methyl ethyl ketone (air)
27	11	543,878	16,236	560,114	11	386,554	24,566	411,120	-235,350	Xylene, Methyl isobutyl ketone, Ethylbenzene (air)
28	12	300,226	4,722	304,948	11	167,483	1,609	169,092	-226,682	Xylene, Methyl ethyl ketone (air)
29	3	201,517	1	201,518	**	**	**	**	-204,985	Methyl ethyl ketone (air)
30	4	616,600	0	616,600	4	412,600	0	412,600	-204,000	Methanol, Chlorine (air)
31	5	605,923	2,100	608,023	6	444,335	14,500	458,835	-194,624	Ethylene glycol (air)
32	16	579,650	0	579,650	16	375,364	0	375,364	-190,751	Nitric acid and nitrate compounds (water)
33	4	3,877	0	3,877	**	**	**	**	-189,126	Formaldehyde (water)
34	13	192,792	1,285	194,077	14	89,736	20,291	110,027	-177,081	Xylene, Toluene (air)
35	7	61,000	309,530	370,530	8	43,772	140,090	183,862	-173,237	Methyl ethyl ketone, Xylene (transfers to treatment)
36	4	884,500	0	884,500	4	442,050	0	442,050	-170,550	Methanol (air)
37	4	53,908	30,560	84,468	4	12,879	7,056	19,935	-155,665	Xylene (air), Zinc and compounds (transfers of metals)
38	1	0	26,800	26,800	1	0	0	0	-154,000	Asbestos (transfers to disposal)
39	**	**	**	**	**	**	**	**	-153,630	Nickel/Lead and compounds (air)
40	3	47,137	0	47,137	6	59,047	0	59,047	-150,621	Xylene, Toluene (air)
41	12	693,550	0	693,550	12	515,120	0	515,120	-147,925	Lead and compounds (air)
42	15	282,231	0	282,231	19	138,763	23,029	161,792	-147,079	Sulfuric acid, Xylene, Toluene (air)
43	9	16,166	47,187	63,353	9	5,717	7,163	12,880	-145,105	Aluminum (transfers of metals), Styrene (air)
44	3	0	0	0	3	0	0	0	-136,000	Zinc and compounds (transfers of metals)
45	10	998,783	200	998,983	8	817,865	15,392	833,257	-131,181	Methyl ethyl ketone, Toluene (air)
46	6	437,406	0	437,406	5	542,102	0	542,102	-130,630	Chlorine (air)
47	6	129,749	0	129,749	5	80,377	0	80,377	-124,940	Toluene, Xylene, Styrene (air)
48	2	2,760	4,720	7,480	1	1,430	0	1,430	-123,618	Zinc and compounds (transfers of metals)
49	2	339,192	5,645	344,837	2	290,800	5,700	296,500	-123,500	Methanol (air)
50	4	0	209,462	209,462	3	0	91,920	91,920	-117,861	Chromium/Zinc/Nickel and compounds (transfers of metals)
	322	**19,208,364**	**5,876,049**	**25,084,413**	**317**	**13,886,473**	**7,548,664**	**21,435,137**	**-28,469,847**	

* Chemicals accounting for more than 70% of decrease in total releases and transfers from facility.
** Indicates facility did not report any matched chemicals that year.

Table 5–40

M 1997

The 50 NPRI Facilities with Largest Increase in Total Releases and Transfers, 1995–1997

Rank	Facility	City, Province	SIC Codes Canada	SIC Codes US	1995 Number of Forms	1995 Total Releases (kg)	1995 Total Transfers (kg)	1995 Total Releases and Transfers (kg)
1	Dofasco Inc.	Hamilton, ON	29	33	18	591,844	1,931,285	2,523,129
2	Aimco Solrec Ltd.	Milton, ON	37	28	*	*	*	*
3	Lake Erie Steel Company Ltd., Stelco Inc.	Nanticoke, ON	29	33	19	639,890	0	639,890
4	Inco Limited, Copper Cliff Smelter Complex	Copper Cliff, ON	29	33	7	3,662,640	0	3,662,640
5	Gerdau MRM Steel Inc., Grupo Gerdau	Selkirk, MB	29	33	4	762,000	0	762,000
6	Maple Roll Leaf Co., Illinois Tool Works Canada Inc.	Windsor, ON	37	28	*	*	*	*
7	Agrium, Fort Saskatchewan Nitrogen Operations	Fort Saskatchewan, AB	37	28	*	*	*	*
8	Sorevco, Société en commandite, Ispat Sidbec	Coteau-du-Lac, QC	29	33	1	0	0	0
9	Ispat Sidbec Inc. Aciérie, Ispat Mexicana	Contrecoeur, QC	29	33	5	1,510,387	0	1,510,387
10	Graphic Packaging Canada, Toronto Facility, ACX Technologies	Mississauga, ON	28	27	1	36,000	5,000	41,000
11	Dominion Colour Corp., Kikuchi Color & Chemicals Corp.	Ajax, ON	37	28	6	100	3,336,100	3,336,200
12	Hudson Bay Mining and Smelting Co., Metallurgical Complex	Flin Flon, MB	29	33	6	181,387	0	181,387
13	Noranda Mining and Exploration Inc., Brunswick Smelting Div.	Belledune, NB	29	33	5	18,478	0	18,478
14	Metalex Products Ltd.	Richmond, BC	29	33	4	10,250	0	10,250
15	Uniboard Canada Inc., Division Sayabec, UniKunz Canada Inc.	Sayabec, QC	25	24	2	17,276	0	17,276
16	Stelco McMaster Ltée, Stelco Inc.	Contrecoeur, QC	29	33	5	10,030	1,864,400	1,874,430
17	Celanese Canada Inc.	Edmonton, AB	37	28	10	3,497,171	35,658	3,532,829
18	Papiers Domtar - Centre d'affaires Windsor	Windsor, QC	27	26	5	143,400	0	143,400
19	Agrium Products Inc., Redwater Fertilizer Operations	Redwater, AB	37	28	11	651,881	0	651,881
20	International Wallcoverings Ltd.	Brampton, ON	27	26	4	316,000	0	316,000
21	Les Produits chimiques Delmar Inc.	LaSalle, QC	37	28	5	65,900	306,300	372,200
22	Raylo Chemicals Inc., Argyll Road Site, Laporte PLC	Edmonton, AB	37	28	5	14	0	14
23	Inland Technologies Inc., Debert Treatment Centre	Debert, NS	36	29	*	*	*	*
24	Pétroles Coastal Canada Inc., Coastal Corporation	Montréal-est, QC	37	28	7	71,398	1,281	72,679
25	Gerdau Courtice Steel Inc., Gerdau Canada	Cambridge, ON	29	33	7	12,197	347,570	359,767
26	MacMillan Bloedel Pembroke LP, MacMillan Bloedel Ltd.	Pembroke, ON	25	24	*	*	*	*
27	Petro-Canada, Burrard Products Terminal	Port Moody, BC	36	29	6	5,000	0	5,000
28	Kraft Canada Inc, Cheese Operations, Philip Morris Companies	Ingleside, ON	10	20	1	0	0	0
29	Emballages Stone (Canada), Div. Chaleurs, Stone Container	New Richmond, QC	27	26	*	*	*	*
30	Zalev Brothers Limited	Windsor, ON	29	33	7	453	849,840	850,293
31	Witco Canada Inc., West Hill Plant	Scarborough, ON	36	29	1	455,000	22,000	477,000
32	Imperial Oil, IOL Sarnia Refinery	Sarnia, ON	36	29	23	441,713	126,328	568,041
33	Falconbridge Ltd., Kidd Metallurgical Div.	Cochrane, ON	29	33	*	*	*	*
34	Kronos Canada, Inc.	Varennes, QC	37	28	8	71,100	633,000	704,100
35	Morbern Incorporated	Cornwall, ON	16	30	3	632,240	0	632,240
36	Crown Cork & Seal Canada Inc., Plant 244	Concord, ON	30	34	5	29,956	0	29,956
37	Atlas Steels Inc., Atlas Specialty Steels	Welland, ON	29	33	5	81,141	216,300	297,441
38	AltaSteel Ltd., Stelco Inc.	Edmonton, AB	29	33	6	626,833	179,183	806,016
39	Novopharm Limited	Markham, ON	37	28	1	72,981	0	72,981
40	Stelco Inc., Hilton Works	Hamilton, ON	29	33	21	259,745	255,380	515,125
41	Kitchencraft of Canada Ltd.	Winnipeg, MB	25	24	3	71,000	0	71,000
42	Daishowa-Marubeni International, Peace River Pulp Div.	Peace River, AB	27	26	6	815,500	0	815,500
43	Les Aciers Canam, Le Groupe Canam Manac Inc.	St-Gédéon, QC	30	34	6	200,100	15,600	215,700
44	Parmalat Canada	Winchester, ON	10	20	2	0	0	0
45	Chrysler Canada, Ltd., Bramalea Assembly Plant	Bramalea, ON	32	37	11	153,985	30,111	184,096
46	McCain Foods (Canada), Borden-Carleton Plants	Carleton, PE	10	20	*	*	*	*
47	Dana Canada Inc., Spicer Driveshaft Division	Thorold, ON	30	37	2	0	1,388	1,388
48	Avenor Inc., Dryden Mill	Dryden, ON	27	26	6	474,560	0	474,560
49	Secal, usine Vaudreuil	Jonquière, QC	37	28	3	99,670	0	99,670
50	Parmalat Canada	Victoriaville, QC	10	20	*	*	*	*
	Total				**263**	**16,689,220**	**10,156,724**	**26,845,944**

➤ Does not include ammonia, isopropyl alcohol, non-air emissions of hydrochloric acid and sulfuric acid, and chemicals not reported to TRI.
* Indicates facility did not report any matched chemicals that year.

	1996				1997				Change 95–97	
Rank	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Total Releases and Transfers (kg)	Major Chemicals Reported with Increases (Primary Media/Transfers with Increases)**
1	18	586,441	2,546,892	3,133,333	18	431,063	8,169,478	8,600,541	6,077,412	Zinc and compounds (transfers of metals)
2	6	33,708	2,100,316	2,134,024	6	35,641	2,028,917	2,064,558	2,064,558	Xylene, Toluene, Methyl ethyl ketone (transfers to treatment)
3	19	603,307	3,814,700	4,418,007	16	577,432	1,480,000	2,057,432	1,417,542	Zinc and compounds (transfers of metals)
4	7	4,773,818	0	4,773,818	7	4,908,786	0	4,908,786	1,246,146	Sulfuric acid (air), Chromium and compounds (land)
5	5	2,031,067	0	2,031,067	7	1,782,947	0	1,782,947	1,020,947	Zinc and compounds (land)
6	*	*	*	*	10	750,109	145,965	896,074	896,074	Methyl ethyl ketone, Toluene, Methanol (air)
7	10	2,121,980	22,314	2,144,294	4	762,000	81,600	843,600	843,600	Methanol (air)
8	1	0	0	0	1	0	840,570	840,570	840,570	Zinc and compounds (transfers of metals)
9	5	2,322,985	0	2,322,985	5	2,349,790	0	2,349,790	839,403	Zinc and compounds (land)
10	1	27,000	4,400	31,400	2	797,000	20,345	817,345	776,345	Methanol (air)
11	6	50	4,099,400	4,099,450	6	29	3,956,300	3,956,329	620,129	Nitric acid and nitrate compounds (transfers to sewage)
12	6	437,092	0	437,092	6	744,572	0	744,572	563,185	Zinc/Lead and compounds (air)
13	5	21,634	0	21,634	6	38,248	467,400	505,648	487,170	Lead/Cadmium and compounds (transfers of metals)
14	5	24,229	257,210	281,439	5	371	484,370	484,741	474,491	Lead and compounds (transfers of metals)
15	2	20,943	0	20,943	2	342,136	127,000	469,136	451,860	Methanol, Formaldehyde (air)
16	5	17,410	3,054,700	3,072,110	5	17,750	2,298,300	2,316,050	441,620	Zinc/Manganese and compounds (transfers of metals)
17	10	4,492,813	48,855	4,541,668	11	3,836,908	105,384	3,942,292	409,463	Methanol (UIJ)
18	4	116,200	0	116,200	6	527,484	0	527,484	384,084	Methanol (air)
19	15	956,800	55,010	1,011,810	15	935,330	93,313	1,028,643	376,762	Nitric acid and nitrate compounds (UIJ, water)
20	4	416,300	0	416,300	4	669,500	0	669,500	353,500	Methyl ethyl ketone, Toluene (air)
21	5	63,800	572,400	636,200	4	83,100	639,700	722,800	350,600	Toluene (transfers to treatment)
22	5	20	0	20	4	30	317,039	317,069	317,055	Methanol,Dichloromethane (transfers to treatment)
23	1	0	181,328	181,328	1	0	296,054	296,054	296,054	Ethylene glycol (transfers to treatment)
24	7	292,217	1,178	293,395	6	357,878	288	358,166	285,487	Xylene (air)
25	7	12,030	787,420	799,450	7	10,782	632,378	643,160	283,393	Zinc and compounds (transfers of metals)
26	*	*	*	*	1	279,000	0	279,000	279,000	Formaldehyde (air)
27	8	4,958	90,000	94,958	8	12,029	271,000	283,029	278,029	Asbestos (transfers to disposal)
28	2	280,000	0	280,000	2	72,000	201,000	273,000	273,000	Nitric acid and nitrate compounds (transfers to sewage)
29	4	415,000	0	415,000	3	267,000	0	267,000	267,000	Methanol (air)
30	7	456	877,606	878,062	8	429	1,104,869	1,105,298	255,005	Zinc/Copper and compounds (transfers of metals)
31	2	471,000	15,000	486,000	2	474,000	248,000	722,000	245,000	Methanol (transfers to sewage)
32	22	476,826	19,138	495,964	23	760,113	44,279	804,392	236,351	Nitric acid and nitrate compounds (water)
33	*	*	*	*	11	231,251	0	231,251	231,251	Lead and compounds, Sulfuric acid, Copper and compounds (air)
34	8	68,546	836,000	904,546	8	47,933	855,000	902,933	198,833	Manganese and compounds (transfers of metals)
35	3	746,600	0	746,600	3	757,500	60,000	817,500	185,260	Methyl ethyl ketone (air)
36	4	158,412	0	158,412	4	200,925	0	200,925	170,969	n-Butyl alcohol, Xylene (air)
37	5	123,600	362,101	485,701	7	162,714	305,118	467,832	170,391	Aluminum oxide (land)
38	6	609,901	68,720	678,621	6	729,605	241,888	971,493	165,477	Copper and compounds (transfers of metals)
39	1	61,955	0	61,955	2	238,198	0	238,198	165,217	Dichloromethane (air)
40	21	352,705	397,640	750,345	21	338,723	328,500	667,223	152,098	Asbestos (transfers to disposal), Phenol (transfers to sewage)
41	4	113,000	0	113,000	5	223,000	0	223,000	152,000	Toluene, Xylene, n-Butyl alcohol (air)
42	8	845,780	0	845,780	10	956,957	0	956,957	141,457	Zinc and compounds (land), Methanol (air)
43	6	200,100	15,600	215,700	7	346,800	7,200	354,000	138,300	Xylene (air)
44	2	0	0	0	3	137,177	0	137,177	137,177	Nitric acid and nitrate compounds (water)
45	12	407,240	44,457	451,697	13	284,621	35,156	319,777	135,681	Methyl ethyl ketone, Toluene (air)
46	*	*	*	*	1	127,540	0	127,540	127,540	Nitric acid and nitrate compounds (water)
47	2	0	121,540	121,540	2	0	128,300	128,300	126,912	Manganese and compounds (transfers of metals)
48	7	497,880	0	497,880	7	601,092	0	601,092	126,532	Methanol, Chlorine (air)
49	3	166,418	0	166,418	3	209,835	0	209,835	110,165	Hydrochloric acid (air)
50	*	*	*	*	2	0	108,856	108,856	108,856	Nitric acid and nitrate compounds (transfers to sewage)
	296	**25,372,221**	**20,393,925**	**45,766,146**	**326**	**27,417,328**	**26,123,567**	**53,540,895**	**26,694,951**	

** Chemicals accounting for more than 70% of increase in total releases and transfers from facility.

➤ UIJ = underground injection

Table 5–41

M 1997

The 50 TRI Facilities with Largest Decrease in Total Releases and Transfers, 1995–1997

Rank	Facility	City, State	US SIC Code	1995 Number of Forms	1995 Total Releases (kg)	1995 Total Transfers (kg)	1995 Total Releases and Transfers (kg)
1	ASARCO Inc., Ray Complex/Hayden Smelter	Hayden, AZ	33	9	7,908,991	2,010,436	9,919,427
2	Courtaulds Fibers Inc., Courtaulds Finance U.S. Inc.	Axis, AL	28	5	15,427,756	0	15,427,756
3	DuPont	Beaumont, TX	28	27	8,523,823	289,770	8,813,593
4	DuPont Cape Fear	Leland, NC	28	21	1,641,748	3,588,734	5,230,482
5	Millennium Petrochemical Inc., Millennium Chemicals Inc.	La Porte, TX	28	22	1,006,283	4,142,623	5,148,906
6	Huntsman Petrochemical Corp., Huntsman Corp.	Port Arthur, TX	28	23	4,326,523	135,676	4,462,199
7	Chino Mines Co., Phelps Dodge Corp.	Hurley, NM	33	3	3,233,586	0	3,233,586
8	Lenzing Fibers Corp.	Lowland, TN	28	5	10,526,240	263,039	10,789,279
9	Cytec Ind. Inc., Fortier Plant	Westwego, LA	28	22	10,573,159	11,331	10,584,490
10	National Steel Corp., Great Lakes Dlv.	Ecorse, MI	33	15	87,471	6,128,351	6,215,822
11	Sterling Chemicals Inc.	Texas City, TX	28	36	5,384,579	42,668	5,427,247
12	Bayer Corp.	New Martinsville, WV	28	30	3,811,028	28,903	3,839,931
13	Phelps Dodge Hidalgo Inc., Phelps Dodge Corp.	Playas, NM	33	11	14,607,892	2	14,607,894
14	IMC-Agrico Co., New Wales Plant	Mulberry, FL	Mult.	2	3,746,031	0	3,746,031
15	Zinc Corp. of America, Horsehead Ind. Inc.	Monaca, PA	33	10	265,389	15,729,385	15,994,774
16	PD Glycol, Occidental Petroleum Corp.	Beaumont, TX	28	6	34,815	1,748,908	1,783,723
17	Cabot Corp.	Ville Platte, LA	28	3	1,614,127	0	1,614,127
18	Hoechst-Celanese Chemical, Clear Lake Plant, Hoechst Corp.	Pasadena, TX	28	20	6,171,389	1,321,499	7,492,888
19	Monsanto Co.,Chocolate Bayou	Alvin, TX	28	19	1,856,700	0	1,856,700
20	Witco Corp., Gretna Plant	Harvey, LA	28	2	1,763,311	0	1,763,311
21	BASF Corp.	Freeport, TX	28	25	7,853,878	92,237	7,946,115
22	Cabot Corp., Canal Plant	Franklin, LA	28	3	1,905,154	0	1,905,154
23	American Steel Foundries, Amsted Ind. Inc.	Alliance, OH	33	7	43,650	1,228,394	1,272,044
24	Electralloy Corp., G. 0. Carlson Inc.	Oil City, PA	33	4	68,933	1,268,007	1,336,940
25	Merichem-Sasol USA LLC	Houston, TX	28	12	1,362,384	671,885	2,034,269
26	Osram Sylvania Prods. Inc., Osram GMBH	Versailles, KY	36	6	1,173,335	64,544	1,237,879
27	Reynolds Metals Co.	Sheffield, AL	34	12	1,285,786	8,156	1,293,942
28	Pharmacia & Upjohn Co.	Portage, MI	28	26	3,305,571	1,445,782	4,751,353
29	Cabot Corp., Cab-o-sil Div.	Tuscola, IL	28	6	1,121,425	0	1,121,425
30	Mobil Chemical Co., Mobil Corp.	Beaumont, TX	28	23	1,220,267	5,866	1,226,133
31	Degussa Corp., Ivanhoe	Louisa, LA	28	2	929,705	0	929,705
32	Magnesium Corp. of America, Renco Group Inc.	Rowley, UT	33	6	29,168,743	0	29,168,743
33	DuPont	Louisville, KY	28	10	38,567	872,295	910,862
34	Flexel Indiana Inc.	Covington, IN	30	5	861,798	8,979	870,777
35	Exxon Chemical, Baton Rouge Chemical Plant, Exxon Corp.	Baton Rouge, LA	28	34	953,396	398,077	1,351,473
36	Craig Ind.	Teresita, MO	28	1	860,082	0	860,082
37	Birmingham Southeast L.L.C., Birmingham Steel Corp.	Flowood, MS	33	5	1,198	840,229	841,427
38	Shell Oil Co.	Deer Park, TX	Mult.	51	1,904,354	604,964	2,509,318
39	Air Prods. Inc., Air Prods. & Chemicals Inc.	Pasadena, TX	28	10	23,210	8,805,712	8,828,922
40	North American Rayon Corp., North American Corp.	Elizabethton, TN	28	3	1,276,176	113,492	1,389,668
41	Avesta Sheffield Plate Inc., Avesta Sheffield N.A.	New Castle, IN	33	5	5,079	1,074,889	1,079,968
42	Simpson Pasadena Paper Co., Simpson Investment Co.	Pasadena, TX	26	8	576,481	3,783,492	4,359,973
43	Merck & Co. Inc.	Rahway, NJ	28	17	64,527	1,068,131	1,132,658
44	Finch Pruyn & Co. Inc.	Glens Falls, NY	26	5	1,983,407	25	1,983,432
45	BP Chemicals Inc., BP America Inc.	Lima, OH	28	27	5,045,344	5,381	5,050,725
46	Malllinckrodt Inc.	Saint Louis, MO	28	19	165,631	2,135,210	2,300,841
47	OSI Specialties Inc., Witco Corp.	Friendly, WV	28	17	362,672	1,042,030	1,404,702
48	Pfizer Pharmaceuticals Inc., Pfizer Inc.	Barceloneta, PR	28	6	59,821	1,248,708	1,308,529
49	Olin Brass Indianapolis, Olin Corp.	Indianapolis, IN	33	8	10,373	717,081	727,454
50	DuPont	Victoria, TX	28	29	9,369,475	733,239	10,102,714
	Total			**683**	**175,511,263**	**63,678,130**	**239,189,393**

➤ Does not include ammonia, isopropyl alcohol, non-air emissions of hydrochloric acid and sulfuric acid, and chemicals not reported to TRI.

	1996				1997				Change 95–97	
Rank	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Total Releases and Transfers (kg)	Major Chemicals Reported with Decreases (Primary Media/Transfers with Decreases)*
1	9	4,676,363	3,033,529	7,709,892	9	375,009	560,926	935,935	-8,983,492	Copper/Zinc and compounds (land)
2	4	12,781,207	0	12,781,207	4	7,033,029	0	7,033,029	-8,394,727	Carbon disulfide (air)
3	19	3,900,458	284,024	4,184,482	22	2,792,231	263,174	3,055,405	-5,758,188	Nitric acid and nitrate compounds, Acetonitrile (UIJ)
4	19	1,258,878	559,548	1,818,426	19	1,136,325	101,290	1,237,615	-3,992,867	Ethylene glycol (transfers to treatment)
5	22	1,042,478	404,462	1,446,940	21	1,041,238	485,572	1,526,810	-3,622,096	Vinyl acetate (transfers to treatment)
6	19	4,256,990	32,098	4,289,088	19	882,623	54,209	936,832	-3,525,367	Propylene (air)
7	2	3,539,360	0	3,539,360	**	**	**	**	-3,233,586	Copper and compounds (land)
8	5	8,357,877	0	8,357,877	5	7,764,811	0	7,764,811	-3,024,468	Carbon disulfide (air)
9	23	9,372,030	10,021	9,382,051	24	7,669,796	21,715	7,691,511	-2,892,979	Acetonitrile, Acrylic acid (UIJ)
10	17	96,345	6,357,178	6,453,523	18	101,370	3,508,789	3,610,159	-2,605,663	Zinc and compounds (transfers of metals)
11	36	3,072,310	52,730	3,125,040	34	2,872,333	17,175	2,889,508	-2,537,739	Nitric acid and nitrate compounds (UIJ)
12	29	3,137,198	21,257	3,158,455	29	1,562,576	14,371	1,576,947	-2,262,984	Nitric acid and nitrate compounds (water)
13	11	12,764,989	2	12,764,991	13	12,345,745	113	12,345,858	-2,262,036	Zinc and compounds (land)
14	2	2,056,689	0	2,056,689	3	1,631,746	0	1,631,746	-2,114,285	Phosphoric acid (land)
15	9	220,257	10,473,482	10,693,739	9	225,113	13,855,648	14,080,761	-1,914,013	Lead and compounds (transfers of metals)
16	6	40,781	200,470	241,251	6	61,987	158,086	220,073	-1,563,650	Ethylene glycol (transfers to treatment)
17	3	1,518,164	0	1,518,164	3	78,028	0	78,028	-1,536,099	Carbon disulfide (air)
18	20	3,829,753	257,134	4,086,887	20	1,903,636	4,112,957	6,016,593	-1,476,295	Ethylene glycol (UIJ)
19	17	1,586,005	0	1,586,005	4	471,070	0	471,070	-1,385,630	Acrylonitrile, Acetonitrile, Phenol, Hydrogen cyanide (UIJ)
20	2	1,857,445	0	1,857,445	1	429,478	0	429,478	-1,333,833	Methanol (UIJ)
21	24	6,507,355	131,612	6,638,967	26	6,502,858	131,800	6,634,658	-1,311,457	Nitric acid and nitrate compounds (water)
22	5	1,979,977	0	1,979,977	3	622,199	0	622,199	-1,282,955	Carbon disulfide, Ethylene (air)
23	7	35,683	387,751	423,434	**	**	**	**	-1,272,044	Chromium and compounds (transfers of metals)
24	5	9,654	127,741	137,395	5	19,430	111,984	131,414	-1,205,526	Chromium and compounds (transfers of metals)
25	12	1,148,242	149,389	1,297,631	12	918,449	2,713	921,162	-1,113,107	Naphthalene, Xylene (transfers to treatment), o-cresol, m-Cresol, Aniline (UIJ)
26	6	992,874	4,727	997,601	6	130,704	897	131,601	-1,106,278	Xylene (air)
27	11	268,980	3,501	272,481	12	249,705	3,386	253,091	-1,040,851	Methyl ethyl ketone, Toluene (air)
28	23	1,774,718	2,349,414	4,124,132	25	1,408,997	2,325,557	3,734,554	-1,016,799	Methanol (UIJ)
29	6	946,558	0	946,558	6	123,465	0	123,465	-997,960	Chlorine (air)
30	21	1,151,794	2,732	1,154,526	16	286,665	2,723	289,388	-936,745	Ethylene, Propylene (air)
31	2	671,202	0	671,202	2	30,385	0	30,385	-899,320	Carbon disulfide (air)
32	6	29,619,666	0	29,619,666	6	28,270,233	0	28,270,233	-898,510	Hydrochloric acid (air)
33	8	18,036	28,040	46,076	6	23,005	8,783	31,788	-879,074	Toluene (transfers to treatment)
34	5	1,249,238	7,080	1,256,318	**	**	**	**	-870,777	Carbon disulfide (air)
35	34	335,426	73,981	409,407	35	388,830	93,265	482,095	-869,378	Nitric acid and nitrate compounds, Methanol (water)
36	**	**	**	**	**	**	**	**	-860,082	Methanol (air)
37	6	3,815	0	3,815	5	1,886	0	1,886	-839,541	Lead/Manganese and compounds (transfers of metals)
38	93	1,020,507	829,160	1,849,667	94	1,052,840	618,138	1,670,978	-838,340	Phenol (UIJ)
39	12	29,525	8,401,166	8,430,691	12	29,252	7,964,044	7,993,296	-835,626	Nitric acid and nitrate compounds, Dinitrotoluene (transfers to sewage)
40	3	1,172,262	39	1,172,301	2	571,610	0	571,610	-818,058	Carbon disulfide (air)
41	5	7,982	256,673	264,655	5	19,057	265,510	284,567	-795,401	Chromium and compounds (transfers of metals)
42	8	533,951	2,185,668	2,719,619	8	211,227	3,361,224	3,572,451	-787,522	Methanol (transfers to sewage), Chloroform (air)
43	17	55,385	387,280	442,665	15	56,034	305,380	361,414	-771,244	Methanol (transfers to sewage)
44	5	1,101,449	2	1,101,451	6	1,203,200	13,809	1,217,009	-766,423	Nitric acid and nitrate compounds (water)
45	27	4,875,406	9,790	4,885,196	27	4,289,188	8,091	4,297,279	-753,446	Acrylonitrile (UIJ)
46	19	137,933	1,607,981	1,745,914	20	118,730	1,428,703	1,547,433	-753,408	Methanol (transfers to sewage), 1,1,2-Trichloroethane (transfers to treatment)
47	17	339,968	437,295	777,263	18	335,024	342,599	677,623	-727,079	Methanol, Toluene (transfers to treatment)
48	6	72,292	754,468	826,760	5	43,902	540,726	584,628	-723,901	Methanol (transfers to treatment)
49	8	8,463	1,771	10,234	7	8,718	1,209	9,927	-717,527	Copper/Chromium and compounds (transfers of metals)
50	29	8,737,253	478,514	9,215,767	29	9,044,261	345,615	9,389,876	-712,838	Nitric acid and nitrate compounds (UIJ)
	704	**144,171,171**	**40,301,710**	**184,472,881**	**676**	**106,337,998**	**41,030,181**	**147,368,179**	**-91,821,214**	

* Chemicals accounting for more than 70% of decrease in total releases and transfers from facility.

** Indicates facility did not report any matched chemicals that year.

➤ UIJ = underground injection

Table 5–42

M 1997

The 50 TRI Facilities with Largest Increase in Total Releases and Transfers, 1995–1997

Rank	Facility	City, State	US SIC Code	1995 Number of Forms	1995 Total Releases (kg)	1995 Total Transfers (kg)	1995 Total Releases and Transfers (kg)
1	USS Clairton Works, USX Corp.	Clairton, PA	33	18	240,552	962,639	1,203,191
2	Kennecott Utah Copper, Kennecott Holdings Corp.	Magna, UT	33	14	2,715,080	170,044	2,885,124
3	Nucor-Yamato Steel Co., Nucor Corp.	Blytheville, AR	33	8	34,269	37,750	72,019
4	Armco Inc. (Route 8 S.)	Butler, PA	33	14	4,728,754	15,652	4,744,406
5	PCS Nitrogen Fertilizer L.P., Potash Corp. of Saskatchewan	Geismar, LA	28	11	6,939,334	16,365	6,955,699
6	Steel Dynamics Inc.	Butler, IN	33	1	956	5,161	6,117
7	U.S. Steel, USS Gary Works, USX Corp.	Gary, IN	33	29	3,462,571	50,085	3,512,656
8	Solutia Inc.	Gonzalez, FL	28	21	5,936,347	2,994	5,939,341
9	DuPont	Pass Christian, MS	28	5	232,766	9,070	241,836
10	Nucor Steel	Plymouth, UT	33	8	16,283	164,581	180,864
11	American Chrome & Chemicals, Harrisons & Crosfield American	Corpus Christi, TX	28	2	4,266,281	40,867	4,307,148
12	Regal Ware Inc.	Kewaskum, WI	34	6	474	538,390	538,864
13	DuPont	New Johnsonville, TN	28	6	160,851	0	160,851
14	Mulberry Phosphates Inc., Mulberry Corp.	Mulberry, FL	28	4	13,514	0	13,514
15	Nucor Steel Arkansas Plant, Nucor Corp.	Blytheville, AR	33	9	11,998	8	12,006
16	BHP Copper Metals Co., BHP Copper Co.	San Manuel, AZ	33	11	204,604	8,982	213,586
17	Timken Co., Faircrest Steel Plant	Canton, OH	33	7	5,445	22,879	28,324
18	Birmingham Southeast LLC, Birmingham Steel Corp.	Cartersville, GA	33	6	11,462	0	11,462
19	Birmingham Steel Corp., Kankakee Illinois Steel Div.	Bourbonnais, IL	33	5	2,252	0	2,252
20	Ameristeel Corp., Jacksonville Mill Div.	Baldwin, FL	33	6	8,663	0	8,663
21	USS Mon Valley Works, USX Corp.	Braddock, PA	33	6	49,944	1,018,552	1,068,496
22	FMC Corp.	Baltimore, MD	28	14	36,874	244,485	281,359
23	ASARCO Inc., Glover Plant	Annapolis, MO	33	6	2,959,545	0	2,959,545
24	Bar Techs. Inc.	Johnstown, PA	33	*	*	*	*
25	Solutia Inc., Chocolate Bayou	Alvin, TX	28	*	*	*	*
26	Birmingham Steel Corp., Washington Steel Div.	Seattle, WA	33	5	1,806	0	1,806
27	American Microtrace Corp., Tetra Techs. Inc.	Fairbury, NE	28	5	37,507	18,141	55,648
28	Ameristeel Corp.	Charlotte, NC	33	6	20,076	0	20,076
29	Southwire Co.	Carrollton, GA	Mult.	19	46,541	349,766	396,307
30	Cyprus Miami Mining Corp., Cyprus Climax Metals Co.	Claypool, AZ	33	13	7,066,233	0	7,066,233
31	Monsanto Co.	Luling, LA	28	13	1,978,881	8,530	1,987,411
32	GNI Chemicals Corp. Inc., GNI Group Inc.	Deer Park, TX	28	*	*	*	*
33	Austeel Lemont Co. Inc.	Lemont, IL	33	4	24,748	0	24,748
34	Koppers Ind. Inc.	Cicero, IL	28	9	47,931	45,870	93,801
35	Timken Co., Harrison Steel Plant	Canton, OH	33	7	12,546	27,152	39,698
36	Roanoke Electric Steel Corp.	Roanoke, VA	33	7	1,865	0	1,865
37	DuPont	Belle, WV	28	25	116,311	179,917	296,228
38	Quality Chemicals Inc., Chemfirst Corp.	Tyrone, PA	28	8	9,665	407,719	417,384
39	New Haven Fndy., Wesley Ind. Inc.	New Haven, MI	33	*	*	*	*
40	Koppel Steel Corp., NS Group Inc.	Koppel, PA	33	4	665	140,624	141,289
41	Tuscaloosa Steel Corp., British Steel PLC	Tuscaloosa, AL	33	7	0	0	0
42	Acme Steel Co., Acme Metals Inc.	Riverdale, IL	Mult.	12	39,620	319,810	359,430
43	Amoco Petroleum Prods., Amoco Corp.	Texas City, TX	29	32	630,312	40,272	670,584
44	Springs Chemical, Grace Complex, Springs Ind. Inc.	Lancaster, SC	22	*	*	*	*
45	Millennium Inorganic Chemicals, Plant 1, Millennium Chemicals	Ashtabula, OH	28	4	10,605	0	10,605
46	Auburn Steel Co. Inc.	Auburn, NY	33	4	4,189	20	4,209
47	Cascade Steel Rolling Mills, Schnitzer Steel Inds.	McMinnville, OR	33	5	1,969	0	1,969
48	Rouge Steel Co., Rouge Ind. Inc.	Dearborn, MI	33	8	26,224	5,071,785	5,098,009
49	DuPont Chambers Works	Deepwater, NJ	28	47	418,280	813,621	1,231,901
50	Exxon Co. USA, Baton Rouge Refinery, Exxon Corp.	Baton Rouge, LA	29	30	1,253,307	7,342	1,260,649
	Total			**491**	**43,788,100**	**10,739,073**	**54,527,173**

➤ Does not include ammonia, isopropyl alcohol, non-air emissions of hydrochloric acid and sulfuric acid, and chemicals not reported to TRI.
* indicates facility did not report any matched chemicals that year.

	1996				1997				Change 95–97	
Rank	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Total Releases and Transfers (kg)	Major Chemicals Reported with Increases (Primary Media/Transfers with Increases)**
1	20	184,284	506,024	690,308	19	162,129	9,945,033	10,107,162	8,903,971	Ethylene (transfers to treatment)
2	14	4,239,677	347,302	4,586,979	14	11,022,591	192,057	11,214,648	8,329,524	Copper/Lead/Arsenic and compounds (land)
3	7	13,061	2,097,304	2,110,365	8	7,224	7,543,045	7,550,269	7,478,250	Zinc and compounds (transfers of metals)
4	14	5,711,005	0	5,711,005	14	11,891,923	154,645	12,046,568	7,302,162	Nitric acid and nitrate compounds (water)
5	11	9,740,677	524	9,741,201	12	13,827,714	0	13,827,714	6,872,015	Phosphoric acid (water)
6	3	2,327	1,982,278	1,984,605	7	6,642	6,529,560	6,536,202	6,530,085	Zinc and compounds (transfers of metals)
7	34	3,389,124	45,386	3,434,510	33	7,254,469	294,422	7,548,891	4,036,235	Zinc and compounds (land)
8	18	7,808,148	2,168	7,810,316	18	9,817,381	1,594	9,818,975	3,879,634	Nitric acid and nitrate compounds (UIJ)
9	5	292,680	7,710	300,390	11	4,091,982	8,163	4,100,145	3,858,309	Manganese and compounds (UIJ)
10	9	10,282	1,893,349	1,903,631	7	6,755	3,922,477	3,929,232	3,748,368	Zinc and compounds (transfers of metals)
11	2	5,127,596	27,279	5,154,875	2	6,578,798	1,434,288	8,013,086	3,705,938	Chromium and compounds (land, transfers of metals)
12	6	474	3,646,259	3,646,733	6	0	4,078,005	4,078,005	3,539,141	Aluminum oxide (transfers to disposal)
13	6	65,227	0	65,227	11	3,583,542	0	3,583,542	3,422,691	Manganese and compounds (UIJ)
14	4	11,156	0	11,156	4	3,183,329	0	3,183,329	3,169,815	Phosphoric acid (water)
15	9	10,147	10	10,157	10	10,983	2,957,542	2,968,525	2,956,519	Zinc and compounds (transfers of metals)
16	7	2,562,032	817	2,562,849	13	2,889,134	36	2,889,170	2,675,584	Copper and compounds (air)
17	7	5,722	703,221	708,943	6	5,379	2,486,113	2,491,492	2,463,168	Zinc and compounds (transfers of metals)
18	5	9,661	0	9,661	5	12,563	2,388,657	2,401,220	2,389,758	Zinc and compounds (transfers of metals)
19	4	3,498	0	3,498	6	4,231	2,384,320	2,388,551	2,386,299	Zinc and compounds (transfers of metals)
20	6	8,662	3,512,206	3,520,868	6	5,185	2,175,039	2,180,224	2,171,561	Zinc and compounds (transfers of metals)
21	7	15,975	3,260,882	3,276,857	7	2,204	3,090,268	3,092,472	2,023,976	Zinc and compounds (transfers of metals)
22	16	24,119	1,159,788	1,183,907	18	22,051	2,283,231	2,305,282	2,023,923	Methanol, Toluene (transfers to treatment)
23	6	4,030,227	0	4,030,227	7	4,921,195	0	4,921,195	1,961,650	Zinc/Lead and compounds (land)
24	5	1,146	376,327	377,473	6	4,824	1,926,825	1,931,649	1,931,649	Zinc and compounds (transfers of metals)
25	*	*	*	*	16	1,803,515	0	1,803,515	1,803,515	Acrylonitrile, Hydrogen cyanide, Phenol (UIJ)
26	5	16,395	0	16,395	5	10,815	1,758,623	1,769,438	1,767,632	Zinc and compounds (transfers of metals)
27	5	16,501	0	16,501	5	32,012	1,723,356	1,755,368	1,699,720	Lead and compounds (transfers of metals)
28	6	19,636	1,430,806	1,450,442	6	20,292	1,680,432	1,700,724	1,680,648	Zinc and compounds (transfers of metals)
29	30	22,601	1,180,378	1,202,979	37	26,884	1,917,891	1,944,775	1,548,468	Zinc and compounds (transfers of metals)
30	13	11,590,932	0	11,590,932	13	8,596,464	0	8,596,464	1,530,231	Copper and compounds (land)
31	13	2,673,597	10,399	2,683,996	14	3,406,590	16,830	3,423,420	1,436,009	Formaldehyde (UIJ)
32	1	2,207	244,666	246,873	9	3,545	1,350,989	1,354,534	1,354,534	Acetonitrile (transfers to disposal)
33	5	668,314	161,166	829,480	5	778,886	562,110	1,340,996	1,316,248	Zinc and compounds (land, transfers to metals)
34	10	35,275	49,925	85,200	9	65,945	1,304,542	1,370,487	1,276,686	Phthalic anhydride (transfers to disposal)
35	7	14,237	521,606	535,843	7	2,716	1,310,549	1,313,265	1,273,567	Zinc and compounds (transfers of metals)
36	7	1,833	203,898	205,731	7	2,559	1,233,769	1,236,328	1,234,463	Zinc and compounds (transfers of metals)
37	25	336,545	14,962	351,507	24	1,209,295	310,971	1,520,266	1,224,038	Nitric acid and nitrate compounds (water)
38	9	4,357	879,587	883,944	16	6,357	1,634,088	1,640,445	1,223,061	Methanol, Carbon tetrachloride, Xylene (transfers to treatment)
39	10	54,085	277,106	331,191	9	31,976	1,164,263	1,196,239	1,196,239	Manganese/Lead/Copper/Arsenic and compounds (transfers of metals)
40	6	4,530	1,047,587	1,052,117	6	4,077	1,332,607	1,336,684	1,195,395	Zinc and compounds (transfers of metals)
41	12	5	60,237	60,242	12	1,478	1,192,598	1,194,076	1,194,076	Zinc and compounds (transfers of metals)
42	12	36,602	401,860	438,462	8	22,730	1,488,998	1,511,728	1,152,298	Zinc and compounds (transfers of metals)
43	33	1,713,945	16,544	1,730,489	33	1,709,465	54,381	1,763,846	1,093,262	Methanol (air)
44	1	0	0	0	11	1,083,600	0	1,083,600	1,083,600	Zinc/Chromium and compounds (air)
45	5	83,381	816,327	899,708	5	92,619	997,732	1,090,351	1,079,746	Manganese and compounds (transfers of metals)
46	4	2,222	296,171	298,393	4	2,277	1,066,656	1,068,933	1,064,724	Zinc and compounds (transfers of metals)
47	5	1,202	400,290	401,492	5	3,056	1,060,770	1,063,826	1,061,857	Zinc and compounds (transfers of metals)
48	7	25,985	5,933,560	5,959,545	7	35,467	6,086,892	6,122,359	1,024,350	Zinc/Manganese and compounds (transfers of metals)
49	43	1,001,751	1,420,580	2,422,331	40	1,354,680	866,709	2,221,389	989,488	Nitric acid and nitrate compounds (water)
50	30	1,303,901	4,633	1,308,534	32	2,231,062	6,203	2,237,265	976,616	Nitric acid and nitrate compounds (water)
	529	**62,896,946**	**34,941,122**	**97,838,068**	**595**	**101,850,590**	**83,917,279**	**185,767,869**	**131,240,696**	

** Chemicals accounting for more than 70% of increase in total releases and transfers from facility.

➤ UIJ = underground injection

5.3.4 Changes in Releases and Transfers by Chemical, 1995–1997

Two chemical groups of particular concern showed substantially greater change than the matched data set as a whole for 1995 to 1997. Total releases and transfers of designated carcinogens declined, especially in NPRI (a reduction of 10 percent compared to less than one percent in TRI). Both NPRI and TRI showed large increases in releases and transfers of metals—up 29 percent in NPRI and 34 percent in TRI (**Figure 5–26**).

NPRI Chemicals with Largest Decreases/Increases

Methanol showed the largest decrease in total releases and transfers in NPRI, from 32.1 million kg in 1995 to 21.9 million kg in 1997, a change of 10.2 million kg. This amounted to a 32 percent reduction. Two other chemicals had reductions of more than one million kg: asbestos, from 3.5 million kg to 1.2 million kg, and xylene, from 9.3 million kg to 8.1 million kg. For asbestos, the reduction amounted to 67 percent, while for xylene, total releases and transfers were reduced by 12 percent (**Table 5–43**).

Figure 5–26
M 1997
NPRI and TRI Total Releases and Transfers of Selected Chemicals, 1995–1997

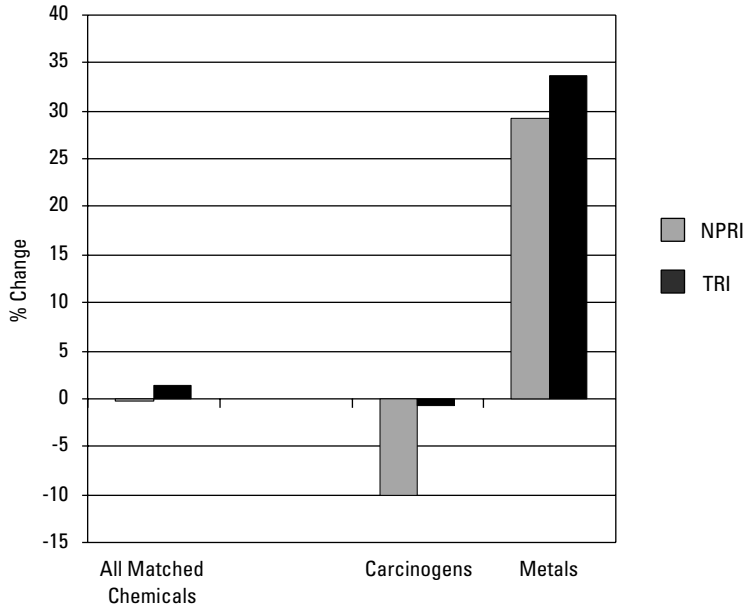


Table 5–43
M 1997

The 10 Chemicals with the Largest Decrease in NPRI Total Releases and Transfers, 1995–1997

CAS Number	Chemical	Total Releases and Transfers 1995 (kg)	1996 (kg)	1997 (kg)	Change 1995–1997 kg	%
67-56-1	Methanol	32,124,311	23,409,810	21,938,075	-10,186,236	-31.7
1332-21-4	Asbestos (friable)	3,475,355	1,072,209	1,156,168	-2,319,187	-66.7
1330-20-7	Xylene (mixed isomers)	9,259,359	8,216,714	8,112,404	-1,146,955	-12.4
—	Copper (and its compounds)	2,395,813	1,437,803	1,772,514	-623,299	-26.0
108-05-4	Vinyl acetate	837,914	329,313	287,212	-550,702	-65.7
74-87-3	Chloromethane	970,846	648,505	434,586	-536,260	-55.2
71-43-2	Benzene	1,938,524	1,871,519	1,507,090	-431,434	-22.3
74-85-1	Ethylene	2,328,642	2,246,209	1,992,423	-336,219	-14.4
7782-50-5	Chlorine	1,237,753	904,783	918,093	-319,660	-25.8
—	Chromium (and its compounds)	3,085,937	2,747,282	2,767,382	-318,555	-10.3

Table 5–44
M 1997

The 10 Chemicals with the Largest Increase in NPRI Total Releases and Transfers, 1995–1997

CAS Number	Chemical	Total Releases and Transfers 1995 (kg)	1996 (kg)	1997 (kg)	Change 1995–1997 kg	%
—	Zinc (and its compounds)	16,750,383	18,165,375	25,701,932	8,951,549	53.4
—	Nitric acid and nitrate compounds	6,059,390	7,615,562	8,152,389	2,092,999	34.5
7664-93-9	Sulfuric acid	3,660,258	4,944,817	4,463,666	803,408	21.9
—	Lead (and its compounds)	3,364,397	3,648,574	4,166,443	802,046	23.8
—	Manganese (and its compounds)	5,975,691	8,470,695	6,772,260	796,569	13.3
50-00-0	Formaldehyde	1,387,308	1,708,782	2,130,849	743,541	53.6
108-88-3	Toluene	7,730,588	7,401,177	8,412,760	682,172	8.8
78-93-3	Methyl ethyl ketone	5,379,472	6,557,372	5,929,227	549,755	10.2
75-09-2	Dichloromethane	2,246,081	2,288,724	2,563,331	317,250	14.1
1344-28-1	Aluminum oxide (fibrous forms)	58,404	118,825	346,444	288,040	493.2

Zinc and its compounds showed the largest increase in total releases and transfers in NPRI, from 16.8 million kg in 1995 to 25.7 million kg in 1997, which amounted to 53.4 percent. NPRI facilities also reported a 2.1-million-kg increase in releases and transfers of nitric acid and nitrate compounds, from 6.1 million kg to 8.2 million kg. This increase amounted to 35 percent. NPRI increases for sulfuric acid and for lead and its compounds were both just over 800,000 kg. For sulfuric acid, NPRI facilities released and transferred 3.7 million kg in 1995 and 4.5 million kg in 1997. For lead and its compounds, the increase was from 3.4 million kg to 4.2 million kg (**Table 5–44**).

Among the top 10 chemicals in NPRI for reduced releases and transfers were four carcinogens (asbestos, benzene, chromium and its compounds and vinyl acetate—for uses of vinyl acetate, see **Section 4.3.4**, above) and two metals (chromium and copper and their compounds). Three of the 10 NPRI chemicals with the largest increases were carcinogens (dichloromethane, formaldehyde and lead and its compounds), and two were metals (lead and manganese and their compounds).

TRI Chemicals with Largest Decreases/Increases

TRI facilities reported the largest decreases in releases and transfers for toluene, from 77.0 million kg in 1995 to 61.5 million kg in 1997, and carbon disulfide, from 38.4 million kg to 23.5 million kg. The reduction for toluene equaled 15.5 million kg, or 20 percent, while the reduction for carbon disulfide was 14.9 million kg, or 39 percent. Methanol had the third-largest reduction, dropping 11.4 million kg (seven percent), from 171.0 million kg to 159.6 million kg (**Table 5–45**).

TRI releases and transfers of zinc and its compounds increased from 110.3 million kg in 1995 to 154.4 million kg in 1997. At 44.1 million kg, this was the largest increase in TRI. In percentage terms, zinc and its compounds showed a 40 percent increase. Ranking second for increases, manganese and its compounds increased by 22.1 million kg (51.0 percent), from 43.4 million kg in 1995 to 65.5 million kg in 1997. Releases and transfers of nitric acid and nitrate compounds rose 11.4 million kg (8.7 percent), from 131.2 million kg in 1995 to 142.7 million kg in 1997 (**Table 5–46**).

The top 10 chemicals in TRI for decreased releases and transfers included two carcinogens (dichloromethane and vinyl acetate); none were metals. Three of the chemicals with the largest TRI increases were carcinogens (arsenic, chromium and lead and their compounds), and six were metals (arsenic, chromium, copper, lead, manganese and zinc and their compounds).

Table 5–45
M 1997

The 10 Chemicals with Largest Decrease in TRI Total Releases and Transfers, 1995–1997

CAS Number	Chemical	Total Releases and Transfers 1995 (kg)	1996 (kg)	1997 (kg)	Change 1995–1997 kg	%
108-88-3	Toluene	76,970,635	67,990,657	61,457,252	-15,513,383	-20.2
75-15-0	Carbon disulfide	38,379,845	33,192,330	23,509,184	-14,870,661	-38.7
67-56-1	Methanol	170,977,185	163,499,583	159,573,461	-11,403,724	-6.7
1330-20-7	Xylene (mixed isomers)	48,776,806	42,028,670	38,815,162	-9,961,644	-20.4
78-93-3	Methyl ethyl ketone	34,780,381	29,777,419	27,357,628	-7,422,753	-21.3
107-21-1	Ethylene glycol	26,045,663	17,838,071	19,888,474	-6,157,189	-23.6
115-07-1	Propylene	12,449,708	12,119,599	7,436,517	-5,013,191	-40.3
7647-01-0	Hydrochloric acid	30,967,552	28,838,728	26,161,189	-4,806,363	-15.5
108-05-4	Vinyl acetate	6,369,767	2,831,610	2,112,673	-4,257,094	-66.8
75-09-2	Dichloromethane	31,486,221	30,000,325	27,591,806	-3,894,415	-12.4

Table 5–46
M 1997

The 10 Chemicals with Largest Increase in TRI Total Releases and Transfers, 1995–1997

CAS Number	Chemical	Total Releases and Transfers 1995 (kg)	1996 (kg)	1997 (kg)	Change 1995–1997 kg	%
—	Zinc (and its compounds)	110,254,783	125,622,492	154,350,644	44,095,861	40.0
—	Manganese (and its compounds)	43,372,348	47,202,906	65,474,105	22,101,757	51.0
—	Nitric acid and nitrate compounds	131,241,024	126,054,855	142,660,350	11,419,326	8.7
7664-38-2	Phosphoric acid	29,417,642	31,039,107	39,101,518	9,683,876	32.9
74-85-1	Ethylene	16,909,766	16,454,997	23,579,204	6,669,438	39.4
—	Lead (and its compounds)	19,960,972	21,961,939	26,418,897	6,457,925	32.4
1344-28-1	Aluminum oxide (fibrous forms)	1,635,456	4,407,035	4,918,131	3,282,675	200.7
—	Copper (and its compounds)	31,690,605	36,416,087	34,715,649	3,025,044	9.5
—	Chromium (and its compounds)	23,741,812	22,465,998	26,212,360	2,470,548	10.4
—	Arsenic (and its compounds)	2,120,447	2,396,332	4,077,455	1,957,008	92.3

Table 5–47

M 1997

Change in NPRI Total Releases and Transfers of Known or Suspected Carcinogens†, 1995–1997

CAS Number	Chemical	Total Releases and Transfers 1995 (kg)	1996 (kg)	1997 (kg)	Change 1995–1997 kg	%
1332-21-4	Asbestos (friable)	3,475,355	1,072,209	1,156,168	-2,319,187	-66.7
108-05-4	Vinyl acetate	837,914	329,313	287,212	-550,702	-65.7
71-43-2	Benzene	1,938,524	1,871,519	1,507,090	-431,434	-22.3
—	Chromium (and its compounds)	3,085,937	2,747,282	2,767,382	-318,555	-10.3
—	Nickel (and its compounds)	1,121,479	894,862	879,686	-241,793	-21.6
106-99-0	1,3-Butadiene	283,028	129,531	118,440	-164,588	-58.2
127-18-4	Tetrachloroethylene	218,627	198,711	77,066	-141,561	-64.8
79-01-6	Trichloroethylene	811,328	862,867	732,552	-78,776	-9.7
107-13-1	Acrylonitrile	50,921	28,251	6,469	-44,452	-87.3
75-07-0	Acetaldehyde	309,188	434,034	275,269	-33,919	-11.0
117-81-7	Di(2-ethylhexyl) phthalate	96,564	71,519	65,289	-31,275	-32.4
67-66-3	Chloroform	242,001	212,417	227,714	-14,287	-5.9
75-21-8	Ethylene oxide	26,204	23,094	16,159	-10,045	-38.3
56-23-5	Carbon tetrachloride	20,859	7,873	12,765	-8,094	-38.8
—	Cobalt (and its compounds)	38,005	36,503	30,986	-7,019	-18.5
79-06-1	Acrylamide	6,362	1,223	3,211	-3,151	-49.5
123-91-1	1,4-Dioxane	7,059	6,054	3,998	-3,061	-43.4
106-46-7	1,4-Dichlorobenzene	10,264	9,600	8,500	-1,764	-17.2
140-88-5	Ethyl acrylate	1,090	440	241	-849	-77.9
584-84-9	Toluene-2,4-diisocyanate	400	502	10	-390	-97.5
106-89-8	Epichlorohydrin	133	127	7	-126	-94.7
79-46-9	2-Nitropropane	125	125	0	-125	-100.0
101-77-9	4,4'-Methylenedianiline	100	0	0	-100	-100.0
91-08-7	Toluene-2,6-diisocyanate	0	1	0	—	—
77-78-1	Dimethyl sulfate	8	11	10	2	25.0
101-14-4	4,4'-Methylenebis(2-chloroaniline)	4	5	6	2	50.0
121-14-2	2,4-Dinitrotoluene	700	2,350	816	116	16.6
96-09-3	Styrene oxide	100	537	297	197	197.0
26471-62-5	Toluenediisocyanate (mixed isomers)	8,203	8,962	9,089	886	10.8
75-56-9	Propylene oxide	10,469	11,448	13,005	2,536	24.2
139-13-9	Nitrilotriacetic acid	2,660	2,205	5,770	3,110	116.9
107-06-2	1,2-Dichloroethane	6,219	17,476	20,192	13,973	224.7
75-01-4	Vinyl chloride	18,195	20,409	43,992	25,797	141.8
—	Cadmium (and its compounds)	54,950	21,735	164,980	110,030	200.2
—	Arsenic (and its compounds)	74,078	172,813	216,145	142,067	191.8
100-42-5	Styrene	976,254	1,141,638	1,139,870	163,616	16.8
75-09-2	Dichloromethane	2,246,081	2,288,724	2,563,331	317,250	14.1
50-00-0	Formaldehyde	1,387,308	1,708,782	2,130,849	743,541	53.6
—	Lead (and its compounds)	3,364,397	3,648,574	4,166,443	802,046	23.8
	Subtotal	**20,731,093**	**17,983,726**	**18,651,009**	**-2,080,084**	**-10.0**
	% of Total	**15.9**	**14.4**	**14.4**		
	Total for Matched NPRI Chemicals	**130,368,812**	**124,688,830**	**129,957,185**	**-411,627**	**-0.3**

† Carcinogenic substances are those chemicals or chemical compounds listed in either the International Agency for Research on Cancer (IARC) Monographs or the US National Toxicological Program (NTP) Annual Report on Carcinogens.

➤ A chemical (and its compounds) is included if the chemical or any of its compounds is designated carcinogenic.

Carcinogens

NPRI releases and transfers of known or suspected carcinogens totaled 20.7 million kg in 1995 and 18.7 million kg in 1997, a decrease of 2.1 million kg or 10 percent. Carcinogens declined from 16 percent of all NPRI releases and transfers in the matched data set for 1995 to 14 percent in 1997 (**Table 5–47**).

Submitting reports on 39 of the 48 carcinogens in the matched data set, NPRI facilities reported reductions in releases and transfers of 23 of them. The largest reduction was for asbestos, decreasing by 2.3 million kg (from 3.5 million kg in 1995 to 1.2 million kg in 1997). Amounts reported for vinyl acetate decreased by 550,702 kg (from 837,914 kg to 287,212 kg). For both asbestos and vinyl acetate, these were reductions of two-thirds.

The largest NPRI increase for carcinogens was for lead and its compounds, increasing by 802,046 kg (from 3.4 million kg to 4.2 million kg). Formaldehyde releases and transfers rose 743,541 kg (from 1.4 million kg to 2.1 million kg). The increase for lead and its compounds amounted to 24 percent and the increase for formaldehyde amounted to 54 percent.

In TRI, carcinogen releases and transfers totaled 177.4 million kg in 1995 and 176.3 million kg in 1997, a decrease of 1.1 million kg (less than one percent). As a percentage of total releases and transfers, carcinogens declined only slightly (from 15.5 percent to 15.2 percent) over the comparison period (**Table 5–48**).

TRI facilities submitted reports for all 48 carcinogens in the matched data set, recording reductions in releases and transfers of 28 of them. Vinyl acetate ranked first among carcinogens for TRI decreases, with a reduction of 4.3 million kg. Vinyl acetate releases and transfers totaled 6.4 million kg in 1995 and 2.1 million kg in 1997, a two-thirds reduction. TRI facilities reported a 3.9-million-kg reduction in releases and transfers of dichloromethane, from 31.5 million kg to 27.6 million kg, and a 3.6-million-kg reduction for trichloroethylene, from 12.2 million kg to 8.6 million kg. These reductions amounted to 12 percent for dichloromethane and 30 percent for trichloroethylene.

The largest TRI increase was for lead and its compounds, increasing by 6.5 million kg. Releases and transfers of lead and its compounds rose 32 percent, from 20.0 million kg to 26.4 million kg. Amounts reported for chromium and its compounds increased by 2.5 million kg, from 23.7 million kg to 26.2 million kg. Arsenic and its compounds ranked third for TRI increases, with an increase of 2.0 million kg, from 2.1 million kg to 4.1 million kg. Percentage increases were 10 percent for chromium and its compounds and 92 percent for arsenic and its compounds.

Table 5–48

M 1997

Change in TRI Total Releases and Transfers of Known or Suspected Carcinogens†, 1995–1997

CAS Number	Chemical	Total Releases and Transfers 1995 (kg)	1996 (kg)	1997 (kg)	Change 1995–1997 kg	%
108-05-4	Vinyl acetate	6,369,767	2,831,610	2,112,673	-4,257,094	-66.8
75-09-2	Dichloromethane	31,486,221	30,000,325	27,591,806	-3,894,415	-12.4
79-01-6	Trichloroethylene	12,235,153	10,492,294	8,589,073	-3,646,080	-29.8
127-18-4	Tetrachloroethylene	5,301,445	4,059,680	3,542,725	-1,758,720	-33.2
67-66-3	Chloroform	5,765,586	5,534,618	4,186,035	-1,579,551	-27.4
117-81-7	Di(2-ethylhexyl) phthalate	1,733,242	1,141,600	699,502	-1,033,740	-59.6
107-13-1	Acrylonitrile	3,543,584	2,719,780	2,916,258	-627,326	-17.7
75-07-0	Acetaldehyde	7,215,465	6,323,108	6,606,827	-608,638	-8.4
107-06-2	1,2-Dichloroethane	1,475,758	941,335	1,287,424	-188,334	-12.8
106-46-7	1,4-Dichlorobenzene	395,722	340,157	210,943	-184,779	-46.7
71-43-2	Benzene	5,321,836	4,719,206	5,194,127	-127,709	-2.4
123-91-1	1,4-Dioxane	507,194	506,045	422,055	-85,139	-16.8
1332-21-4	Asbestos (friable)	2,266,788	2,098,371	2,200,165	-66,623	-2.9
106-99-0	1,3-Butadiene	1,431,270	1,305,524	1,376,050	-55,220	-3.9
—	Cadmium (and its compounds)	1,144,575	845,823	1,099,954	-44,621	-3.9
75-56-9	Propylene oxide	587,983	453,419	561,921	-26,062	-4.4
95-80-7	2,4-Diaminotoluene	13,730	841	1,013	-12,717	-92.6
101-77-9	4,4'-Methylenedianiline	62,251	57,919	51,004	-11,247	-18.1
96-45-7	Ethylene thiourea	12,119	4,913	4,587	-7,532	-62.2
75-01-4	Vinyl chloride	507,997	498,143	500,671	-7,326	-1.4
79-46-9	2-Nitropropane	15,540	22,470	12,037	-3,503	-22.5
62-56-6	Thiourea	11,473	9,395	10,087	-1,386	-12.1
64-67-5	Diethyl sulfate	5,607	5,207	4,307	-1,300	-23.2
101-14-4	4,4'-Methylenebis(2-chloroaniline)	4,967	5,698	4,089	-878	-17.7
121-14-2	2,4-Dinitrotoluene	1,624	1,015	943	-681	-41.9
90-94-8	Michler's ketone	715	0	182	-533	-74.5
606-20-2	2,6-Dinitrotoluene	324	269	260	-64	-19.8
96-09-3	Styrene oxide	6	14	5	-1	-16.7
77-78-1	Dimethyl sulfate	2,919	2,629	3,098	179	6.1
94-59-7	Safrole	118	290	342	224	189.8
91-08-7	Toluene-2,6-diisocyanate	2,095	11,684	2,700	605	28.9
584-84-9	Toluene-2,4-diisocyanate	9,083	10,801	9,967	884	9.7
302-01-2	Hydrazine	19,041	15,627	25,803	6,762	35.5
139-13-9	Nitrilotriacetic acid	2,179	8,883	9,984	7,805	358.2
140-88-5	Ethyl acrylate	141,970	259,850	157,330	15,360	10.8
75-21-8	Ethylene oxide	447,403	385,130	470,769	23,366	5.2
106-89-8	Epichlorohydrin	623,152	830,223	770,644	147,492	23.7
56-23-5	Carbon tetrachloride	542,421	908,079	700,486	158,065	29.1
26471-62-5	Toluenediisocyanate (mixed isomers)	130,820	285,432	445,335	314,515	240.4
—	Cobalt (and its compounds)	577,112	682,712	943,532	366,420	63.5
98-95-3	Nitrobenzene	446,878	378,756	908,311	461,433	103.3
79-06-1	Acrylamide	2,885,819	2,863,636	3,469,206	583,387	20.2
50-00-0	Formaldehyde	10,258,740	10,967,404	11,391,573	1,132,833	11.0
100-42-5	Styrene	21,961,202	21,452,523	23,392,846	1,431,644	6.5
—	Nickel (and its compounds)	6,140,156	6,476,739	7,751,290	1,611,134	26.2
—	Arsenic (and its compounds)	2,120,447	2,396,332	4,077,455	1,957,008	92.3
—	Chromium (and its compounds)	23,741,812	22,465,998	26,212,360	2,470,548	10.4
—	Lead (and its compounds)	19,960,972	21,961,939	26,418,897	6,457,925	32.4
	Subtotal	**177,432,281**	**167,283,446**	**176,348,651**	**-1,083,630**	**-0.6**
	% of Total	**15.5**	**15.1**	**15.2**		
	Total	**1,145,788,956**	**1,107,331,518**	**1,161,341,947**	**15,552,991**	**1.4**

† Carcinogenic substances are those chemicals or chemical compounds listed in either the International Agency for Research on Cancer (IARC) Monographs or the US National Toxicological Program (NTP) Annual Report on Carcinogens.

➤ A chemical (and its compounds) is included if the chemical or any of its compounds is designated carcinogenic.

(As indicated in **Chapter 3**, arsenic is principally used as a wood preservative. It is also used in agricultural products, in glass, and in nonferrous alloys.)

NPRI Facilities with Largest Decreases/Increases

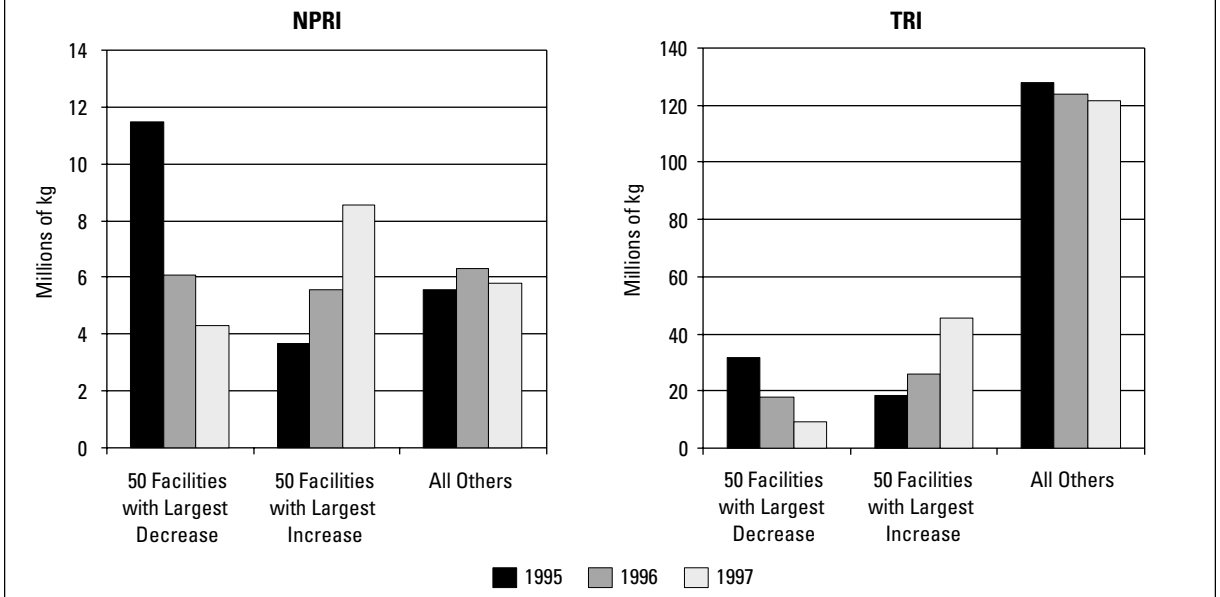
Among facilities reporting the largest changes in NPRI releases and transfers of carcinogens from 1995 to 1997, the 50 largest reductions substantially exceeded the 50 largest increases, with little overall change by all other facilities (**Figure 5–27**).

The 50 NPRI facilities with the largest reductions in releases and transfers of carcinogenic substances reported 11.5 million kg in 1995 and 4.3 million kg in 1997. The bulk of their reductions occurred in amounts transferred, which fell from 7.2 million kg to 2.1 million kg. They submitted 126 forms in 1995 and 114 in 1997, a small decrease. Nine of the 50 facilities submitted forms for carcinogens in the matched data set in 1995 but not in 1997 (**Table 5–49**).

The 50 NPRI facilities with the largest increases reported releases and transfers of 3.7 million kg in 1995 and 8.5 million kg in 1997. Taken together, these facilities made larger increases in transfers (from 1.2 million kg to 4.1 million kg) than in releases (from 2.5 million kg to 4.4 million kg). They also submitted one and one-half times as many forms in 1997 (92) as in 1995 (59). Twenty of these facilities did not report carcinogens in the matched data set in 1995 but did so in 1997 (**Table 5–50**).

Figure 5–27
M 1997

NPRI and TRI Total Releases and Transfers of Known or Suspected Carcinogens†, 1995–1997: Facilities with Largest Changes and All Others



† Carcinogenic substances are those chemicals or chemical compounds listed in either the International Agency for Research on Cancer (IARC) Monographs or the US National Toxicological Program (NTP) Annual Report on Carcinogens.
➤ A chemical (and its compounds) is included if the chemical or any of its compounds is designated carcinogenic.

TRI Facilities with Largest Decreases/Increases

Decreases from 1995 to 1997 by the 50 TRI facilities with the largest reductions in carcinogen releases and transfers were slightly larger than the net increase of all other facilities. Indeed, they were larger than either the increase of the 50 TRI facilities with the largest increases, or the net increase of all other TRI facilities (**Figure 5–27**).

The 50 TRI facilities with the largest reductions in releases and transfers of carcinogenic substances reported 31.6 million kg in 1995 and 9.2 million kg in 1997. These facilities' transfers dropped substantially over the period. In 1995, their transfers of designated carcinogens totaled 17.4 million kg, larger than the 14.3 million kg they released. In 1997, transfers had decreased to 3.3 million kg, less than the 5.9 million kg released. The facilities submitted 191 forms for carcinogens in 1995 and 164 forms in 1997. Five of these facilities submitted forms for carcinogens in the matched data set in 1995 but not in 1997 (**Table 5–51**).

For the 50 TRI facilities with the largest increases, releases and transfers of designated carcinogens rose from 18.2 million kg in 1995 to 45.4 million in 1997. The facilities' releases doubled, from 15.4 million kg to 30.3 million kg, while their transfers increased five-fold, from 2.7 million kg to 15.2 million kg. The number of forms they submitted expanded from 133 in 1995 to 172 in 1997. Nine of these facilities did not report carcinogens in the matched data set in 1995 but did in 1997 (**Table 5–52**).

Table 5–49

M 1997

The 50 NPRI Facilities with Largest Decrease in Total Releases and Transfers of Known or Suspected Carcinogens†, 1995–1997

Rank	Facility	City, Province	SIC Codes Canada	SIC Codes US	1995 Number of Forms	1995 Total Releases (kg)	1995 Total Transfers (kg)	1995 Total Releases and Transfers (kg)
1	CXY Chemicals LP, Canadian Occidental Petroleum	Nanaimo, BC	37	28	1	0	1,988,000	1,988,000
2	Dominion Castings Ltd., NACO Inc.	Hamilton, ON	29	33	1	1,127	1,400,778	1,401,905
3	AT Plastics Inc., Edmonton Site	Edmonton, AB	37	28	1	36,083	588,390	624,473
4	Co-Steel Lasco	Whitby, ON	29	33	3	334,898	663,911	998,809
5	Bayer Inc., Bayer AG	Sarnia, ON	37	28	5	361,475	278,500	639,975
6	Western Co-Operative Fertilizers Limited	Calgary, AB	37	28	1	0	154,000	154,000
7	Abitibi Consolidated Inc., Division Belgo, Stone Consolidated	Shawinigan, QC	27	26	1	147,397	0	147,397
8	Inco Limited, Copper Cliff Nickel Refinery	Copper Cliff, ON	29	33	5	126,800	0	126,800
9	Dow Chemical Canada Inc.	Sarnia, ON	37	28	8	248,425	9,867	258,292
10	Métallurgie Noranda Inc, Fonderie Horne	Rouyn Noranda, QC	29	33	6	398,980	0	398,980
11	Advanced Monobloc Manufacturing, CCL Industries Inc.	Penetanguishene, ON	30	34	1	109,380	0	109,380
12	Cooper Automotive Products., Wagner Div., Cooper Industries	Stratford, ON	32	37	1	447	105,840	106,287
13	Novopharm Limited	Scarborough, ON	37	28	1	418,410	0	418,410
14	BASF Canada Inc., Sarnia Site	Sarnia, ON	37	28	2	140	104,600	104,740
15	Magotteaux Inc., Magotteaux Canada	Magog, QC	30	39	2	210	94,770	94,980
16	Solutia Canada Inc, Produits chimiques	LaSalle, QC	16	30	4	5,450	122,902	128,352
17	Titan Steel & Wire Co. Ltd., Mitsui & Co., Ltd.	Surrey, BC	30	33	1	100	88,005	88,105
18	Mitsubishi Electronics Industries Canada Inc.	Midland, ON	33	36	2	21,149	61,634	82,783
19	MAAX Inc., Division fibre de verre moderne - usine 4	Tring-Jonction, QC	37	28	1	91,820	13,600	105,420
20	M.B. Paper, Alberni Specialties Division, MacMillan Bloedel	Port Alberni, BC	27	26	1	0	97,200	97,200
21	Sydney Steel Corporation	Sydney, NS	29	33	3	105,200	0	105,200
22	Imperial Oil, IOL Sarnia Refinery	Sarnia, ON	36	29	5	34,130	123,033	157,163
23	Consumers Packaging Inc., Consumers Glass (Brampton)	Brampton, ON	35	32	1	0	72,300	72,300
24	Wolverine Tube (Canada) Inc.	London, ON	29	33	1	133,212	0	133,212
25	A.P. Green Refractories (Canada) Ltd., A.P. Green Industries	Smithville, ON	35	32	2	0	87,732	87,732
26	Doorhandle Systems, Plating Plant, Ventra Group Inc.	Brampton, ON	32	34	2	0	140,811	140,811
27	Celanese Canada Inc.	Edmonton, AB	37	28	5	507,498	35,041	542,539
28	A.G. Simpson Co Ltd.	Oshawa, ON	32	34	2	400	101,853	102,253
29	Ford Motor Company, Essex Aluminum Plant	Windsor, ON	29	33	5	53,000	265	53,265
30	PCI Chemicals Canada Inc, Pioneer Companies Inc.	Cornwall, ON	37	28	3	7,819	43,776	51,595
31	Atlas Steels Inc., Atlas Specialty Steels	Welland, ON	29	33	2	60,019	119,300	179,319
32	QIT-Fer et Titane Inc., RTZ Fer et Titane, Inc.	Tracy, QC	29	33	2	1,831	48,250	50,081
33	Nova Chemicals (Canada) Ltd	Sarnia, ON	37	28	3	37,590	69,300	106,890
34	Blount Canada Ltd., Blount Inc.	Guelph, ON	30	34	3	40,943	3,060	44,003
35	Imperial Oil, Sarnia Chemical Plant	Sarnia, ON	37	28	5	76,822	39,366	116,188
36	CXY Chemicals Canada LP, Canadian Occidental Petroleum Ltd	North Vancouver, BC	37	28	1	0	48,000	48,000
37	E.B. Eddy Forest Products Ltd., George Weston Ltd.	Espanola, ON	27	26	2	63,345	0	63,345
38	Slater Steels, Hamilton Specialty Bar Division	Hamilton, ON	29	33	3	1,849	356,188	358,037
39	Lake Erie Steel Company Ltd., Stelco Inc.	Nanticoke, ON	29	33	3	102,969	0	102,969
40	DuPont Canada Inc., Maitland Site	Maitland, ON	37	28	5	49,240	0	49,240
41	St. Anne-Nackawic Pulp Company Ltd.	Nackawic, NB	27	26	3	54,270	0	54,270
42	Vitafoam Products Canada Ltd., Vita-Toronto	Downsview, ON	16	30	2	212,755	25,600	238,355
43	Camoplast Inc, Division Roski I	Roxton Falls, QC	32	37	1	80,000	0	80,000
44	Petro-Canada, Mississauga Lubricant Center	Mississauga, ON	36	29	3	8,440	45,000	53,440
45	Malette Québec Inc., Panneaux Malette OSB	St-Georges de Champlain, QC	25	24	1	96,380	0	96,380
46	Inco Limited, Manitoba Division	Thompson, MB	29	33	3	114,525	0	114,525
47	Aries Flexographics Ltd.	Mississauga, ON	28	27	1	3,930	28,830	32,760
48	Suzorite Mica Products Inc., Mica Plant, Zemex Corp.	Boucherville, QC	35	32	1	60,000	0	60,000
49	Wyeth - Ayerst, Canada Inc., American Home Products	St-Laurent, QC	37	28	1	43,419	1,095	44,514
50	Imperial Oil, IOL Strathcona Refinery	Edmonton, AB	36	29	4	12,840	32,100	44,940
	Total				**126**	**4,264,717**	**7,192,897**	**11,457,614**

➤ Carcinogenic substances are those chemicals or chemical compounds listed in either the International Agency for Research on Cancer (IARC) Monographs or the US National Toxicological Program (NTP) Annual Report on Carcinogens. ➤ A chemical (and its compounds) is included if the chemical or any of its compounds is designated carcinogenic.

➤ Does not include ammonia, isopropyl alcohol, non-air emissions of hydrochloric acid and sulfuric acid, and chemicals not reported to TRI.

	1996				1997				Change 95–97	
Rank	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Total Releases and Transfers (kg)	Major Chemicals Reported with Decreases (Primary Media/Transfers with Decreases)*
1	**	**	**	**	1	0	272	272	-1,987,728	Asbestos (transfers to disposal)
2	2	6,491	888,042	894,533	2	1,676	545,510	547,186	-854,719	Chromium and compounds (transfers of metals)
3	1	85,914	0	85,914	1	84,600	0	84,600	-539,873	Vinyl acetate (transfers to treatment)
4	3	233,261	397,208	630,469	3	92,573	496,278	588,851	-409,958	Cadmium and compounds (land, transfers of metals), Chromium/Lead and compounds (land)
5	5	162,400	104,500	266,900	5	82,673	200,300	282,973	-357,002	Benzene (air, transfers to treatment)
6	1	0	26,800	26,800	1	0	0	0	-154,000	Asbestos (transfers to disposal)
7	1	3,135	0	3,135	**	**	**	**	-147,397	Formaldehyde (water)
8	**	**	**	**	**	**	**	**	-126,800	Arsenic/Chromium/Cobalt/Lead and compounds (air), Nickel and compounds (air)
9	8	214,262	72,416	286,678	17	100,758	30,931	131,689	-126,603	Benzene, Ethylene oxide (air), Asbestos (land)
10	5	393,700	0	393,700	5	281,030	0	281,030	-117,950	Cadmium/Lead and compounds (air)
11	1	87,240	0	87,240	**	**	**	**	-109,380	Tetrachloroethylene (air)
12	1	186	44,286	44,472	**	**	**	**	-106,287	Asbestos (transfers to disposal)
13	1	366,565	0	366,565	1	313,250	0	313,250	-105,160	Dichloromethane (air)
14	**	**	**	**	**	**	**	**	-104,740	Styrene, 1,3-Butadiene (transfers to treatment)
15	2	210	0	210	2	210	0	210	-94,770	Chromium and compounds (transfers of metals)
16	4	4,209	77,847	82,056	2	55	36,721	36,776	-91,576	Formaldehyde (transfers to sewage), Styrene, Acrylonitrile (transfers to treatment)
17	1	100	7,710	7,810	1	100	1,410	1,510	-86,595	Lead and compounds (transfers of metals)
18	2	12,423	106,657	119,080	**	**	**	**	-82,783	Trichloroethylene (air), Lead and compounds (transfers of metals)
19	1	19,373	2,250	21,623	1	22,200	2,250	24,450	-80,970	Styrene (air)
20	1	0	11,540	11,540	1	0	16,330	16,330	-80,870	Asbestos (transfers to disposal)
21	3	33,180	0	33,180	3	29,120	0	29,120	-76,080	Cadmium/Chromium/Lead and compounds (land)
22	5	43,715	17,073	60,788	5	39,412	43,641	83,053	-74,110	Benzene, 1,3-Butadiene (air), Asbestos (transfers to disposal)
23	1	0	4,000	4,000	1	0	0	0	-72,300	Chromium and compounds (transfers of metals)
24	1	133,212	0	133,212	1	62,500	590	63,090	-70,122	Trichloroethylene (air)
25	1	0	30,601	30,601	1	0	20,141	20,141	-67,591	Asbestos (transfers to disposal), Chromium and compounds (transfers of metals)
26	2	0	140,811	140,811	2	0	74,750	74,750	-66,061	Chromium/Nickel and compounds (transfers of metals)
27	5	570,772	48,061	618,833	6	378,422	105,033	483,455	-59,084	Acetaldehyde (UIJ)
28	3	400	127,520	127,920	3	200	46,807	47,007	-55,246	Nickel and compounds (transfers of metals)
29	4	0	200	200	4	0	337	337	-52,928	Styrene (air)
30	1	28	84	112	**	**	**	**	-51,595	Carbon tetrachloride (air, transfers to treatment), Asbestos (transfers to disposal)
31	2	114,557	192,501	307,058	2	699	128,180	128,879	-50,440	Chromium and compounds (land)
32	**	**	**	**	**	**	**	**	-50,081	Chromium/Lead and compounds (transfers of metals)
33	3	43,300	29,000	72,300	3	56,400	5,100	61,500	-45,390	Benzene (transfers to treatment), Asbestos (transfers to disposal)
34	3	74,616	3,882	78,498	**	**	**	**	-44,003	Trichloroethylene (air)
35	5	66,737	61,330	128,067	4	69,991	2,560	72,551	-43,637	Benzene, 1,3-Butadiene (air), Asbestos (transfers to disposal)
36	2	0	48,400	48,400	2	0	4,900	4,900	-43,100	Asbestos (transfers to disposal)
37	2	44,149	0	44,149	2	22,421	0	22,421	-40,924	Chloroform, Acetaldehyde (air)
38	5	2,459	268,691	271,150	5	2,455	316,350	318,805	-39,232	Lead and compounds (transfers of metals)
39	4	59,558	0	59,558	4	63,977	0	63,977	-38,992	Benzene (air)
40	5	10,600	0	10,600	5	10,837	0	10,837	-38,403	Asbestos (land)
41	1	14,000	0	14,000	1	18,000	0	18,000	-36,270	Formaldehyde, Chloroform (air)
42	3	209,711	0	209,711	3	202,260	0	202,260	-36,095	Dichloromethane (transfers to treatment, air)
43	1	69,000	0	69,000	1	44,600	0	44,600	-35,400	Styrene (air)
44	2	8,140	19,000	27,140	2	4,043	15,740	19,783	-33,657	Benzene, 1,3-Butadiene (air), Asbestos (transfers to disposal)
45	1	55,108	0	55,108	1	66,857	0	66,857	-29,523	Formaldehyde (air)
46	3	92,844	0	92,844	3	85,303	0	85,303	-29,222	Arsenic/Cobalt/Nickel and compounds (air)
47	1	3,930	28,830	32,760	1	3,930	0	3,930	-28,830	Tetrachloroethylene (transfers to treatment)
48	1	60,000	0	60,000	1	33,000	0	33,000	-27,000	Dichloromethane (air)
49	1	23,017	200	23,217	1	18,579	0	18,579	-25,935	Dichloromethane (air)
50	3	12,408	2,764	15,172	4	9,234	10,122	19,356	-25,584	Benzene (air), Asbestos (transfers to disposal)
	114	**3,334,910**	**2,762,204**	**6,097,114**	**114**	**2,201,365**	**2,104,253**	**4,305,618**	**-7,151,996**	

* Chemicals accounting for more than 70% of decrease in total releases and transfers of carcinogens from the facility.

** Indicates facility did not report any matched carcinogens that year.

➤ UIJ = underground injection

Table 5–50

M 1997

The 50 NPRI Facilities with Largest Increase in Total Releases and Transfers of Known or Suspected Carcinogens†, 1995–1997

Rank	Facility	City, Province	SIC Codes Canada	SIC Codes US	1995 Number of Forms	1995 Total Releases (kg)	1995 Total Transfers (kg)	1995 Total Releases and Transfers (kg)
1	Noranda Mining and Exploration Inc., Brunswick Smelting Div.	Belledune, NB	29	33	3	18,200	0	18,200
2	Metalex Products Ltd.	Richmond, BC	29	33	2	6,310	0	6,310
3	Inco Limited, Copper Cliff Smelter Complex	Copper Cliff, ON	29	33	4	498,950	0	498,950
4	MacMillan Bloedel Pembroke LP, MacMillan Bloedel Ltd.	Pembroke, ON	25	24	*	*	*	*
5	Petro-Canada, Burrard Products Terminal	Port Moody, BC	36	29	1	1,200	0	1,200
6	Hudson Bay Mining and Smelting Co., Metallurgical Complex	Flin Flon, MB	29	33	3	41,177	0	41,177
7	Uniboard Canada Inc., Division Sayabec, UniKunz Canada Inc.	Sayabec, QC	25	24	1	3,323	0	3,323
8	Novopharm Limited	Markham, ON	37	28	1	72,981	0	72,981
9	Stelco Inc., Hilton Works	Hamilton, ON	29	33	6	174,590	145,380	319,970
10	Sammi Atlas Inc., Aciers inoxydables Atlas	Tracy, QC	29	33	3	46,270	233,090	279,360
11	Carpenter Canada Ltd.	Woodbridge, ON	16	30	2	196,585	0	196,585
12	Domtar Papers, Cornwall Business Unit	Cornwall, ON	27	26	*	*	*	*
13	Philip Services Corp., Philip Enterprises Inc.	Guelph, ON	29	33	1	100	1,400	1,500
14	Gerdau MRM Steel Inc., Grupo Gerdau	Selkirk, MB	29	33	1	80,000	0	80,000
15	Raylo Chemicals Inc., Argyll Road Site, Laporte PLC	Edmonton, AB	37	28	1	0	0	0
16	Tonolli Canada Limited	Mississauga, ON	29	33	1	2,357	226,980	229,337
17	Dow Chemical Canada Inc.	Varennes, QC	16	30	2	755	56,295	57,050
18	Abitibi-Consolidated Inc., Division Port-Alfred	La Baie, QC	27	26	1	129,500	0	129,500
19	Uniboard Canada Inc., Division Val-d'Or, UniKunz Canada Inc.	Val-d'Or, QC	25	24	*	*	*	*
20	Ainsworth Lumber Co. Ltd.	Grande Prairie, AB	25	24	*	*	*	*
21	MAAX Inc., Division fibre de verre moderne - usine 5	Tring-Jonction, QC	16	30	*	*	*	*
22	René Matériaux composites Ltée	St-Éphrem-de-Beauce, QC	32	37	*	*	*	*
23	National-Standard Company of Canada, Ltd.	Guelph, ON	30	33	1	0	405	405
24	Falconbridge Ltd., Kidd Metallurgical Div.	Cochrane, ON	29	33	*	*	*	*
25	Canada Metal Company Limited, Canada Metal Investments Ltd.	Toronto, ON	29	33	1	100	0	100
26	Les Produits chimiques Delmar Inc.	LaSalle, QC	37	28	1	28,100	5,000	33,100
27	Domfoam International Inc.	St-Léonard, QC	16	30	2	195,472	0	195,472
28	Marswell Metal Industries Limited	Burlington, ON	30	34	1	0	1	1
29	Dofasco Inc.	Hamilton, ON	29	33	5	460,142	110,468	570,610
30	Stelco McMaster Ltée, Stelco Inc.	Contrecoeur, QC	29	33	2	650	122,700	123,350
31	Beauce Composites Inc., ADS Groupe Composites Inc.	Ste-Clotilde-de-Beauce, QC	32	37	*	*	*	*
32	Menasco Aerospace, Coltec Industries Inc.	Oakville, ON	32	37	*	*	*	*
33	Louisiana-Pacific Canada Ltd., Dawson Creek OSB	Dawson Creek, BC	25	24	*	*	*	*
34	Chemrec Inc.	Cowansville, QC	37	28	3	5,090	62,900	67,990
35	Ranger Board Ltd., West Fraser Mills Ltd.	Blue Ridge, AB	25	24	1	24,455	0	24,455
36	Bonar Inc, Plastics Division, Low & Bonar PLC	Burlington/Halton, ON	16	26	*	*	*	*
37	Dominion Colour Corp., Kikuchi Color & Chemicals Corp.	Ajax, ON	37	28	2	0	185,000	185,000
38	Gerdau Courtice Steel Inc., Gerdau Canada	Cambridge, ON	29	33	2	1,951	56,130	58,081
39	North American Lumber, Roblin Forest Products	Roblin, MB	25	24	*	*	*	*
40	Fonderies canadiennes d'Acier Ltée, Atchison Casting Corp.	Montréal, QC	31	35	2	290,100	170	290,270
41	Ispat Sidbec Inc. Aciérie, Ispat Mexicana	Contrecoeur, QC	29	33	2	202,179	0	202,179
42	West Fraser Mills Ltd., Westpine, MDF	Quesnel, BC	25	24	*	*	*	*
43	Phytogen Pharmaceuticals Inc., Phytogen Life Sciences Inc.	Delta, BC	37	28	*	*	*	*
44	Cartons St-Laurent Inc.	LaTuque, QC	27	26	*	*	*	*
45	MacMillan Bloedel, North Superior Forest Products	Wawa, ON	25	24	*	*	*	*
46	ICI Canada Inc, ICI Explosifs	Brownsburg, QC	37	28	1	6,000	0	6,000
47	Avenor Inc., Thunder Bay Operations	Thunder Bay, ON	27	26	*	*	*	*
48	Fleet Industries Ltd., Magellan Aerospace Corp.	Fort Erie, ON	32	37	*	*	*	*
49	Grant Forest Products Corp., OSB Plant	Englehart, ON	25	24	*	*	*	*
50	Garlock of Canada Ltd., Garlock Sealing Technology	Sherbrooke, QC	18	22	*	*	*	*
	Total				**59**	**2,486,537**	**1,205,919**	**3,692,456**

† Carcinogenic substances are those chemicals or chemical compounds listed in either the International Agency for Research on Cancer (IARC) Monographs or the US National Toxicological Program (NTP) Annual Report on Carcinogens.

➤ A chemical (and its compounds) is included if the chemical or any of its compounds is designated carcinogenic.

➤ Does not include ammonia, isopropyl alcohol, non-air emissions of hydrochloric acid and sulfuric acid, and chemicals not reported to TRI.

* Indicates facility did not report any matched carcinogens that year.

	1996				1997				Change 95–97	
Rank	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Total Releases and Transfers (kg)	Major Chemicals Reported with Increases (Primary Media/Transfers with Increases)**
1	3	21,194	0	21,194	3	17,987	465,000	482,987	464,787	Lead and compounds (transfers of metals)
2	2	10,488	213,670	224,158	2	342	421,667	422,009	415,699	Lead and compounds (transfers of metals)
3	4	215,858	0	215,858	4	897,650	0	897,650	398,700	Chromium and compounds (land)
4	*	*	*	*	1	279,000	0	279,000	279,000	Formaldehyde (air)
5	2	1,166	90,000	91,166	2	1,319	271,000	272,319	271,119	Asbestos (transfers to disposal)
6	3	166,644	0	166,644	3	234,454	0	234,454	193,277	Lead and compounds (air)
7	1	3,582	0	3,582	1	62,136	127,000	189,136	185,813	Formaldehyde (air, land)
8	1	61,955	0	61,955	1	226,993	0	226,993	154,012	Dichloromethane (air)
9	6	234,615	238,340	472,955	6	242,390	230,400	472,790	152,820	Asbestos (transfers to disposal), Benzene (air)
10	3	23,190	355,270	378,460	3	23,870	401,290	425,160	145,800	Chromium and compounds (transfers of metals)
11	2	238,953	0	238,953	2	296,925	0	296,925	100,340	Dichloromethane (air)
12	1	104,411	0	104,411	1	100,003	0	100,003	100,003	Benzene (air)
13	1	100	1,400	1,500	1	100	100,000	100,100	98,600	Nickel and compounds (transfers of metals)
14	1	217,440	0	217,440	2	169,273	0	169,273	89,273	Lead and compounds (land)
15	1	0	0	0	1	0	89,214	89,214	89,214	Dichloromethane (transfers to treatment)
16	1	2,357	376,450	378,807	1	2,355	311,202	313,557	84,220	Lead and compounds (transfers of metals)
17	2	709	57,794	58,503	2	953	139,063	140,016	82,966	Styrene (transfers to treatment)
18	1	229,000	0	229,000	2	212,430	0	212,430	82,930	Formaldehyde (water)
19	1	64,800	0	64,800	1	77,100	5,240	82,340	82,340	Formaldehyde (air)
20	1	40,688	0	40,688	1	82,298	0	82,298	82,298	Formaldehyde (air)
21	1	58,119	6,750	64,869	1	66,510	6,750	73,260	73,260	Styrene (air)
22	2	144,000	0	144,000	2	71,000	0	71,000	71,000	Styrene, Dichloromethane (air)
23	1	0	110,000	110,000	1	0	71,000	71,000	70,595	Lead and compounds (transfers of metals)
24	*	*	*	*	4	69,999	0	69,999	69,999	Lead and compounds (air)
25	1	100	0	100	1	700	65,600	66,300	66,200	Lead and compounds (transfers of metals)
26	1	20,700	27,800	48,500	1	37,300	51,700	89,000	55,900	Dichloromethane (transfers to treatment)
27	2	230,802	0	230,802	2	245,996	0	245,996	50,524	Dichloromethane (air)
28	1	0	1	1	1	0	50,000	50,000	49,999	Lead and compounds (transfers of metals)
29	5	457,530	109,259	566,789	5	316,496	302,763	619,259	48,649	Lead and compounds (transfers of metals)
30	2	970	194,500	195,470	2	990	166,500	167,490	44,140	Lead and compounds (transfers of metals)
31	2	43,536	0	43,536	2	43,536	0	43,536	43,536	Styrene (air)
32	*	*	*	*	2	31,920	11,218	43,138	43,138	Chromium and compounds (air, transfers of metals)
33	1	36,598	0	36,598	1	41,712	0	41,712	41,712	Formaldehyde (air)
34	3	1,420	55,900	57,320	3	2,700	105,500	108,200	40,210	Dichloromethane (transfers to treatment)
35	1	16,508	0	16,508	1	64,585	0	64,585	40,130	Formaldehyde (air)
36	1	29,300	0	29,300	1	36,000	2,000	38,000	38,000	Trichloroethylene (air)
37	2	0	228,000	228,000	2	0	223,000	223,000	38,000	Lead and compounds (transfers of metals)
38	2	1,929	125,670	127,599	2	1,569	91,952	93,521	35,440	Lead and compounds (transfers of metals)
39	*	*	*	*	2	0	34,090	34,090	34,090	Chromium/Arsenic and compounds (transfers of metals)
40	2	251,600	400	252,000	2	0	324,258	324,258	33,988	Chromium and compounds (transfers of metals)
41	2	230,540	0	230,540	2	234,792	0	234,792	32,613	Lead and compounds (land)
42	*	*	*	*	1	31,134	0	31,134	31,134	Formaldehyde (air)
43	1	0	16,500	16,500	1	0	30,340	30,340	30,340	Dichloromethane (transfers to treatment)
44	2	30,034	7	30,041	2	29,283	7	29,290	29,290	Chloroform, Acetaldehyde (air)
45	1	35,400	0	35,400	1	29,230	0	29,230	29,230	Formaldehyde (air)
46	1	6,000	0	6,000	2	34,960	0	34,960	28,960	Lead and compounds (land)
47	2	28,140	0	28,140	2	28,584	0	28,584	28,584	Acetaldehyde, Chloroform (air)
48	1	30,970	0	30,970	1	26,250	2,300	28,550	28,550	Trichloroethylene (air)
49	1	81,800	0	81,800	1	28,370	3	28,373	28,373	Formaldehyde (air)
50	*	*	*	*	1	0	28,000	28,000	28,000	Asbestos (transfers to disposal)
	78	**3,373,146**	**2,207,711**	**5,580,857**	**92**	**4,401,194**	**4,128,057**	**8,529,251**	**4,836,795**	

** Chemicals accounting for more than 70% of increase in total releases and transfers of carcinogens from the facility.

Table 5–51

M 1997

The 50 TRI Facilities with Largest Decrease in Total Releases and Transfers of Known or Suspected Carcinogens†, 1995–1997

Rank	Facility	City, State	US SIC Code	1995 Number of Forms	1995 Total Releases (kg)	1995 Total Transfers (kg)	1995 Total Releases and Transfers (kg)
1	Millennium Petrochemical Inc., Millennium Chemicals Inc.	La Porte, TX	28	6	242,269	3,474,222	3,716,491
2	ASARCO Inc., Ray Complex/Hayden Smelter	Hayden, AZ	33	4	1,237,100	1,397,915	2,635,015
3	Zinc Corp. of America, Horsehead Ind. Inc.	Monaca, PA	33	4	5,711	2,519,653	2,525,364
4	Electralloy Corp., G. O. Carlson Inc.	Oil City, PA	33	2	66,435	1,249,518	1,315,953
5	American Steel Foundries, Amsted Ind. Inc.	Alliance, OH	33	3	37,270	1,124,603	1,161,873
6	BP Chemicals Inc., BP America Inc.	Lima, OH	28	10	1,821,315	2,454	1,823,769
7	Avesta Sheffield Plate Inc., Avesta Sheffield N.A.	New Castle, IN	33	2	0	849,182	849,182
8	Monsanto Co., Chocolate Bayou	Alvin, TX	28	4	801,396	0	801,396
9	Birmingham Southeast L.L.C., Birmingham Steel Corp.	Flowood, MS	33	3	302	604,370	604,672
10	Armstrong World Indl. Inc.	Lancaster, PA	39	2	29,664	550,022	579,686
11	Slater Steels, Ft. Wayne Spec. Alloys Div.	Fort Wayne, IN	33	2	3,945	569,071	573,016
12	Heatcraft Inc., Lennox Intl. Inc.	Grenada, MS	Mult.	1	447,951	31	447,982
13	Piper Impact Inc.	New Albany, MS	34	2	358,617	8,254	366,871
14	Celanese Eng. Resins Inc., Hoechst Corp.	Bishop, TX	28	4	447,212	11,753	458,965
15	PD Glycol, Occidental Petroleum Corp.	Beaumont, TX	28	2	114	359,906	360,020
16	Eastman Kodak Co., Kodak Park	Rochester, NY	38	10	1,352,547	15,632	1,368,179
17	GE Plastics Co., GE Co.	Mount Vernon, IN	28	4	698,118	18,441	716,559
18	DuPont	Beaumont, TX	28	9	341,818	264,477	606,295
19	Chemical Solvents Inc., Denison Facility	Cleveland, OH	28	4	2,300	279,176	281,476
20	Simpson Pasadena Paper Co., Simpson Investment Co.	Pasadena, TX	26	2	287,075	54,422	341,497
21	Quin-T Corp.	Erie, PA	26	1	340	261,111	261,451
22	DuPont	Towanda, PA	38	1	244,898	10,567	255,465
23	Allegheny Ludlum Corp., Allegheny Teledyne Inc.	Brackenridge, PA	33	3	21,247	303,991	325,238
24	GNB Techs. Inc., Pacific Dunlop GNB Corp.	Vernon, CA	33	2	1,384	383,721	385,105
25	Solutia Inc.	Springfield, MA	Mult.	5	16,109	522,696	538,805
26	Gaska Tape Inc.	Elkhart, IN	30	2	252,550	7,087	259,637
27	Celanese Ltd.	Bay City, TX	28	5	191,243	50,823	242,066
28	Trinity American Corp.	High Point, NC	30	2	276,214	8,131	284,345
29	Gates Rubber Co.	Iola, KS	30	2	111	237,766	237,877
30	Cyprus Miami Mining Corp., Cyprus Climax Metals Co.	Claypool, AZ	33	7	891,992	0	891,992
31	Philips Display Components Co., North American Philips Corp.	Ottawa, OH	36	3	40,413	196,666	237,079
32	Vitafoam Inc., British Vita PLC	Tupelo, MS	30	2	205,427	0	205,427
33	Olin Brass Indianapolis, Olin Corp.	Indianapolis, IN	33	3	101	204,857	204,958
34	Foamex L.P., Foamex Intl. Inc.	La Porte, IN	30	2	196,516	1,927	198,443
35	Weyerhaeuser Co.	Longview, WA	Mult.	6	537,293	4,777	542,070
36	Bristol-Myers Barceloneta Inc., Bristol-Myers Squibb Co.	Barceloneta, PR	28	1	46,366	280,725	327,091
37	Doe Run Co., Renco Group Inc.	Herculaneum, MO	33	6	785,764	370	786,134
38	Fortron Ind., Hoechst Celanese - Agent	Wilmington, NC	28	1	3,532	226,035	229,567
39	Chevron Chemical Co., Polythylene Plant, Chevron Corp.	Orange, TX	28	1	19,410	219,774	239,184
40	Corhart Refractories Corp.	Buckhannon, WV	32	1	14,829	249,327	264,156
41	Dow Chemical Co.	Freeport, TX	28	21	462,411	27,594	490,005
42	IBM	Endicott, NY	36	2	14,145	253,699	267,844
43	Huntsman Petrochemical Corp., Huntsman Corp.	Port Arthur, TX	28	5	295,193	10,726	305,919
44	Hoechst-Celanese Chemical, Clear Lake Plant, Hoechst Corp.	Pasadena, TX	28	6	404,831	41,677	446,508
45	Lubrizol Corp., Bayport Facility	Pasadena, TX	28	4	9,425	186,458	195,883
46	Vitafoam Inc.	High Point, NC	30	3	338,776	0	338,776
47	Hoechst-Celanese Corp., Hoechst Corp.	Spartanburg, SC	Mult.	5	177,338	2	177,340
48	Great Lakes Chemical Corp.	El Dorado, AR	28	2	391,977	0	391,977
49	Arco Chemical Co., Atlantic Richfield Co.	South Charleston, WV	28	5	4,729	297,641	302,370
50	Schering-Plough Prods. Inc., Schering-Plough Corp.	Las Piedras, PR	28	2	253,660	23,870	277,530
	Total			**191**	**14,279,383**	**17,365,120**	**31,644,503**

† Carcinogenic substances are those chemicals or chemical compounds listed in either the International Agency for Research on Cancer (IARC) Monographs or the US National Toxicological Program (NTP) Annual Report on Carcinogens. ➤ A chemical (and its compounds) is included if the chemical or any of its compounds is designated carcinogenic.

➤ Does not include ammonia, isopropyl alcohol, non-air emissions of hydrochloric acid and sulfuric acid, and chemicals not reported to NPRI.

	1996				1997				Change 95–97	
Rank	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Total Releases and Transfers (kg)	Major Chemicals Reported with Decreases (Primary Media/Transfers with Decreases)*
1	5	248,445	0	248,445	5	260,736	0	260,736	-3,455,755	Vinyl acetate (transfers to treatment)
2	4	945,577	2,593,811	3,539,388	4	56,321	478,160	534,481	-2,100,534	Lead and compounds (land, transfers of metals)
3	4	5,895	1,265,686	1,271,581	4	5,163	1,061,318	1,066,481	-1,458,883	Lead and compounds (transfers of metals)
4	2	2,670	104,379	107,049	2	5,230	62,029	67,259	-1,248,694	Chromium and compounds (transfers of metals)
5	4	2,250	382,397	384,647	**	**	**	**	-1,161,873	Chromium and compounds (transfers of metals)
6	10	1,195,459	3,538	1,198,997	10	992,438	2,780	995,218	-828,551	Acrylonitrile (UIJ)
7	2	0	45,887	45,887	2	0	49,344	49,344	-799,838	Chromium and compounds (transfers of metals)
8	3	657,431	0	657,431	1	43,284	0	43,284	-758,112	Acrylonitrile (UIJ)
9	2	291	0	291	3	131	0	131	-604,541	Lead and compounds (transfers of metals)
10	1	9,827	149,416	159,243	1	13,742	0	13,742	-565,944	Di(2-ethylhexyl) phthalate (transfers to disposal)
11	2	3,628	19,547	23,175	2	7,864	27,209	35,073	-537,943	Chromium and compounds (transfers of metals)
12	1	164,902	160	165,062	1	48,202	113	48,315	-399,667	Trichloroethylene (air)
13	2	127,778	1,361	129,139	2	227	2,041	2,268	-364,603	Tetrachloroethylene (air)
14	5	385,525	1,172	386,697	5	106,392	1,905	108,297	-350,668	Formaldehyde (UIJ)
15	2	6,876	8,844	15,720	2	8,825	9,879	18,704	-341,316	Acetaldehyde (transfers to treatment)
16	9	1,142,344	4,595	1,146,939	9	1,013,355	17,996	1,031,351	-336,828	Dichloromethane, Acetaldehyde (air)
17	7	569,534	33,736	603,270	4	392,448	19,049	411,497	-305,062	Dichloromethane (air)
18	4	107,635	255,988	363,623	5	98,399	221,724	320,123	-286,172	Carbon tetrachloride (transfers to treatment, air), Acrylonitrile (UIJ)
19	4	19,627	0	19,627	3	589	0	589	-280,887	Dichloromethane, Styrene (transfers to treatment)
20	2	286,168	34,013	320,181	2	39,455	33,560	73,015	-268,482	Chloroform (air)
21	1	340	258,843	259,183	**	**	**	**	-261,451	Asbestos (transfers to disposal)
22	1	222,222	1,452	223,674	**	**	**	**	-255,465	Dichloromethane (air)
23	3	4,625	141,157	145,782	4	7,165	65,850	73,015	-252,223	Chromium and compounds (transfers of metals)
24	2	1,384	400,628	402,012	2	1,551	134,000	135,551	-249,554	Lead and compounds (transfers of metals)
25	4	14,398	374,314	388,712	4	19,024	271,398	290,422	-248,383	Formaldehyde (transfers to sewage)
26	2	33,149	7,362	40,511	2	18,301	5,390	23,691	-235,946	Dichloromethane, Tetrachloroethylene (air)
27	3	35,597	8	35,605	3	11,550	0	11,550	-230,516	Vinyl acetate (UIJ, air), Acetaldehyde (UIJ, transfers to treatment)
28	1	160,100	5,687	165,787	2	53,574	4,082	57,656	-226,689	Dichloromethane (air)
29	2	40	15,025	15,065	2	21	12,079	12,100	-225,777	Di(2-ethylhexyl) phthalate (transfers to disposal)
30	7	1,321,135	0	1,321,135	7	680,183	0	680,183	-211,809	Lead and compounds (land)
31	3	47,307	28,299	75,606	2	5	26,644	26,649	-210,430	Lead and compounds (transfers of metals)
32	3	352,260	0	352,260	**	**	**	**	-205,427	Dichloromethane (air)
33	3	115	288	403	2	115	126	241	-204,717	Chromium and compounds (transfers of metals)
34	2	45,972	23,839	69,811	**	**	**	**	-198,443	Dichloromethane (air)
35	6	402,497	8,841	411,338	5	339,823	9,096	348,919	-193,151	Chloroform (air, water), Acetaldehyde (air)
36	1	23,645	332,541	356,186	1	16,920	118,486	135,406	-191,685	Dichloromethane (transfers to treatment)
37	6	689,212	368	689,580	5	594,782	368	595,150	-190,984	Lead and compounds (land)
38	1	3,525	174,403	177,928	1	3,579	35,150	38,729	-190,838	1,4-Dichlorobenzene (transfers to treatment)
39	1	22,336	0	22,336	1	10,408	38,367	48,775	-190,409	Vinyl acetate (transfers to treatment)
40	1	13,349	61,061	74,410	1	7,314	66,516	73,830	-190,326	Chromium and compounds (transfers of metals)
41	21	406,386	7,435	413,821	21	297,191	3,665	300,856	-189,149	Propylene oxide, Dichloromethane, Benzene, Tetrachloroethylene (air)
42	2	11,701	125,399	137,100	2	10,825	72,737	83,562	-184,282	Tetrachloroethylene (transfers to treatment)
43	4	214,753	1,853	216,606	4	106,712	25,620	132,332	-173,587	Benzene (air)
44	6	128,816	19,321	148,137	6	61,319	220,163	281,482	-165,026	Vinyl acetate (UIJ)
45	4	15,869	166,301	182,170	4	18,230	13,648	31,878	-164,005	Acrylonitrile (transfers to treatment)
46	3	201,395	15,497	216,892	2	174,720	476	175,196	-163,580	Dichloromethane (air)
47	5	38,575	0	38,575	5	13,822	0	13,822	-163,518	Acetaldehyde (air)
48	2	299,060	0	299,060	2	228,899	0	228,899	-163,078	Dichloromethane (UIJ)
49	5	7,161	49,084	56,245	5	7,714	139,842	147,556	-154,814	Styrene (transfers to treatment)
50	2	205,587	7,215	212,802	2	128,277	115	128,392	-149,138	Dichloromethane (air)
	182	**10,804,373**	**7,130,751**	**17,935,124**	**164**	**5,904,825**	**3,250,925**	**9,155,750**	**-22,488,753**	

* Chemicals accounting for more than 70% of decrease in total releases and transfers of carcinogens from the facility.

** Indicates facility did not report any matched carcinogens that year.

➤ UIJ=underground injection

Table 5–52

M 1997

The 50 TRI Facilities with Largest Increase in Total Releases and Transfers of Known or Suspected Carcinogens†, 1995–1997

Rank	Facility	City, State	US SIC Code	1995 Number of Forms	1995 Total Releases (kg)	1995 Total Transfers (kg)	1995 Total Releases and Transfers (kg)
1	American Chrome & Chemicals, Harrisons & Crosfield American	Corpus Christi, TX	28	1	4,265,578	40,867	4,306,445
2	Kennecott Utah Copper, Kennecott Holdings Corp.	Magna, UT	33	5	759,954	70,725	830,679
3	American Microtrace Corp., Tetra Techs. Inc.	Fairbury, NE	28	2	18,146	18,141	36,287
4	Monsanto Co.	Luling, LA	28	2	1,823,991	6,349	1,830,340
5	Solutia Inc., Chocolate Bayou	Alvin, TX	28	*	*	*	*
6	Occidental Chemical Corp., Occidental Petroleum Corp.	Castle Hayne, NC	28	1	3,313,374	1,723	3,315,097
7	C & D Techs. Inc.	Conyers, GA	36	1	458	116	574
8	Borden Chemicals & Plastics LP	Geismar, LA	28	7	38,378	21,103	59,481
9	Nucor-Yamato Steel Co., Nucor Corp.	Blytheville, AR	33	4	16,119	3,335	19,454
10	New Haven Fndy., Wesley Ind. Inc.	New Haven, MI	33	*	*	*	*
11	ASARCO Inc., Glover Plant	Annapolis, MO	33	4	960,950	0	960,950
12	Glenbrook Nickel Co., Cominco American Inc.	Riddle, OR	33	1	547,715	0	547,715
13	Foamex L.P., Div. of Kihi	Corry, PA	30	2	448,333	5,245	453,578
14	Reichhold Chemicals Inc.	Jacksonville, FL	28	2	3,629	5,370	8,999
15	Doe Run Co., Recycling Facility, Renco Group Inc.	Boss, MO	33	2	18,302	21,216	39,518
16	ASARCO Inc.	Omaha, NE	33	2	16,688	436,597	453,285
17	Wagner Brake, Cooper Ind. Inc.	Scottsville, KY	37	1	113	136,893	137,006
18	Boeing Co.	Wichita, KS	Mult.	9	230,411	79,114	309,525
19	Aquaglass Corp., Masco Corp.	Adamsville, TN	30	1	665,652	0	665,652
20	Squibb Mfg. Inc., Bristol-Myers Squibb Co.	Humacao, PR	28	3	9,533	260	9,793
21	DuPont	Pass Christian, MS	28	*	*	*	*
22	Quality Chemicals Inc., Chemfirst Corp.	Tyrone, PA	28	*	*	*	*
23	Nucor Steel	Plymouth, UT	33	3	7,003	14,040	21,043
24	Vitafoam Inc., British Vita PLC	Tupelo, MS	30	2	98,199	0	98,199
25	Lacks Ind. Inc., Airlane Plant, Lacks Ents. Inc.	Kentwood, MI	Mult.	3	459	63,601	64,060
26	Scot Forge Co.	Spring Grove, IL	34	2	0	0	0
27	BP Chemicals Inc., Green Lake, BP America Inc.	Port Lavaca, TX	28	5	1,398,049	289	1,398,338
28	DuPont	New Johnsonville, TN	28	*	*	*	*
29	Arco Chemical Co.	Westlake, LA	28	*	*	*	*
30	Able Electro Polishing	Chicago, IL	34	2	7,424	18,701	26,125
31	Birmingham Steel Corp., Kankakee Illinois Steel Div.	Bourbonnais, IL	33	3	569	0	569
32	Rubicon Inc.	Geismar, LA	28	9	106,728	118,097	224,825
33	Quemetco Inc., RSR Corp.	Indianapolis, IN	33	3	3,618	615,461	619,079
34	BHP Copper Metals Co., BHP Copper Co.	San Manuel, AZ	33	5	22,155	8,982	31,137
35	Wayne Pigment Corp.	Milwaukee, WI	28	2	121	453	574
36	American Video Glass Co.	Mt Pleasant, PA	32	*	*	*	*
37	Ameristeel Corp., Jacksonville Mill Div.	Baldwin, FL	33	3	738	0	738
38	Quemetco Inc., RSR Corp.	City of Industry, CA	33	3	746	701,642	702,388
39	Carpenter Co.	Russellville, KY	Mult.	3	353,610	0	353,610
40	Shell Chemical Co., Shell Oil Co.	Geismar, LA	28	4	34,607	9,524	44,131
41	ZTT Minerals Inc., Babcock Intl.	Caldwell, TX	33	1	118	17,345	17,463
42	Arco Chemical Co., Bayport Div., Atlantic Richfield Co.	Pasadena, TX	28	1	34,785	65,515	100,300
43	Hydrite Chemical Co.	Cottage Grove, WI	28	4	2,167	1,267	3,434
44	Tennessee Mat Co.	Nashville, TN	30	*	*	*	*
45	Aqua Glass Performance Plant, Masco Corp.	McEwen, TN	30	1	206,396	0	206,396
46	BASF Corp.	Geismar, LA	28	11	15,926	24,120	40,046
47	Steel Dynamics Inc.	Butler, IN	33	*	*	*	*
48	Southwire Co.	Carrollton, GA	Mult.	8	14,901	198,793	213,694
49	Burkart Foam Inc., Ohio Decorative Prods. Inc.	Cairo, IL	30	2	684	0	684
50	Timken Co., Faircrest Steel Plant	Canton, OH	33	3	520	6,898	7,418
	Total			**133**	**15,446,847**	**2,711,782**	**18,158,629**

† Carcinogenic substances are those chemicals or chemical compounds listed in either the International Agency for Research on Cancer (IARC) Monographs or the US National Toxicological Program (NTP) Annual Report on Carcinogens.

➤ A chemical (and its compounds) is included if the chemical or any of its compounds is designated carcinogenic.

➤ Does not include ammonia, isopropyl alcohol, non-air emissions of hydrochloric acid and sulfuric acid, and chemicals not reported to NPRI.

* Indicates facility did not report any matched carcinogens that year.

	1996				1997				Change 95–97	
Rank	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Total Releases and Transfers (kg)	Major Chemicals Reported with Increases (Primary Media/Transfers with Increases)**
1	1	5,126,893	27,279	5,154,172	1	6,578,095	1,434,288	8,012,383	3,705,938	Chromium and compounds (land, transfers of metals)
2	5	741,870	119,252	861,122	5	4,101,067	69,666	4,170,733	3,340,054	Lead/Arsenic and compounds (land)
3	2	63	0	63	2	57	1,723,356	1,723,413	1,687,126	Lead and compounds (transfers of metals)
4	2	2,549,116	5,442	2,554,558	2	3,236,644	6,803	3,243,447	1,413,107	Formaldehyde (UIJ)
5	*	*	*	*	3	1,039,050	0	1,039,050	1,039,050	Acrylonitrile (UIJ)
6	1	4,084,751	4,535	4,089,286	1	4,129,841	6,349	4,136,190	821,093	Chromium and compounds (land)
7	1	535	431,778	432,313	1	793	810,519	811,312	810,738	Lead and compounds (transfers of metals)
8	6	77,681	53,659	131,340	7	815,745	18,809	834,554	775,073	Benzene (air)
9	3	15	248,621	248,636	4	663	735,580	736,243	716,789	Lead and compounds (transfers of metals)
10	6	42,111	83,002	125,113	5	19,140	666,122	685,262	685,262	Lead/Arsenic/Cobalt and compounds (transfers of metals)
11	4	1,445,774	0	1,445,774	4	1,603,364	0	1,603,364	642,414	Lead and compounds (land)
12	1	922,590	0	922,590	1	1,097,645	0	1,097,645	549,930	Nickel and compounds (land)
13	2	756,420	1,813	758,233	2	903,448	7,126	910,574	456,996	Dichloromethane (air)
14	2	3,853	0	3,853	2	3,456	462,390	465,846	456,847	Styrene (transfers to treatment)
15	2	14,575	120,624	135,199	3	17,360	475,008	492,368	452,850	Lead and compounds (transfers of metals)
16	2	10,528	397,779	408,307	2	2,836	893,671	896,507	443,222	Lead and compounds (transfers of metals)
17	1	113	133,630	133,743	1	113	557,771	557,884	420,878	Asbestos (transfers to disposal)
18	6	350,371	172,801	523,172	6	596,395	132,328	728,723	419,198	Tetrachloroethylene (air)
19	1	1,046,797	0	1,046,797	1	1,057,867	0	1,057,867	392,215	Styrene (air)
20	4	10,712	60,333	71,045	3	6,163	363,885	370,048	360,255	Dichloromethane (transfers to treatment)
21	*	*	*	*	4	358,277	0	358,277	358,277	Chromium and compounds (UIJ)
22	1	1,503	497,742	499,245	4	1,510	346,159	347,669	347,669	Carbon tetrachloride (transfers to treatment)
23	4	5,161	166,505	171,666	2	2,062	363,053	365,115	344,072	Lead and compounds (transfers of metals)
24	2	35,755	4,132	39,887	3	425,644	0	425,644	327,445	Dichloromethane (air)
25	3	459	50,338	50,797	3	459	386,248	386,707	322,647	Nickel/Chromium and compounds (transfers of metals)
26	2	0	0	0	2	0	320,425	320,425	320,425	Chromium and compounds (transfers of metals)
27	5	1,243,881	329	1,244,210	5	1,711,337	711	1,712,048	313,710	Acrylamide (UIJ)
28	*	*	*	*	2	296,145	0	296,145	296,145	Chromium and compounds (UIJ)
29	*	*	*	*	3	29	290,092	290,121	290,121	Toluenediisocyanate (transfers to treatment)
30	2	10,073	293,991	304,064	2	14,608	299,433	314,041	287,916	Chromium and compounds (transfers of metals)
31	2	330	0	330	3	495	283,347	283,842	283,273	Lead and compounds (transfers of metals)
32	9	110,086	12,914	123,000	9	308,696	197,998	506,694	281,869	Nitrobenzene (UIJ)
33	3	1,879	743,366	745,245	3	1,416	879,880	881,296	262,217	Lead/Chromium and compounds (transfers of metals)
34	4	60,361	817	61,178	7	291,902	31	291,933	260,796	Arsenic and compounds (land)
35	2	121	458	579	2	121	256,702	256,823	256,249	Lead and compounds (transfers of metals)
36	*	*	*	*	2	120	245,511	245,631	245,631	Lead and compounds (transfers of metals)
37	3	792	168,028	168,820	3	1,012	240,636	241,648	240,910	Lead and compounds (transfers of metals)
38	3	847	847,238	848,085	3	723	934,969	935,692	233,304	Lead and compounds (transfers of metals)
39	3	374,128	513	374,641	5	571,776	4,402	576,178	222,568	Dichloromethane (air)
40	5	75,637	28,571	104,208	5	222,355	32,325	254,680	210,549	Ethylene oxide (air)
41	1	224	5,140	5,364	1	225	224,203	224,428	206,965	Lead and compounds (transfers of metals)
42	1	20,730	75,938	96,668	1	23,300	281,266	304,566	204,266	Propylene oxide (transfers to sewage)
43	4	2,363	476,259	478,622	5	1,447	201,930	203,377	199,943	Trichloroethylene, Dichloromethane (transfers to treatment)
44	1	4	0	4	1	198,200	0	198,200	198,200	Dichloromethane (air)
45	1	269,465	0	269,465	1	404,393	0	404,393	197,997	Styrene (air)
46	12	11,349	20,620	31,969	12	15,425	222,324	237,749	197,703	Nitrobenzene (transfers to treatment)
47	2	165	141,059	141,224	3	196	194,014	194,210	194,210	Lead and compounds (transfers of metals)
48	14	4,576	496,891	501,467	16	3,258	403,098	406,356	192,662	Lead and compounds (transfers of metals)
49	2	278,642	0	278,642	2	189,911	0	189,911	189,227	Dichloromethane (air)
50	3	494	65,819	66,313	2	422	194,367	194,789	187,371	Lead and compounds (transfers of metals)
	146	**19,693,793**	**5,957,216**	**25,651,009**	**172**	**30,255,206**	**15,166,795**	**45,422,001**	**27,263,372**	

** Chemicals accounting for more than 70% of increase in total releases and transfers of carcinogens from the facility.

➤ UIJ = underground injection

Metals

NPRI releases and transfers of metals and their compounds increased 9.8 million kg, from 33.7 million kg in 1995 to 43.5 million kg in 1997, a 29 percent increase. This meant that metals rose from one-quarter of all NPRI reporting in the matched data set in 1995 to one-third in 1997. NPRI facilities reported increases for 10 of the 15 metallic substances in the matched data set (**Table 5–53**).

The largest NPRI increase, of 9.0 million kg (53 percent), occurred in releases and transfers of zinc and its compounds. Releases and transfers of two other metals rose approximately 800,000 kg each: lead and its compounds (an increase of 24 percent) and manganese and its compounds (a 13 percent increase). On the other hand, NPRI facilities reported their largest reduction for copper and its compounds. Releases and transfers of this substance decreased 623,299 kg (a 26 percent reduction).

Table 5–53
M 1997

Change in NPRI Total Releases and Transfers of Metals and Their Compounds, 1995–1997

CAS Number	Chemical	Total Releases and Transfers 1995 (kg)	1996 (kg)	1997 (kg)	Change 1995–1997 kg	%
—	Copper (and its compounds)	2,395,813	1,437,803	1,772,514	-623,299	-26.0
—	Chromium (and its compounds)	3,085,937	2,747,282	2,767,382	-318,555	-10.3
—	Nickel (and its compounds)	1,121,479	894,862	879,686	-241,793	-21.6
—	Mercury (and its compounds)	19,305	9,647	3,730	-15,575	-80.7
—	Cobalt (and its compounds)	38,005	36,503	30,986	-7,019	-18.5
—	Silver (and its compounds)	1,029	1,432	1,748	719	69.9
—	Selenium (and its compounds)	33,611	40,023	39,649	6,038	18.0
—	Antimony (and its compounds)	13,103	17,750	20,234	7,131	54.4
7440-62-2	Vanadium (fume or dust)	173,414	189,527	217,001	43,587	25.1
—	Cadmium (and its compounds)	54,950	21,735	164,980	110,030	200.2
—	Arsenic (and its compounds)	74,078	172,813	216,145	142,067	191.8
7429-90-5	Aluminum (fume or dust)	613,535	717,376	790,035	176,500	28.8
—	Manganese (and its compounds)	5,975,691	8,470,695	6,772,260	796,569	13.3
—	Lead (and its compounds)	3,364,397	3,648,574	4,166,443	802,046	23.8
—	Zinc (and its compounds)	16,750,383	18,165,375	25,701,932	8,951,549	53.4
	Subtotal	**33,714,730**	**36,571,397**	**43,544,725**	**9,829,995**	**29.2**
	% of Total	**25.9**	**29.3**	**33.5**		
	Total for Matched NPRI Chemicals	**130,368,812**	**124,688,830**	**129,957,185**	**-411,627**	**-0.3**

Table 5–54

M 1997

Change in TRI Total Releases and Transfers of Metals and Their Compounds, 1995–1997

CAS Number	Chemical	Total Releases and Transfers 1995 (kg)	1996 (kg)	1997 (kg)	Change 1995–1997 kg	%
—	Mercury (and its compounds)	110,365	27,702	33,375	-76,990	-69.8
—	Cadmium (and its compounds)	1,144,575	845,823	1,099,954	-44,621	-3.9
7440-62-2	Vanadium (fume or dust)	85,043	68,013	78,978	-6,065	-7.1
—	Selenium (and its compounds)	192,107	168,707	203,086	10,979	5.7
—	Silver (and its compounds)	49,494	70,277	72,370	22,876	46.2
—	Antimony (and its compounds)	2,741,814	3,476,086	2,796,482	54,668	2.0
—	Cobalt (and its compounds)	577,112	682,712	943,532	366,420	63.5
7429-90-5	Aluminum (fume or dust)	4,677,483	4,916,455	5,557,225	879,742	18.8
—	Nickel (and its compounds)	6,140,156	6,476,739	7,751,290	1,611,134	26.2
—	Arsenic (and its compounds)	2,120,447	2,396,332	4,077,455	1,957,008	92.3
—	Chromium (and its compounds)	23,741,812	22,465,998	26,212,360	2,470,548	10.4
—	Copper (and its compounds)	31,690,605	36,416,087	34,715,649	3,025,044	9.5
—	Lead (and its compounds)	19,960,972	21,961,939	26,418,897	6,457,925	32.4
—	Manganese (and its compounds)	43,372,348	47,202,906	65,474,105	22,101,757	51.0
—	Zinc (and its compounds)	110,254,783	125,622,492	154,350,644	44,095,861	40.0
	Subtotal	**246,859,116**	**272,798,268**	**329,785,402**	**82,926,286**	**33.6**
	% of Total	**21.5**	**24.6**	**28.4**		
	Total for Matched TRI Chemicals	**1,145,788,956**	**1,107,331,518**	**1,161,341,947**	**15,552,991**	**1.4**

In TRI, releases and transfers of metals and their compounds increased by 82.9 million kg, from 246.9 million kg in 1995 to 329.8 million kg in 1997. This amounted to an increase of 34 percent. Metals accounted for one-fifth of the 1995 TRI releases and transfers of all substances and more than one-quarter in 1997 (**Table 5–54**).

Zinc and its compounds showed the largest increase—44.1 million kg—and this was twice the increase for second-ranked manganese and its compounds. Zinc releases and transfers increased from 110.3 million kg to 154.4 million kg, or 40 percent. Manganese and its compounds increased from 43.4 million kg to 65.5 million kg, or 51 percent. TRI facilities reported increases in releases and transfers of 12 of the 15 metals. The largest of the few reductions was in mercury and its compounds, decreasing from 110,365 kg to 33,375 kg, a reduction of 76,990 kg, or 70 percent.

NPRI Facilities with Largest Decreases/Increases

While NPRI facilities making the largest reductions in releases and transfers of metals cut their totals by about one-third from 1995 levels, the facilities with the largest increases doubled their totals over the 1995–1997 period (**Figure 5–28**).

The 50 NPRI facilities with the largest decreases in releases and transfers of metals and their compounds reported 16.4 million kg in 1995 and 9.6 million kg in 1997. This was a 6.8-million-kg reduction, achieved about equally in releases and in transfers. The 50 facilities submitted 170 forms in 1995 and 141 in 1997. Eight facilities that submitted forms for metals in 1995 did not do so in 1997 (**Table 5–55**).

For the 50 NPRI facilities reporting the largest increases, releases and transfers of metals totaled 15.1 million kg in 1995 and 31.0 million kg in 1997. Most of this 15.9-million-kg increase occurred in transfers, which rose from 9.9 million kg to 22.7 million kg. The number of forms increased from 140 submitted in 1995 to 178 in 1997. Nine of the facilities had not reported metals in 1995 (**Table 5–56**).

TRI Facilities with Largest Decreases/Increases

The TRI facilities with the largest decreases and increases in releases and transfers of metals between 1995 and 1997 were responsible for the majority of such releases and transfers reported to the PRTR. This represented an unusual concentration of releases and transfers among facilities with large changes—either up or down—in the amounts they reported. For metals, the largest increases far outweighed the largest reductions, while releases and transfers by all other facilities also rose (**Figure 5–28**).

The 50 TRI facilities with the largest decreases in releases and transfers of metals and their compounds reported 119.9 million kg in 1995 and 83.7 million kg in 1997. About half of this 36.2-million-kg reduction occurred in releases and half in transfers. There was only a small reduction in the number of forms submitted, from 235 in 1995 to 218 in 1997. Four facilities that submitted forms for metals in 1995 did not in 1997 (**Table 5–57**).

For the 50 facilities reporting the largest increases, total releases and transfers of metals and their compounds quadrupled from 31.9 million kg in 1995 to 127.0 million kg in 1997. Two-thirds of this 95.1-million-kg increase occurred in transfers, which rose from 7.6 million kg to 70.8 million kg. The number of forms these facilities submitted increased from 213 in 1995 to 287 in 1997. Ten facilities that did not submit forms for metals in 1995 did so in 1997 (**Table 5–58**).

Figure 5–28
M 1997

NPRI and TRI Total Releases and Transfers of Metals and Their Compounds, 1995–1997: Facilities with Largest Changes and All Others

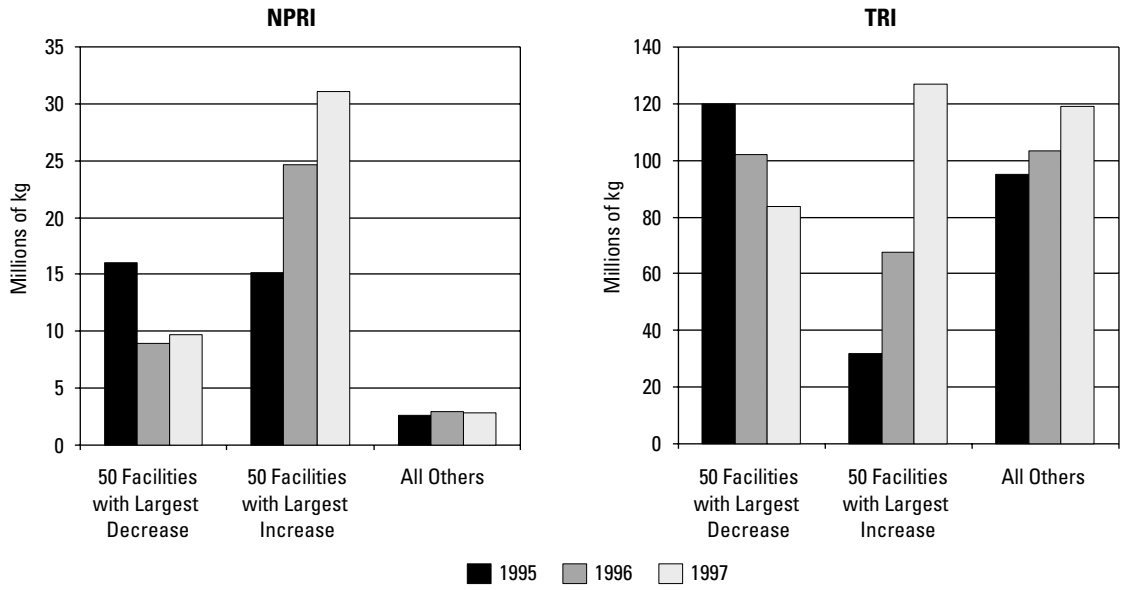


Table 5–55

M 1997

The 50 NPRI Facilities with Largest Decrease in Total Releases and Transfers of Metals and Their Compounds, 1995–1997

Rank	Facility	City, Province	SIC Codes Canada	SIC Codes US	1995 Number of Forms	1995 Total Releases (kg)	1995 Total Transfers (kg)	1995 Total Releases and Transfers (kg)
1	Algoma Steel Inc, Algoma Steel Main Works	Sault Ste. Marie, ON	29	33	6	1,401,740	0	1,401,740
2	Co-Steel Lasco	Whitby, ON	29	33	6	2,411,507	6,030,824	8,442,331
3	Dominion Castings Ltd., NACO Inc.	Hamilton, ON	29	33	2	1,227	1,485,964	1,487,191
4	Titan Steel & Wire Co. Ltd., Mitsui & Co., Ltd.	Surrey, BC	30	33	2	200	398,035	398,235
5	QIT-Fer et Titane Inc., RTZ Fer et Titane, Inc.	Tracy, QC	29	33	6	21,240	305,238	326,478
6	Sydney Steel Corporation	Sydney, NS	29	33	8	530,500	0	530,500
7	Inco Limited, Copper Cliff Nickel Refinery	Copper Cliff, ON	29	33	7	153,630	0	153,630
8	Métallurgie Noranda Inc, Fonderie Horne	Rouyn Noranda, QC	29	33	11	648,045	0	648,045
9	Versatech Industries, Apex Metals Inc.	Kitchener, ON	32	34	3	0	136,000	136,000
10	Owens-Corning Canada Inc., Guelph Glass Plant	Guelph, ON	35	32	1	7,728	117,320	125,048
11	Doorhandle Systems, Plating Plant, Ventra Group Inc.	Brampton, ON	32	34	4	0	209,781	209,781
12	Magotteaux Inc., Magotteaux Canada	Magog, QC	30	39	4	320	98,650	98,970
13	Ford Motor Company, Windsor Casting Plant	Windsor, ON	29	33	5	66,670	386,200	452,870
14	Ford Motor Company, Essex Aluminum Plant	Windsor, ON	29	33	7	605	88,365	88,970
15	Boler Group, Hendrickson Spring	Stratford, ON	32	34	1	0	81,000	81,000
16	Consumers Packaging Inc., Consumers Glass (Brampton)	Brampton, ON	35	32	1	0	72,300	72,300
17	Duracell Canada Inc., Duracell Inc.	Mississauga, ON	33	36	2	200	87,094	87,294
18	Mitsubishi Electronics Industries Canada Inc.	Midland, ON	33	36	2	1,489	67,364	68,853
19	Abitibi-Consolidated Inc., Division Port-Alfred	La Baie, QC	27	26	1	0	99,700	99,700
20	Les Forges de Sorel Inc., Slater Industries Inc.	St-Joseph-de-Sorel, QC	30	34	3	703	119,800	120,503
21	A.P. Green Refractories (Canada) Ltd., A.P. Green Industries	Smithville, ON	35	32	1	0	77,632	77,632
22	CEZinc (Zinc électrolytique du Canada Limitée), Noranda Inc.	Salaberry-de-Valleyfield, QC	29	33	8	115,361	70,200	185,561
23	Griffin Canada Inc., Amsted Industries	Winnipeg, MB	29	33	1	0	69,480	69,480
24	Varity/Kelsey-Hayes Canada Ltd., Eureka Foundry Division	Woodstock, ON	29	33	1	1,582	69,500	71,082
25	A.G. Simpson Co Ltd.	Oshawa, ON	32	34	4	400	112,523	112,923
26	Stelco Inc., Hilton Works	Hamilton, ON	29	33	8	19,700	54,580	74,280
27	Riverside Brass, Riverside Brass & Aluminum Foundry	New Hamburg, ON	29	33	4	52,000	0	52,000
28	Inco Limited, Manitoba Division	Thompson, MB	29	33	4	130,315	0	130,315
29	Michelin North America (Canada) Inc., Waterville Plant	Cambridge Station, NS	15	30	6	2	40,069	40,071
30	Eveready Division, Ralston Purina Canada	Walkerton, ON	33	36	2	0	39,548	39,548
31	Inco Limited, Copper Refinery	Copper Cliff, ON	29	33	7	30,090	0	30,090
32	GE Lighting, Canada, Oakville Lamp Plant	Oakville, ON	33	36	3	300	39,533	39,833
33	Sherritt International Corporation	Fort Saskatchewan, AB	37	28	4	7,336	16,370	23,706
34	Johnson Matthey Limited, Precious Metals Division	Brampton, ON	39	33	3	300	18,618	18,918
35	Standard Products (Canada) Limited, Rubber Plant #2	Stratford, ON	15	30	1	0	58,149	58,149
36	Inco Limited, Central Mills	Copper Cliff, ON	29	33	2	17,310	0	17,310
37	Valeo Engine Cooling Limited, Automotive Division	Stratford, ON	32	35	3	438	36,740	37,178
38	Esco Limited	Port Coquitlam, BC	29	33	2	79,213	0	79,213
39	Stelpipe Ltd, Steel Tube Manufacturing	Welland, ON	29	33	2	535	15,130	15,665
40	Goodyear Tire & Rubber Company, Goodyear Canada Inc.	Napanee, ON	15	30	1	120	14,000	14,120
41	Owens-Corning Canada Inc.	Edmonton, AB	35	32	1	100	13,398	13,498
42	Prototype Circuits Inc, Plant 1	Scarborough, ON	33	36	1	250	25,000	25,250
43	Norcast Division de Tritech Precision Inc., fonderie Norcast	Mont-Joli, QC	30	34	4	2,534	16,657	19,191
44	Consumers Packaging Inc., Consumers Glass (Scoudouc)	Scoudouc, NB	35	32	1	0	10,500	10,500
45	General Motors of Canada Limited, London Diesel Division	London, ON	32	37	4	1,951	14,524	16,475
46	Aluminerie de Bécancour Inc., Reynolds Metal Company	Ville de Bécancour, QC	29	33	1	0	9,300	9,300
47	ICI Canada Inc, ICI Forest Products, Cornwall Works	Cornwall, ON	37	28	3	34	9,259	9,293
48	Standard Products (Canada) Limited, Rubber Plant #4	Mitchell, ON	15	30	1	0	10,937	10,937
49	Tamis CAE Inc., CAE Inc.	Lennoxville, QC	30	34	3	100	11,682	11,782
50	Belden Canada Inc., Cobourg Facility	Cobourg, ON	29	33	2	1	15,444	15,445
	Total				**170**	**5,705,776**	**10,652,408**	**16,358,184**

➤ Does not include ammonia, isopropyl alcohol, non-air emissions of hydrochloric acid and sulfuric acid, and chemicals not reported to TRI.

	1996				1997				Change 95–97	
Rank	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Total Releases and Transfers (kg)	Major Chemicals Reported with Decreases (Primary Media/Transfers with Decreases)*
1	5	5,499	0	5,499	7	7,628	0	7,628	-1,394,112	Manganese and compounds (land)
2	6	1,254,893	3,578,510	4,833,403	6	1,259,869	5,799,885	7,059,754	-1,382,577	Copper and compounds (land)
3	3	6,591	906,005	912,596	3	1,776	571,557	573,333	-913,858	Chromium and compounds (transfers of metals)
4	2	200	36,760	36,960	2	200	6,450	6,650	-391,585	Zinc and compounds (transfers of metals)
5	3	12,900	52,000	64,900	2	6,660	0	6,660	-319,818	Zinc and compounds (transfers of metals)
6	8	331,280	0	331,280	8	290,290	0	290,290	-240,210	Zinc/Manganese/Lead and compounds (land)
7	**	**	**	**	**	**	**	**	-153,630	Nickel/Lead and compounds (air)
8	10	676,550	0	676,550	11	498,120	0	498,120	-149,925	Lead and compounds (air)
9	3	0	0	0	3	0	0	0	-136,000	Zinc and compounds (transfers of metals)
10	1	1,250	4,720	5,970	**	**	**	**	-125,048	Zinc and compounds (transfers of metals)
11	4	0	209,462	209,462	3	0	91,920	91,920	-117,861	Chromium/Zinc/Nickel and compounds (transfers of metals)
12	4	320	0	320	4	320	0	320	-98,650	Chromium and compounds (transfers of metals)
13	5	53,530	383,900	437,430	5	5,942	362,000	367,942	-84,928	Zinc and compounds (water)
14	7	145	47,187	47,332	7	13	7,163	7,176	-81,794	Aluminum (transfers of metals)
15	1	0	30,560	30,560	1	0	7,056	7,056	-73,944	Zinc and compounds (transfers of metals)
16	1	0	4,000	4,000	1	0	0	0	-72,300	Chromium and compounds (transfers of metals)
17	2	200	52,700	52,900	2	200	15,273	15,473	-71,821	Manganese and compounds (transfers of metals)
18	2	287	110,477	110,764	**	**	**	**	-68,853	Lead and compounds (transfers of metals)
19	1	0	38,000	38,000	1	0	34,000	34,000	-65,700	Manganese and compounds (transfers of metals)
20	3	323	191,540	191,863	3	347	55,258	55,605	-64,898	Manganese and compounds (transfers of metals)
21	1	0	30,601	30,601	1	0	20,141	20,141	-57,491	Chromium and compounds (transfers of metals)
22	8	118,880	29,885	148,765	8	107,762	20,633	128,395	-57,166	Zinc/Selenium and compounds (transfers of metals)
23	1	140	13,600	13,740	1	140	13,600	13,740	-55,740	Manganese and compounds (transfers of metals)
24	1	1,433	60,877	62,310	1	688	21,036	21,724	-49,358	Manganese and compounds (transfers of metals)
25	5	400	154,560	154,960	5	300	64,802	65,102	-47,821	Nickel and compounds (transfers of metals)
26	8	37,720	29,740	67,460	8	19,660	9,900	29,560	-44,720	Zinc and compounds (transfers of metals)
27	1	500	0	500	4	6,818	2,861	9,679	-42,321	Copper/Zinc and compounds (air)
28	4	104,466	0	104,466	4	93,777	0	93,777	-36,538	Nickel/Copper and compounds (air)
29	2	0	7,362	7,362	2	0	6,778	6,778	-33,293	Zinc and compounds (transfers of metals)
30	2	0	36,812	36,812	2	0	8,794	8,794	-30,754	Zinc and compounds (transfers of metals)
31	**	**	**	**	**	**	**	**	-30,090	Copper and compounds (air)
32	3	300	22,265	22,565	3	300	14,461	14,761	-25,072	Lead and compounds (transfers of metals)
33	4	1,990	8,710	10,700	4	1,190	1,540	2,730	-20,976	Nickel and compounds (transfers of metals)
34	3	300	0	300	3	0	0	0	-18,918	Copper and compounds (transfers of metals)
35	1	0	45,300	45,300	1	0	39,900	39,900	-18,249	Zinc and compounds (transfers of metals)
36	2	36,430	0	36,430	**	**	**	**	-17,310	Nickel and compounds (water)
37	3	542	54,850	55,392	3	448	21,511	21,959	-15,219	Lead and compounds (transfers of metals)
38	2	65,720	0	65,720	2	64,495	0	64,495	-14,718	Manganese and compounds (land)
39	2	595	2,741	3,336	2	260	718	978	-14,687	Zinc and compounds (transfers of metals)
40	1	142	17,150	17,292	**	**	**	**	-14,120	Zinc and compounds (transfers of metals)
41	**	**	**	**	**	**	**	**	-13,498	Chromium and compounds (transfers of metals)
42	1	133	6,773	6,906	1	144	12,375	12,519	-12,731	Copper and compounds (transfers of metals)
43	4	4,062	5,674	9,736	4	491	6,007	6,498	-12,693	Chromium and compounds (transfers of metals)
44	1	0	0	0	1	0	0	0	-10,500	Chromium and compounds (transfers of metals)
45	4	3,486	5,837	9,323	4	5,836	1,301	7,137	-9,338	Manganese and compounds (transfers of metals)
46	1	0	12,000	12,000	1	0	0	0	-9,300	Manganese and compounds (transfers of metals)
47	1	32	4,626	4,658	**	**	**	**	-9,293	Mercury and compounds (transfers of metals)
48	1	0	1,400	1,400	1	0	2,100	2,100	-8,837	Zinc and compounds (transfers of metals)
49	3	100	15,300	15,400	3	100	3,200	3,300	-8,482	Chromium and compounds (transfers of metals)
50	2	1	4,474	4,475	3	32	7,530	7,562	-7,883	Copper and compounds (transfers of metals)
	143	**2,721,340**	**6,216,358**	**8,937,698**	**141**	**2,373,806**	**7,229,750**	**9,603,556**	**-6,754,628**	

* Chemicals accounting for more than 70% of decrease in total releases and transfers of metals from facility.
** Indicates facility did not report any matched metals that year.

Table 5–56

M 1997

The 50 NPRI Facilities with Largest Increase in Total Releases and Transfers of Metals and Their Compounds, 1995–1997

Rank	Facility	City, Province	SIC Codes Canada	SIC Codes US	1995 Number of Forms	1995 Total Releases (kg)	1995 Total Transfers (kg)	1995 Total Releases and Transfers (kg)
1	Dofasco Inc.	Hamilton, ON	29	33	6	16,617	1,931,258	1,947,875
2	Lake Erie Steel Company Ltd., Stelco Inc.	Nanticoke, ON	29	33	6	446,525	0	446,525
3	Gerdau MRM Steel Inc., Grupo Gerdau	Selkirk, MB	29	33	3	762,000	0	762,000
4	Sorevco, Société en commandite, Ispat Sidbec	Coteau-du-Lac, QC	29	33	1	0	0	0
5	Ispat Sidbec Inc. Aciérie, Ispat Mexicana	Contrecoeur, QC	29	33	5	1,510,387	0	1,510,387
6	Hudson Bay Mining and Smelting Co., Metallurgical Complex	Flin Flon, MB	29	33	5	161,217	0	161,217
7	Metalex Products Ltd.	Richmond, BC	29	33	4	10,250	0	10,250
8	Noranda Mining and Exploration Inc., Brunswick Smelting Div.	Belledune, NB	29	33	5	18,478	0	18,478
9	Stelco McMaster Ltée, Stelco Inc.	Contrecoeur, QC	29	33	5	10,030	1,864,400	1,874,430
10	Inco Limited, Copper Cliff Smelter Complex	Copper Cliff, ON	29	33	6	621,640	0	621,640
11	Gerdau Courtice Steel Inc., Gerdau Canada	Cambridge, ON	29	33	5	11,928	342,150	354,078
12	Zalev Brothers Limited	Windsor, ON	29	33	7	453	849,840	850,293
13	Kronos Canada, Inc.	Varennes, QC	37	28	2	40,700	633,000	673,700
14	Sammi Atlas Inc., Aciers inoxydables Atlas	Tracy, QC	29	33	4	27,640	362,590	390,230
15	AltaSteel Ltd., Stelco Inc.	Edmonton, AB	29	33	5	624,322	173,130	797,452
16	Falconbridge Ltd., Kidd Metallurgical Div.	Cochrane, ON	29	33	*	*	*	*
17	Dana Canada Inc., Spicer Driveshaft Division	Thorold, ON	30	37	2	0	1,388	1,388
18	Cartons St-Laurent Inc.	LaTuque, QC	27	26	*	*	*	*
19	Ivaco Rolling Mills	L'Orignal, ON	29	33	5	16,256	1,532,610	1,548,866
20	Daishowa-Marubeni International, Peace River Pulp Div.	Peace River, AB	27	26	*	*	*	*
21	Philip Services Corp., Philip Enterprises Inc.	Guelph, ON	29	33	4	800	44,300	45,100
22	Tonolli Canada Limited	Mississauga, ON	29	33	1	2,357	226,980	229,337
23	Weyerhaeuser Canada Limited, Kamloops Pulp Division	Kamloops, BC	27	26	*	*	*	*
24	Meridian Operations Inc., Richmond Division	Long-Sault, ON	55	37	*	*	*	*
25	Norsk Hydro Canada Inc., Hydro Magnesium Canada	Bécancour, QC	29	33	2	0	0	0
26	F.F. Soucy Inc., Brant Allen Ind.	Rivière-du-Loup, QC	27	26	2	14,300	33,000	47,300
27	National-Standard Company of Canada, Ltd.	Guelph, ON	30	33	2	0	2,813	2,813
28	Canada Metal Company Limited, Canada Metal Investments Ltd.	Toronto, ON	29	33	2	200	0	200
29	Imperial Oil, IOL Sarnia Refinery	Sarnia, ON	36	29	4	42,330	0	42,330
30	Spectra Anodizing Ltd.	Woodbridge, ON	39	39	1	0	0	0
31	Marswell Metal Industries Limited	Burlington, ON	30	34	1	0	1	1
32	Protec Finishing Ltd.	Mississauga, ON	30	34	1	0	32,920	32,920
33	Metal Koting, Continuous Colour Coat Ltd.	Rexdale, ON	30	34	2	337	35,970	36,307
34	Stelwire Ltd., Parkdale Works	Hamilton, ON	30	33	3	668	73,717	74,385
35	North American Lumber, Roblin Forest Products	Roblin, MB	25	24	*	*	*	*
36	Michelin North America (Canada) Inc.	Kitchener, ON	15	30	2	50	2,286	2,336
37	Dominion Colour Corp., Kikuchi Color & Chemicals Corp.	Ajax, ON	37	28	3	0	186,100	186,100
38	A.G. Simpson Co. Ltd.	Cambridge, ON	30	34	4	200	395	595
39	Coatings 85 Ltd.	Mississauga, ON	30	34	1	0	76,500	76,500
40	Acadian Platers Co. Ltd.	Rexdale, ON	30	34	1	0	19,640	19,640
41	Slater Steels, Hamilton Specialty Bar Division	Hamilton, ON	29	33	5	10,004	1,445,515	1,455,519
42	Menasco Aerospace, Coltec Industries Inc.	Oakville, ON	32	37	*	*	*	*
43	Fonderies canadiennes d'Acier Ltée, Atchison Casting Corp.	Montréal, QC	31	35	3	295,200	210	295,410
44	Ispat Sidbec Inc., Sidbec-Feruni, Ispat Mexicana	Contrecoeur, QC	29	33	5	371,800	0	371,800
45	Produits Shell Canada Ltée., Raffinerie de Montréal-est	Montréal-est, QC	36	29	2	20	0	20
46	Columbia/MBF, Glynwed Steels & Engineering	Mississauga, ON	30	34	2	0	15,722	15,722
47	Cobalt Refinery Company, Sherritt International Corp.	Fort Saskatchewan, AB	29	33	*	*	*	*
48	Métallurgie Noranda, Affinerie CCR, Noranda Inc.	Montréal-est, QC	29	33	9	4,320	40,835	45,155
49	NRI Industries Inc., Cawthra Plant	Toronto, ON	15	30	*	*	*	*
50	Les Produits forestiers Donohue Inc, usine de pâte kraft	St-Félicien, QC	27	26	2	177,200	0	177,200
	Total				**140**	**5,198,229**	**9,927,270**	**15,125,499**

➤ Does not include ammonia, isopropyl alcohol, non-air emissions of hydrochloric acid and sulfuric acid, and chemicals not reported to TRI.
* Indicates facility did not report any matched metals that year.

	1996				1997				Change 95–97	
Rank	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Total Releases and Transfers (kg)	Major Chemicals Reported with Increases (Primary Media/Transfers with Increases)**
1	6	15,909	2,540,853	2,556,762	6	22,931	8,168,440	8,191,371	6,243,496	Zinc and compounds (transfers of metals)
2	7	481,240	3,814,700	4,295,940	6	462,724	1,480,000	1,942,724	1,496,199	Zinc and compounds (transfers of metals)
3	4	2,031,067	0	2,031,067	5	1,752,614	0	1,752,614	990,614	Zinc and compounds (land)
4	1	0	0	0	1	0	840,570	840,570	840,570	Zinc and compounds (transfers of metals)
5	5	2,322,985	0	2,322,985	5	2,349,790	0	2,349,790	839,403	Zinc and compounds (land)
6	5	416,922	0	416,922	5	710,354	0	710,354	549,137	Zinc/Lead and compounds (air)
7	5	24,229	257,210	281,439	5	371	484,370	484,741	474,491	Lead and compounds (transfers of metals)
8	5	21,634	0	21,634	5	18,248	467,400	485,648	467,170	Lead and compounds (transfers of metals)
9	5	17,410	3,054,700	3,072,110	5	17,750	2,298,300	2,316,050	441,620	Zinc/Manganese and compounds (transfers of metals)
10	6	427,818	0	427,818	6	1,014,986	0	1,014,986	393,346	Chromium and compounds (land)
11	5	11,754	764,570	776,324	5	10,608	621,538	632,146	278,068	Zinc and compounds (transfers of metals)
12	7	456	877,606	878,062	8	429	1,104,869	1,105,298	255,005	Zinc/Copper and compounds (transfers of metals)
13	2	45,350	836,000	881,350	2	32,500	855,000	887,500	213,800	Manganese and compounds (transfers of metals)
14	4	1,820	474,430	476,250	4	1,420	584,310	585,730	195,500	Chromium/Nickel and compounds (transfers of metals)
15	5	608,341	65,858	674,199	6	729,605	241,888	971,493	174,041	Copper and compounds (transfers of metals)
16	*	*	*	*	9	169,168	0	169,168	169,168	Lead/Copper and compounds (air)
17	2	0	121,540	121,540	2	0	128,300	128,300	126,912	Manganese and compounds (transfers of metals)
18	2	33,811	80,834	114,645	2	38,366	71,666	110,032	110,032	Manganese and compounds (transfers of metals, water)
19	7	11,020	1,559,360	1,570,380	7	9,447	1,647,700	1,657,147	108,281	Manganese/Lead and compounds, Aluminum (transfers of metals)
20	*	*	*	*	2	103,137	0	103,137	103,137	Zinc and compounds (land)
21	4	800	44,300	45,100	4	800	142,900	143,700	98,600	Nickel and compounds (transfers of metals)
22	1	2,357	376,450	378,807	1	2,355	311,202	313,557	84,220	Lead and compounds (transfers of metals)
23	1	31,300	38,600	69,900	1	28,500	52,900	81,400	81,400	Manganese and compounds (transfers of metals, water)
24	*	*	*	*	3	44,898	36,400	81,298	81,298	Aluminum, Copper and compounds (transfers of metals)
25	2	0	37,000	37,000	2	40,000	32,000	72,000	72,000	Manganese and compounds (land, transfers of metals)
26	2	10,600	76,000	86,600	2	9,500	107,600	117,100	69,800	Aluminum (transfers of metals)
27	2	0	111,156	111,156	2	0	72,062	72,062	69,249	Lead and compounds (transfers of metals)
28	2	200	0	200	2	800	65,600	66,400	66,200	Lead and compounds (transfers of metals)
29	4	79,116	43	79,159	4	92,846	4	92,850	50,520	Vanadium (air)
30	1	0	0	0	1	0	50,000	50,000	50,000	Aluminum (transfers of metals)
31	1	0	1	1	1	0	50,000	50,000	49,999	Lead and compounds (transfers of metals)
32	1	0	58,501	58,501	1	0	78,503	78,503	45,583	Zinc and compounds (transfers of metals)
33	2	301	41,700	42,001	2	301	80,087	80,388	44,081	Zinc and compounds (transfers of metals)
34	3	1,178	113,981	115,159	3	927	115,551	116,478	42,093	Zinc and compounds (transfers of metals)
35	*	*	*	*	3	0	41,000	41,000	41,000	Chromium/Arsenic and compounds (transfers of metals)
36	2	120	20,800	20,920	1	110	41,910	42,020	39,684	Zinc and compounds (transfers of metals)
37	3	0	229,400	229,400	3	0	224,300	224,300	38,200	Lead and compounds (transfers of metals)
38	5	200	1,402	1,602	5	300	37,618	37,918	37,323	Zinc and compounds (transfers of metals)
39	1	0	74,800	74,800	1	0	112,972	112,972	36,472	Zinc and compounds (transfers of metals)
40	1	0	29,001	29,001	1	0	55,673	55,673	36,033	Zinc and compounds (transfers of metals)
41	8	10,328	1,257,736	1,268,064	8	10,321	1,481,088	1,491,409	35,890	Zinc and compounds (transfers of metals)
42	*	*	*	*	1	21,505	11,218	32,723	32,723	Chromium and compounds (air, transfers of metals)
43	3	256,000	550	256,550	3	0	327,898	327,898	32,488	Chromium and compounds (transfers of metals)
44	5	457,180	0	457,180	5	402,950	0	402,950	31,150	Zinc/Lead and compounds (land)
45	2	0	0	0	4	7,950	23,100	31,050	31,030	Nickel and compounds (transfers of metals)
46	2	0	27,305	27,305	2	0	46,706	46,706	30,984	Zinc and compounds (transfers of metals)
47	4	11,260	31,830	43,090	4	2,094	26,865	28,959	28,959	Nickel and compounds (transfers of metals)
48	9	5,440	75,261	80,701	9	4,357	68,234	72,591	27,436	Arsenic/Selenium and compounds (transfers of metals)
49	1	200	9,500	9,700	1	13,000	12,800	25,800	25,800	Zinc and compounds (land, transfers of metals)
50	2	214,600	0	214,600	2	202,200	0	202,200	25,000	Manganese and compounds (water)
	157	**7,552,946**	**17,102,978**	**24,655,924**	**178**	**8,330,162**	**22,700,542**	**31,030,704**	**15,905,205**	

** Chemicals accounting for more than 70% of increase in total releases and transfers of metals from facility.

Table 5–57

M 1997

The 50 TRI Facilities with Largest Decrease in Total Releases and Transfers of Metals and Their Compounds, 1995–1997

Rank	Facility	City, State	US SIC Code	1995 Number of Forms	1995 Total Releases (kg)	1995 Total Transfers (kg)	1995 Total Releases and Transfers (kg)
1	ASARCO Inc., Ray Complex/Hayden Smelter	Hayden, AZ	33	8	7,854,444	2,010,436	9,864,880
2	Chino Mines Co., Phelps Dodge Corp.	Hurley, NM	33	2	3,169,958	0	3,169,958
3	National Steel Corp., Great Lakes Dlv.	Ecorse, MI	33	3	51,633	6,103,309	6,154,942
4	Phelps Dodge Hidalgo Inc., Phelps Dodge Corp.	Playas, NM	33	10	14,457,959	2	14,457,961
5	Zinc Corp. of America, Horsehead Ind. Inc.	Monaca, PA	33	10	265,389	15,729,385	15,994,774
6	Electralloy Corp., G. 0. Carlson Inc.	Oil City, PA	33	4	68,933	1,268,007	1,336,940
7	American Steel Foundries, Amsted Ind. Inc.	Alliance, OH	33	4	37,386	1,167,570	1,204,956
8	Birmingham Southeast L.L.C., Birmingham Steel Corp.	Flowood, MS	33	5	1,198	840,229	841,427
9	Avesta Sheffield Plate Inc., Avesta Sheffield N.A.	New Castle, IN	33	3	0	851,385	851,385
10	Olin Brass Indianapolis, Olin Corp.	Indianapolis, IN	33	7	10,373	717,081	727,454
11	Northwestern Steel & Wire Co.	Sterling, IL	33	4	7,126,231	311,564	7,437,795
12	GM Powertrain Defiance, General Motors Corp.	Defiance, OH	33	6	6,229,325	243	6,229,568
13	Chemetals Inc., Comilog	New Johnsonville, TN	28	2	2,108,027	0	2,108,027
14	Cerro Wire & Cable Co. Inc.	Hartselle, AL	33	3	21	3,415,766	3,415,787
15	General Motors Corp., GMPTG Saginaw Metal Casting	Saginaw, MI	33	6	1,125,076	437	1,125,513
16	Slater Steels, Ft. Wayne Spec. Alloys Div.	Fort Wayne, IN	33	4	5,283	571,570	576,853
17	LTV Steel Co. Inc.	Cleveland, OH	33	5	1,151,427	79,943	1,231,370
18	Honda of America Mfg. Inc., American Honda Motor Co. Inc.	Anna, OH	37	5	176	495,806	495,982
19	Keystone Steel & Wire Co., Keystone Consolidated Ind. Inc.	Peoria, IL	33	3	85,614	2,927,800	3,013,414
20	Nucor Steel - Texas, Nucor Corp.	Jewett, TX	33	7	10,171	501,185	511,356
21	Essex Group Inc.	Lithonia, GA	33	3	3	403,260	403,263
22	Newport Steel Corp., NS Group Inc.	Wilder, KY	33	8	4,266	1,384,942	1,389,208
23	Imco Recycling of Ohio Inc., Imco Recycling Inc.	Uhrichsville, OH	33	6	15,309	762,612	777,921
24	North American Royalties Inc., Wheland Fndy. Div.	Chattanooga, TN	33	6	9,049	757,761	766,810
25	Franklin Bronze & Alloy Co.	Franklin, PA	33	3	226	636,735	636,961
26	Rhone-Poulenc Basic Chemicals, Rhone-Poulenc Inc.	Martinez, CA	28	1	54	296,912	296,966
27	Wheeling-Pittsburgh Steel Corp., Wheeling-Pittsburgh Corp.	Mingo Junction, OH	33	3	31,111	304,971	336,082
28	Allegheny Ludlum Corp., Allegheny Teledyne Inc.	Brackenridge, PA	33	7	37,167	354,331	391,498
29	U.S. Pipe & Fndy. Co., Walter Ind. Inc.	Union City, CA	33	3	85,732	411,972	497,704
30	ABC Rail Prods. Corp.	Calera, AL	33	2	7,367	855,588	862,955
31	GNB Techs. Inc., Pacific Dunlop GNB Corp.	Vernon, CA	33	3	1,411	383,871	385,282
32	S.D. Warren Co.	Westbrook, ME	26	2	9,801	245,250	255,051
33	Cox Creek Refining Co.	Baltimore, MD	33	3	230	240,363	240,593
34	ASARCO Inc.	El Paso, TX	33	6	84,925	176,733	261,658
35	ASARCO Inc.	East Helena, MT	33	9	17,914,439	179	17,914,618
36	Neenah Fndy. Co., Neenah Corp.	Neenah, WI	33	3	566	632,316	632,882
37	Elkem Metals Co.	Marietta, OH	33	5	5,379,659	23,129	5,402,788
38	Wheeling-Pittsburgh Steel Corp., Wheeling-Pittsburgh Corp.	Martins Ferry, OH	33	2	10,681	235,705	246,386
39	Gulf States Steel Inc., GSS Holding Corp.	Gadsden, AL	33	6	488,078	3,286	491,364
40	Johnstown Wire Techs. Inc.	Johnstown, PA	33	4	2,067	247,732	249,799
41	FMC Corp.	Pocatello, ID	28	9	2,371,621	725	2,372,346
42	Intermet Corp., Archer Creek Plant	Lynchburg, VA	33	5	219,214	2	219,216
43	Corhart Refractories Corp.	Buckhannon, WV	32	1	14,829	249,327	264,156
44	General Battery Corp., Reading Smelter Div., Exide Corp.	Reading, PA	33	6	2,320	889,729	892,049
45	Magotteaux Corp., Magotteaux Intl.	Pulaski, TN	33	7	41,177	224,450	265,627
46	Lukens Steel Co., Lukens Inc.	Coatesville, PA	33	6	203,887	62,926	266,813
47	Georgia-Pacific Paper Ops., Georgia-Pacific Corp.	Crossett, AR	26	1	276,746	0	276,746
48	Anzon Inc., Cookson America Inc.	Philadelphia, PA	28	4	226	168,461	168,687
49	Philips Display Components Co., North American Philips Corp.	Ottawa, OH	36	3	1,504	202,517	204,021
50	Oregon Steel Mills Inc.	Portland, OR	Mult.	7	7,778	1,776,756	1,784,534
	Total			**235**	**70,980,067**	**48,924,259**	**119,904,326**

➤ Does not include ammonia, isopropyl alcohol, non-air emissions of hydrochloric acid and sulfuric acid, and chemicals not reported to NPRI.

	1996				1997				Change 95–97	
Rank	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Total Releases and Transfers (kg)	Major Chemicals Reported with Decreases (Primary Media/Transfers with Decreases)*
1	8	4,618,520	3,033,529	7,652,049	8	318,428	560,926	879,354	-8,985,526	Copper/Zinc and compounds (land)
2	1	3,476,043	0	3,476,043	**	**	**	**	-3,169,958	Copper and compounds (land)
3	4	54,671	6,346,480	6,401,151	5	56,800	3,497,819	3,554,619	-2,600,323	Zinc and compounds (transfers of metals)
4	10	12,606,649	2	12,606,651	10	12,186,098	113	12,186,211	-2,271,750	Zinc and compounds (land)
5	9	220,257	10,473,482	10,693,739	9	225,113	13,855,648	14,080,761	-1,914,013	Lead and compounds (transfers of metals)
6	4	4,551	127,741	132,292	4	7,500	111,984	119,484	-1,217,456	Chromium and compounds (transfers of metals)
7	5	3,027	387,736	390,763	**	**	**	**	-1,204,956	Chromium and compounds (transfers of metals)
8	6	3,815	0	3,815	5	1,886	0	1,886	-839,541	Lead/Manganese and compounds (transfers of metals)
9	3	0	48,092	48,092	3	0	51,575	51,575	-799,810	Chromium and compounds (transfers of metals)
10	7	8,463	1,771	10,234	6	8,718	1,209	9,927	-717,527	Copper/Chromium and compounds (transfers of metals)
11	4	6,545,333	65,170	6,610,503	4	6,772,540	30,658	6,803,198	-634,597	Zinc and compounds (land)
12	6	6,042,825	410	6,043,235	6	5,599,833	505	5,600,338	-629,230	Zinc and compounds (land)
13	1	1,685,692	0	1,685,692	1	1,539,949	0	1,539,949	-568,078	Manganese and compounds (land)
14	3	126	3,439,996	3,440,122	3	124	2,863,172	2,863,296	-552,491	Copper and compounds (transfers of metals)
15	6	1,019,211	426	1,019,637	6	576,725	1,115	577,840	-547,673	Zinc and compounds (land)
16	4	4,875	21,252	26,127	4	10,776	30,670	41,446	-535,407	Chromium and compounds (transfers of metals)
17	5	360,980	558,890	919,870	5	294,568	421,815	716,383	-514,987	Manganese and compounds (land)
18	4	335	141,328	141,663	5	444	4,085	4,529	-491,453	Zinc and compounds (transfers of metals)
19	3	763,440	2,351,083	3,114,523	5	35,600	2,498,413	2,534,013	-479,401	Zinc and compounds (transfers of metals)
20	7	16,336	196,306	212,642	7	16,466	84,801	101,267	-410,089	Zinc and compounds (transfers of metals)
21	3	10	96	106	3	10	99	109	-403,154	Copper and compounds (transfers of metals)
22	7	4,987	852,880	857,867	7	5,648	1,022,314	1,027,962	-361,246	Zinc and compounds (transfers of metals)
23	6	8,245	414,318	422,563	7	8,244	431,969	440,213	-337,708	Aluminum (transfers of metals)
24	6	6,317	514,648	520,965	6	5,901	446,282	452,183	-314,627	Zinc/Manganese and compounds (transfers of metals)
25	2	226	389,116	389,342	2	226	331,972	332,198	-304,763	Zinc/Copper and compounds (transfers of metals)
26	1	14	3,073	3,087	1	21	1,669	1,690	-295,276	Zinc and compounds (transfers of metals)
27	3	2,889	212,893	215,782	3	4,659	46,440	51,099	-284,983	Manganese and compounds (transfers of metals)
28	7	26,735	178,482	205,217	8	28,231	86,260	114,491	-277,007	Chromium/Nickel and compounds (transfers of metals)
29	3	88,241	199,681	287,922	3	54,965	171,409	226,374	-271,330	Zinc and compounds (transfers of metals)
30	2	5,144	576,478	581,622	2	5,336	600,011	605,347	-257,608	Manganese and compounds (transfers of metals)
31	3	1,411	411,262	412,673	3	1,582	138,272	139,854	-245,428	Lead and compounds (transfers of metals)
32	2	3,950	12,289	16,239	2	3,478	7,058	10,536	-244,515	Zinc and compounds (transfers of metals)
33	**	**	**	**	**	**	**	**	-240,593	Copper/Nickel and compounds (transfers of metals)
34	6	93,033	85,050	178,083	6	22,241	11,881	34,122	-227,536	Copper and compounds (air, transfers of metals), Zinc and compounds (transfers of metals)
35	9	20,160,568	15	20,160,583	9	17,143,072	547,191	17,690,263	-224,355	Zinc and compounds (land)
36	3	566	645,467	646,033	3	566	410,780	411,346	-221,536	Manganese and compounds (transfers of metals)
37	5	5,308,851	43,538	5,352,389	5	5,132,439	56,236	5,188,675	-214,113	Manganese and compounds (land, air, water)
38	2	7,875	231,238	239,113	1	113	34,590	34,703	-211,683	Zinc and compounds (transfers of metals)
39	6	337,532	6,167	343,699	6	277,605	5,384	282,989	-208,375	Zinc/Lead and compounds (land)
40	4	1,620	67,007	68,627	4	1,300	49,559	50,859	-198,940	Zinc and compounds (transfers of metals)
41	9	2,588,613	795	2,589,408	9	2,172,640	790	2,173,430	-198,916	Zinc and compounds (land)
42	3	27,005	2,022	29,027	3	20,420	572	20,992	-198,224	Zinc/Manganese and compounds (land)
43	1	13,349	61,061	74,410	1	7,314	66,516	73,830	-190,326	Chromium and compounds (transfers of metals)
44	6	2,261	1,220,971	1,223,232	6	1,347	703,568	704,915	-187,134	Lead/Zinc and compounds (transfers of metals)
45	5	5,394	85,232	90,626	5	6,193	80,866	87,059	-178,568	Aluminum (transfers of metals)
46	6	150,202	28,394	178,596	6	81,153	15,907	97,060	-169,753	Chromium/Nickel and compounds (land)
47	1	236,125	0	236,125	2	108,033	0	108,033	-168,713	Zinc and compounds (air, land)
48	2	175	84,173	84,348	**	**	**	**	-168,687	Zinc and compounds (transfers of metals)
49	3	642	30,660	31,302	3	121	35,374	35,495	-168,526	Lead and compounds (transfers of metals)
50	6	3,570	1,932,099	1,935,669	6	2,784	1,620,869	1,623,653	-160,881	Zinc and compounds, Aluminum (transfers of metals)
	222	**66,520,699**	**35,482,799**	**102,003,498**	**218**	**52,747,210**	**30,938,346**	**83,685,556**	**-36,218,770**	

* Chemicals accounting for more than 70% of decrease in total releases and transfers of metals from the facility.
** Indicates facility did not report any matched metals that year.

Table 5–58

M 1997

The 50 TRI Facilities with Largest Increase in Total Releases and Transfers of Metals and Their Compounds, 1995–1997

Rank	Facility	City, State	US SIC Code	1995 Number of Forms	1995 Total Releases (kg)	1995 Total Transfers (kg)	1995 Total Releases and Transfers (kg)
1	Kennecott Utah Copper, Kennecott Holdings Corp.	Magna, UT	33	8	2,674,512	170,044	2,844,556
2	Nucor-Yamato Steel Co., Nucor Corp.	Blytheville, AR	33	6	19,837	37,750	57,587
3	Steel Dynamics Inc.	Butler, IN	33	1	956	5,161	6,117
4	U.S. Steel, USS Gary Works, USX Corp.	Gary, IN	33	9	2,954,636	50,085	3,004,721
5	DuPont	Pass Christian, MS	28	*	*	*	*
6	Nucor Steel	Plymouth, UT	33	6	16,235	164,581	180,816
7	American Chrome & Chemicals, Harrisons & Crosfield American	Corpus Christi, TX	28	1	4,265,578	40,867	4,306,445
8	DuPont	New Johnsonville, TN	28	*	*	*	*
9	Nucor Steel Arkansas Plant, Nucor Corp.	Blytheville, AR	33	7	11,998	8	12,006
10	BHP Copper Metals Co., BHP Copper Co.	San Manuel, AZ	33	9	204,604	8,982	213,586
11	Timken Co., Faircrest Steel Plant	Canton, OH	33	7	5,445	22,879	28,324
12	Birmingham Southeast LLC, Birmingham Steel Corp.	Cartersville, GA	33	5	11,462	0	11,462
13	Birmingham Steel Corp., Kankakee Illinois Steel Div.	Bourbonnais, IL	33	5	2,252	0	2,252
14	Ameristeel Corp., Jacksonville Mill Div.	Baldwin, FL	33	6	8,663	0	8,663
15	USS Mon Valley Works, USX Corp.	Braddock, PA	33	4	6,860	1,018,552	1,025,412
16	ASARCO Inc., Glover Plant	Annapolis, MO	33	6	2,959,545	0	2,959,545
17	Bar Techs. Inc.	Johnstown, PA	33	*	*	*	*
18	Birmingham Steel Corp., Washington Steel Div.	Seattle, WA	33	5	1,806	0	1,806
19	American Microtrace Corp., Tetra Techs. Inc.	Fairbury, NE	28	5	37,507	18,141	55,648
20	Ameristeel Corp.	Charlotte, NC	33	6	20,076	0	20,076
21	Southwire Co.	Carrollton, GA	Mult.	17	41,430	349,765	391,195
22	Cyprus Miami Mining Corp., Cyprus Climax Metals Co.	Claypool, AZ	33	11	7,015,825	0	7,015,825
23	Austeel Lemont Co. Inc.	Lemont, IL	33	4	24,748	0	24,748
24	Timken Co., Harrison Steel Plant	Canton, OH	33	7	12,546	27,152	39,698
25	Roanoke Electric Steel Corp.	Roanoke, VA	33	7	1,865	0	1,865
26	Koppel Steel Corp., NS Group Inc.	Koppel, PA	33	3	665	140,624	141,289
27	Tuscaloosa Steel Corp., British Steel PLC	Tuscaloosa, AL	33	7	0	0	0
28	New Haven Fndy., Wesley Ind. Inc.	New Haven, MI	33	*	*	*	*
29	Acme Steel Co., Acme Metals Inc.	Riverdale, IL	Mult.	7	13,060	308,132	321,192
30	Millennium Inorganic Chemicals, Plant 1, Millennium Chemicals	Ashtabula, OH	28	*	*	*	*
31	Auburn Steel Co. Inc.	Auburn, NY	33	4	4,189	20	4,209
32	Cascade Steel Rolling Mills, Schnitzer Steel Inds.	McMinnville, OR	33	5	1,969	0	1,969
33	Rouge Steel Co., Rouge Ind. Inc.	Dearborn, MI	33	7	26,224	5,071,785	5,098,009
34	Springs Chemical, Grace Complex, Springs Ind. Inc.	Lancaster, SC	22	*	*	*	*
35	P4 Production L.L.C.	Soda Springs, ID	Mult.	*	*	*	*
36	Occidental Chemical Corp., Occidental Petroleum Corp.	Castle Hayne, NC	28	1	3,313,374	1,723	3,315,097
37	C & D Techs. Inc.	Conyers, GA	36	1	458	116	574
38	Ameristeel Corp., WTN Steel Mill	Jackson, TN	33	7	24,159	0	24,159
39	Nucor Steel, Nucor Corp.	Huger, SC	33	*	*	*	*
40	Nucor Steel, Nucor Corp.	Darlington, SC	33	9	37,934	18,948	56,882
41	Ipsco Steel Inc., Ipsco Ents. Inc.	Muscatine, IA	33	*	*	*	*
42	Prestolite Wire Corp.	Paragould, AR	Mult.	4	2	3,514	3,516
43	Mueller Co., Plant #4, Tyco Intl. (US) Inc.	Decatur, IL	33	2	19,091	684	19,775
44	Green River Steel Corp., AII Acquisition Corp.	Owensboro, KY	33	4	10,859	702	11,561
45	Algonquin Ind. Inc., Rea Magnet Wire Co.	Guilford, CT	33	1	0	5	5
46	ZTT Minerals Inc., Babcock Intl.	Caldwell, TX	33	3	462	87,646	88,108
47	Armco Inc.	Dover, OH	33	*	*	*	*
48	Glenbrook Nickel Co., Cominco American Inc.	Riddle, OR	33	1	547,715	0	547,715
49	Frog Switch & Mfg. Co.	Carlisle, PA	33	2	122	44,872	44,994
50	Lacks Ind. Inc., Airlane Plant, Lacks Ents. Inc.	Kentwood, MI	Mult.	3	237	43,751	43,988
	Total			**213**	**24,298,906**	**7,636,489**	**31,935,395**

➤ Does not include ammonia, isopropyl alcohol, non-air emissions of hydrochloric acid and sulfuric acid, and chemicals not reported to NPRI.
* Indicates facility did not report any matched metals that year.

	1996				1997				Change 95–97	
Rank	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Total Releases and Transfers (kg)	Major Chemicals Reported with Increases (Primary Media/Transfers with Increases)**
1	8	4,188,084	347,302	4,535,386	8	10,976,578	192,057	11,168,635	8,324,079	Copper/Lead/Arsenic and compounds (land)
2	6	13,061	2,097,304	2,110,365	7	7,224	7,543,045	7,550,269	7,492,682	Zinc and compounds (transfers of metals)
3	3	2,327	1,982,278	1,984,605	6	6,612	6,529,560	6,536,172	6,530,055	Zinc and compounds (transfers of metals)
4	11	2,730,167	45,386	2,775,553	11	6,598,692	294,304	6,892,996	3,888,275	Zinc and compounds (land)
5	*	*	*	*	6	3,809,524	0	3,809,524	3,809,524	Manganese and compounds (UIJ)
6	7	10,225	1,893,349	1,903,574	5	6,682	3,922,477	3,929,159	3,748,343	Zinc and compounds (transfers of metals)
7	1	5,126,893	27,279	5,154,172	1	6,578,095	1,434,288	8,012,383	3,705,938	Chromium and compounds (land, transfers of metals)
8	*	*	*	*	5	3,516,553	0	3,516,553	3,516,553	Manganese and compounds (UIJ)
9	7	10,147	10	10,157	7	10,983	2,957,542	2,968,525	2,956,519	Zinc and compounds (transfers of metals)
10	5	2,562,032	817	2,562,849	11	2,889,134	36	2,889,170	2,675,584	Copper and compounds (air)
11	7	5,722	703,221	708,943	6	5,379	2,486,113	2,491,492	2,463,168	Zinc and compounds (transfers of metals)
12	5	9,661	0	9,661	5	12,563	2,388,657	2,401,220	2,389,758	Zinc and compounds (transfers of metals)
13	4	3,498	0	3,498	5	4,231	2,384,320	2,388,551	2,386,299	Zinc and compounds (transfers of metals)
14	6	8,662	3,512,206	3,520,868	6	5,185	2,175,039	2,180,224	2,171,561	Zinc and compounds (transfers of metals)
15	5	5,703	3,260,882	3,266,585	5	2,014	3,090,268	3,092,282	2,066,870	Zinc and compounds (transfers of metals)
16	6	4,030,227	0	4,030,227	7	4,921,195	0	4,921,195	1,961,650	Zinc/Lead and compounds (land)
17	4	1,141	376,191	377,332	5	4,819	1,925,941	1,930,760	1,930,760	Zinc and compounds (transfers of metals)
18	5	16,395	0	16,395	5	10,815	1,758,623	1,769,438	1,767,632	Zinc and compounds (transfers of metals)
19	5	16,501	0	16,501	5	32,012	1,723,356	1,755,368	1,699,720	Lead and compounds (transfers of metals)
20	6	19,636	1,430,806	1,450,442	6	20,292	1,680,432	1,700,724	1,680,648	Zinc and compounds (transfers of metals)
21	27	16,537	1,180,378	1,196,915	29	14,538	1,917,884	1,932,422	1,541,227	Zinc and compounds (transfers of metals)
22	11	11,478,460	0	11,478,460	11	8,522,088	0	8,522,088	1,506,263	Copper and compounds (land)
23	5	668,314	161,166	829,480	5	778,886	562,110	1,340,996	1,316,248	Zinc and compounds (land, transfers of metals)
24	7	14,237	521,606	535,843	7	2,716	1,310,549	1,313,265	1,273,567	Zinc and compounds (transfers of metals)
25	7	1,833	203,898	205,731	7	2,559	1,233,769	1,236,328	1,234,463	Zinc and compounds (transfers of metals)
26	5	4,530	1,047,587	1,052,117	5	3,979	1,332,607	1,336,586	1,195,297	Zinc and compounds (transfers of metals)
27	12	5	60,237	60,242	12	1,478	1,192,598	1,194,076	1,194,076	Zinc and compounds (transfers of metals)
28	6	36,671	12,254	48,925	6	28,983	1,158,730	1,187,713	1,187,713	Manganese/Copper/Lead/Arsenic and compounds (transfers of metals)
29	7	10,547	390,943	401,490	6	17,324	1,487,000	1,504,324	1,183,132	Zinc and compounds (transfers of metals)
30	1	81,633	816,327	897,960	1	90,703	997,732	1,088,435	1,088,435	Manganese and compounds (transfers of metals)
31	4	2,222	296,171	298,393	4	2,277	1,066,656	1,068,933	1,064,724	Zinc and compounds (transfers of metals)
32	5	1,202	400,290	401,492	5	3,056	1,060,770	1,063,826	1,061,857	Zinc and compounds (transfers of metals)
33	7	25,985	5,933,560	5,959,545	7	35,467	6,086,892	6,122,359	1,024,350	Zinc/Manganese and compounds (transfers of metals)
34	*	*	*	*	7	969,901	0	969,901	969,901	Zinc and compounds (air)
35	*	*	*	*	4	941,741	0	941,741	941,741	Zinc and compounds (land)
36	1	4,084,751	4,535	4,089,286	1	4,129,841	6,349	4,136,190	821,093	Chromium and compounds (land)
37	1	535	431,778	432,313	1	793	810,519	811,312	810,738	Lead and compounds (transfers of metals)
38	7	12,638	1,601,937	1,614,575	7	22,906	780,190	803,096	778,937	Zinc and compounds (transfers of metals)
39	3	133	103,514	103,647	4	1,204	757,234	758,438	758,438	Zinc and compounds (transfers of metals)
40	7	51,913	1,645,527	1,697,440	6	49,265	753,082	802,347	745,465	Zinc and compounds (transfers of metals)
41	*	*	*	*	6	1,452	710,884	712,336	712,336	Zinc and compounds (transfers of metals)
42	4	115	226	341	4	117	680,693	680,810	677,294	Copper and compounds (transfers of metals)
43	2	20,965	4	20,969	4	33,579	640,804	674,383	654,608	Zinc/Copper and compounds (transfers of metals)
44	4	6,438	570	7,008	4	5,219	651,538	656,757	645,196	Manganese and compounds (transfers of metals)
45	1	0	2	2	1	0	642,234	642,234	642,229	Copper and compounds (transfers of metals)
46	3	1,915	68,950	70,865	3	1,916	722,948	724,864	636,756	Zinc/Lead and compounds (transfers of metals)
47	*	*	*	*	2	588	600,888	601,476	601,476	Zinc and compounds (transfers of metals)
48	1	922,590	0	922,590	1	1,097,645	0	1,097,645	549,930	Nickel and compounds (land)
49	2	124	760,620	760,744	2	96	583,890	583,986	538,992	Manganese and compounds (transfers of metals)
50	3	237	38,707	38,944	3	237	574,226	574,463	530,475	Copper/Nickel and compounds (transfers of metals)
	244	**36,204,612**	**31,357,818**	**67,562,430**	**287**	**56,179,136**	**70,808,834**	**126,987,970**	**95,052,575**	

** Chemicals accounting for more than 70% of increase in total releases and transfers of metals from the facility.

➤ UIJ = underground injection

5.3.5 Changes in Releases and Transfers by Industry

Releases and Transfers, 1995–1997

Among the three industries reporting the largest amounts, the primary metals industry reported substantial increases in releases and transfers from 1995 to 1997—up more than 25 percent—in both NPRI and TRI. (**Chapter 7** more closely reviews this sector, its activities, and its releases and transfers.) In contrast, both the chemical manufacturing and paper products sectors reported decreases. Canadian paper products facilities reported the largest percentage reduction in this group, with releases and transfers down one-third from 1995 to 1997. (*Taking Stock 1995* more closely examined the pulp and paper industry and its reporting and identified factors expected to contribute to such reductions.) All other industries in the matched data set, taken together, reported increases in NPRI and decreases in TRI from 1995 to 1997 (**Figure 5–29**).

Figure 5–29
M 1997
Percent Change in Total Releases and Transfers for Primary Industries, NPRI and TRI, 1995–1997

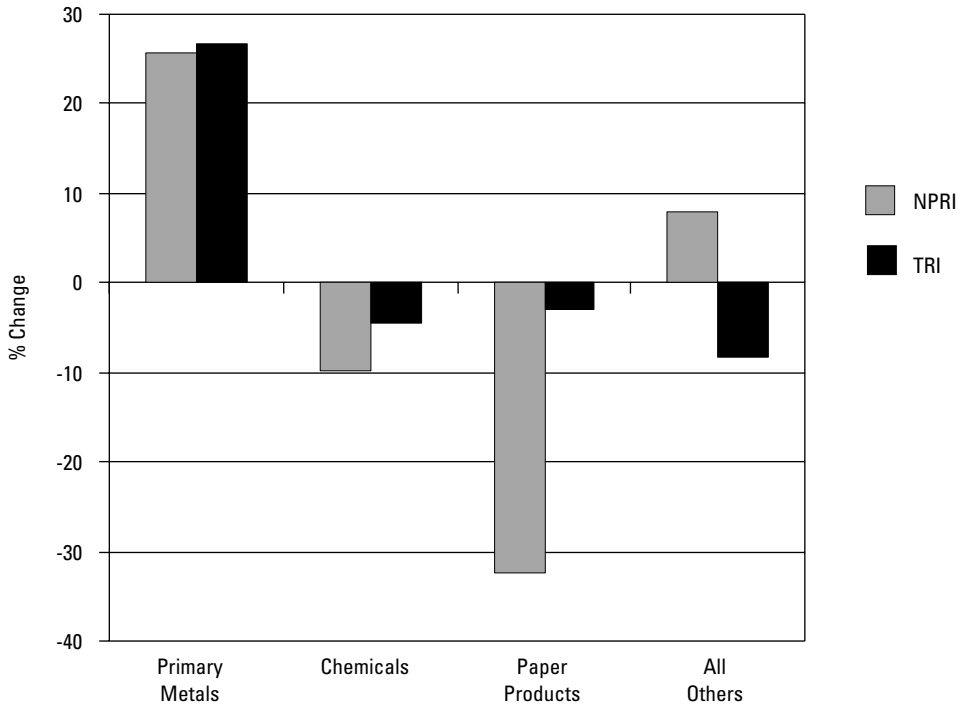


Table 5–59
M 1997

Change in NPRI Total Releases and Transfers by Industry (US SIC Code), 1995–1997

US SIC Code	Industry	Total Releases and Transfers 1995 (kg)	1996 (kg)	1997 (kg)	Change 1995–1997 kg	%
20	Food Products	439,137	739,665	1,256,231	817,094	186.1
22	Textile Mill Products	926,200	539,126	309,952	-616,248	-66.5
23	Apparel and Other Textile Products	860	740	280	-580	-67.4
24	Lumber and Wood Products	1,276,303	1,791,209	2,426,501	1,150,198	90.1
25	Furniture and Fixtures	494,600	484,581	926,665	432,065	87.4
26	Paper Products	28,238,014	19,867,741	19,117,069	-9,120,945	-32.3
27	Printing and Publishing	867,577	836,970	1,762,223	894,646	103.1
28	Chemicals	34,105,213	33,003,955	30,793,673	-3,311,540	-9.7
29	Petroleum and Coal Products	5,302,865	5,224,649	5,792,793	489,928	9.2
30	Rubber and Plastics Products	7,448,810	7,075,329	6,872,359	-576,451	-7.7
31	Leather Products	23,888	13,500	30,707	6,819	28.5
32	Stone/Clay/Glass Products	1,447,512	1,161,140	961,563	-485,949	-33.6
33	Primary Metals	37,337,705	40,930,129	46,944,803	9,607,098	25.7
34	Fabricated Metals Products	3,346,060	3,800,040	3,790,403	444,343	13.3
35	Industrial Machinery	589,699	593,504	717,656	127,957	21.7
36	Electronic/Electrical Equipment	634,095	456,474	356,239	-277,856	-43.8
37	Transportation Equipment	7,553,220	7,429,389	7,026,852	-526,368	-7.0
38	Measurement/Photographic Instruments	1,501	55	250	-1,251	-83.3
39	Misc. Manufacturing Industries	335,553	740,634	870,966	535,413	159.6
	Total	**130,368,812**	**124,688,830**	**129,957,185**	**-411,627**	**-0.3**

NPRI's primary metals industry (US SIC code 33) increased releases and transfers from 37.3 million kg in 1995 to 46.9 million kg in 1997. This increase of 9.6 million kg was more than eight times the second-largest increase, 1.2 million kg, reported by the lumber and wood products industry (US SIC code 24). The lumber and wood products industry's releases and transfers increased from 1.3 million kg to 2.4 million kg. Releases and transfers more than doubled in three NPRI industries: food products (US SIC code 20, 186 percent increase), miscellaneous manufacturing (US SIC code 39, 160 percent) and printing and publishing (US SIC code 27, 103 percent—see **Table 5–59**).

In NPRI, the paper products industry (US SIC code 26) reported 28.2 million kg in 1995 and 19.1 million kg in 1997, a reduction of 9.1 million kg. The chemical manufacturing industry (US SIC code 28) reported NPRI's second-largest reduction, from 34.1 million kg to 30.8 million kg, or 3.3 million kg. Three industries reported reducing releases and transfers by half or more: measurement/photographic instruments (US SIC code 38, 83 percent reduction), apparel (US SIC code 23, 67 percent) and textiles (US SIC code 22, 67 percent). These were among industries with the smallest NPRI totals in 1997.

Table 5–60
M 1997

Change in TRI Total Releases and Transfers by Industry (US SIC Code), 1995–1997

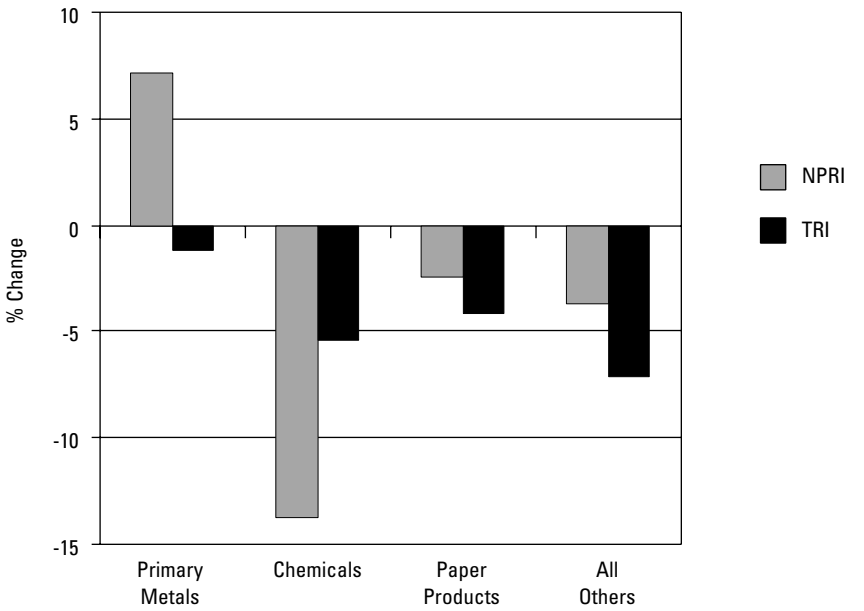
US SIC Code	Industry	Total Releases and Transfers 1995 (kg)	1996 (kg)	1997 (kg)	Change 1995–1997 kg	%
20	Food Products	20,626,121	19,430,614	22,080,648	1,454,527	7.1
21	Tobacco Products	469,578	635,028	663,597	194,019	41.3
22	Textile Mill Products	8,117,852	7,795,008	8,936,589	818,737	10.1
23	Apparel and Other Textile Products	483,148	429,648	319,302	-163,846	-33.9
24	Lumber and Wood Products	14,140,894	12,586,057	11,117,049	-3,023,845	-21.4
25	Furniture and Fixtures	18,340,376	15,855,608	11,015,678	-7,324,698	-39.9
26	Paper Products	123,669,957	118,757,016	120,069,699	-3,600,258	-2.9
27	Printing and Publishing	13,687,483	11,944,646	10,867,867	-2,819,616	-20.6
28	Chemicals	399,414,120	372,115,239	381,879,267	-17,534,853	-4.4
29	Petroleum and Coal Products	24,762,762	27,293,027	27,739,857	2,977,095	12.0
30	Rubber and Plastics Products	50,111,101	48,389,574	45,413,162	-4,697,939	-9.4
31	Leather Products	1,564,638	1,394,534	1,386,833	-177,805	-11.4
32	Stone/Clay/Glass Products	12,531,918	15,343,203	15,422,577	2,890,659	23.1
33	Primary Metals	251,596,049	276,762,519	318,726,448	67,130,399	26.7
34	Fabricated Metals Products	37,984,043	36,933,612	38,225,158	241,115	0.6
35	Industrial Machinery	11,007,654	9,912,474	9,676,568	-1,331,086	-12.1
36	Electronic/Electrical Equipment	19,462,835	17,987,020	18,343,162	-1,119,673	-5.8
37	Transportation Equipment	49,701,036	44,476,925	44,605,737	-5,095,299	-10.3
38	Measurement/Photographic Instruments	8,282,055	7,229,158	6,283,345	-1,998,710	-24.1
39	Misc. Manufacturing Industries	6,292,434	4,742,902	4,680,274	-1,612,160	-25.6
	Multiple Codes 20–39*	73,542,902	57,317,706	63,889,130	-9,653,772	-13.1
	Total	**1,145,788,956**	**1,107,331,518**	**1,161,341,947**	**15,552,991**	**1.4**

In TRI, the primary metals industry (US SIC code 33) released and transferred 251.6 million kg in 1995 and 318.7 million kg in 1997, an increase of 67.1 million kg. In comparison, the second-largest increase was 3.0 million kg, reported by the petroleum refining industry (US SIC code 29, up from 24.8 million kg to 27.7 million kg). The stone/clay/glass products industry also increased by 2.9 million kg (US SIC code 32, up from 12.5 million kg to 15.4 million kg). The largest percentage increase (41 percent) was reported by the tobacco products industry (US SIC code 21), although this industry reported small totals in comparison to other industries. The increase of 27 percent by the primary metals industry was the second highest in percentage terms (**Table 5–60**).

The chemical manufacturing industry (US SIC code 28) reported TRI's largest reduction, a 17.5-million-kg decrease from 399.4 million kg in 1995 to 381.9 million kg in 1997. The "multiple codes" group, which consists of forms from facilities reporting more than one SIC code to describe their operations, ranked second among TRI industries for reductions. This group reported 73.5 million kg in 1995 and 63.9 million kg in 1997, a decrease of 9.7 million kg. (Canadian facilities report only one SIC code, so NPRI does not contain a similar group.) As in NPRI, industries making the largest percentage reductions (furniture, US SIC code 25, a 40 percent decrease; apparel, US SIC code 23, 34 percent; and miscellaneous manufacturing, US SIC code 39, 26 percent) were not among the largest sources of releases and transfers.

Figure 5–30
M 1997

Projected Change in NPRI and TRI Total Releases and Transfers by Primary Industries, 1997–1999



Actual and Projected Changes, 1995–1999

The three industries with the largest releases and transfers projected improved performance through 1999, compared to their 1995–1997 record. The primary metals industry projected an increase in NPRI and a reduction (quite small in percentage terms) in TRI. The chemical manufacturing industry and the paper products industry expected to make continued reductions in both NPRI and TRI—of these, only the Canadian paper industry projected a smaller reduction (two percent) for 1995–1997 than the large reduction (32 percent) achieved in recent years. Taken together, all other industries also projected a decrease (**Figure 5–30**).

Table 5–61
M 1997

NPRI Actual and Projected Total Releases and Transfers, by Industry, 1995–1999

US SIC Code	Industry	Total Releases and Transfers: Actual 1995 (kg)	Actual 1997 (kg)	Projected 1999 (kg)	Actual Change 1995–1997 (kg)	Projected Change 1997–1999 (kg)	Actual % Change 1995–1997	Projected % Change 1997–1999
20	Food Products	439,137	1,256,231	1,021,704	817,094	-234,527	186.1	-18.7
22	Textile Mill Products	926,200	309,952	333,597	-616,248	23,645	-66.5	7.6
23	Apparel and Other Textile Products	860	280	1,400	-580	1,120	-67.4	400.0
24	Lumber and Wood Products	1,276,303	2,426,501	2,500,380	1,150,198	73,879	90.1	3.0
25	Furniture and Fixtures	494,600	926,665	1,021,069	432,065	94,404	87.4	10.2
26	Paper Products	28,238,014	19,117,069	18,661,413	-9,120,945	-455,656	-32.3	-2.4
27	Printing and Publishing	867,577	1,762,223	1,734,213	894,646	-28,010	103.1	-1.6
28	Chemicals	34,105,213	30,793,673	26,582,968	-3,311,540	-4,210,705	-9.7	-13.7
29	Petroleum and Coal Products	5,302,865	5,792,793	5,140,597	489,928	-652,196	9.2	-11.3
30	Rubber and Plastics Products	7,448,810	6,872,359	6,370,121	-576,451	-502,238	-7.7	-7.3
31	Leather Products	23,888	30,707	29,500	6,819	-1,207	28.5	-3.9
32	Stone/Clay/Glass Products	1,447,512	961,563	913,385	-485,949	-48,178	-33.6	-5.0
33	Primary Metals	37,337,705	46,944,803	50,267,007	9,607,098	3,322,204	25.7	7.1
34	Fabricated Metals Products	3,346,060	3,790,403	4,088,191	444,343	297,788	13.3	7.9
35	Industrial Machinery	589,699	717,656	647,655	127,957	-70,001	21.7	-9.8
36	Electronic/Electrical Equipment	634,095	356,239	478,533	-277,856	122,294	-43.8	34.3
37	Transportation Equipment	7,553,220	7,026,852	6,904,337	-526,368	-122,515	-7.0	-1.7
38	Measurement/Photographic Instruments	1,501	250	250	-1,251	0	-83.3	0.0
39	Misc. Manufacturing Industries	335,553	870,966	702,779	535,413	-168,187	159.6	-19.3
	Total	**130,368,812**	**129,957,185**	**127,399,099**	**-411,627**	**-2,558,086**	**-0.3**	**-2.0**

➤ 1995 data from 1995 reporting forms; 1997 and 1999 data from 1997 reporting forms.

Seven industries projected increasing the releases and transfers they report to NPRI through 1999. The primary metals industry (US SIC code 33), with the largest actual increase from 1995 to 1997, also projected the largest increase from 1997 to 1999. Primary metals producers projected an increase of 3.3 million kg for 1997–1999, in comparison to a 9.6-million-kg increase from 1995 to 1997. This would mean a seven percent projected increase compared to a 26 percent actual increase since 1995 (**Table 5–61**).

In chemical manufacturing (US SIC code 28), NPRI releases and transfers were expected to decline another 4.2 million kg through 1999, a 14 percent projected reduction. From 1995 to 1997, the chemical manufacturing industry's total amounts decreased by 3.3 million kg, or 10 percent. No other industry projected an increase or decrease of more than one million kg from 1997 to 1999. After a 9.1-million kg reduction in releases and transfers from 1995 to 1997, the paper products industry (US SIC code 26) expected a further reduction of 455,656 kg from 1997 to 1999. Paper products facilities reported a 32 percent actual reduction for 1995–1997 and a two percent projected reduction for 1997–1999.

Industries projecting the largest percentage reductions in NPRI were miscellaneous manufacturing (US SIC code 39) and food products (US SIC code 20). Both expected a reduction of 19 percent through 1999, despite increases of more than 150 percent since 1995. The apparel industry (US SIC code 23) expected its releases and transfers to increase 400 percent from 1997 to 1999, the largest percentage increase. However, releases and transfers by this industry are among the smallest in NPRI. The electronics and electrical equipment industry (US SIC code 36) projected an increase of 34 percent, the second largest relative increase in the projections and a reversal of the industry's record for 1995 to 1997 (a 44 percent reduction).

All but one industry in TRI projected reductions in releases and transfers. The exception was a 0.4 percent

Table 5–62
M 1997

TRI Actual and Projected Total Releases and Transfers, by Industry, 1995–1999

US SIC Code	Industry	Total Releases and Transfers: Actual 1995 (kg)	Actual 1997 (kg)	Projected 1999 (kg)	Actual Change 1995–1997 (kg)	Projected Change 1997–1999 (kg)	Actual % Change 1995–1997	Projected % Change 1997–1999
20	Food Products	20,669,945	21,811,878	21,067,678	1,141,933	-744,200	5.5	-3.4
21	Tobacco Products	469,577	663,521	654,521	193,944	-9,000	41.3	-1.4
22	Textile Mill Products	8,060,206	8,806,334	6,455,930	746,128	-2,350,404	9.3	-26.7
23	Apparel and Other Textile Products	480,542	296,438	195,896	-184,104	-100,542	-38.3	-33.9
24	Lumber and Wood Products	13,526,724	11,165,594	10,430,942	-2,361,130	-734,652	-17.5	-6.6
25	Furniture and Fixtures	17,878,641	10,782,760	10,135,764	-7,095,881	-646,996	-39.7	-6.0
26	Paper Products	123,430,649	119,577,001	114,614,408	-3,853,648	-4,962,593	-3.1	-4.2
27	Printing and Publishing	12,649,809	9,996,368	8,974,139	-2,653,441	-1,022,229	-21.0	-10.2
28	Chemicals	399,588,309	378,830,391	358,183,719	-20,757,918	-20,646,672	-5.2	-5.5
29	Petroleum and Coal Products	24,952,332	27,314,363	23,216,170	2,362,031	-4,098,193	9.5	-15.0
30	Rubber and Plastics Products	49,465,989	44,818,250	43,179,491	-4,647,739	-1,638,759	-9.4	-3.7
31	Leather Products	1,534,227	1,430,113	1,370,070	-104,114	-60,043	-6.8	-4.2
32	Stone/Clay/Glass Products	12,575,334	14,272,266	12,665,275	1,696,932	-1,606,991	13.5	-11.3
33	Primary Metals	241,332,963	290,929,593	287,356,314	49,596,630	-3,573,279	20.6	-1.2
34	Fabricated Metals Products	38,613,088	33,259,163	29,654,256	-5,353,925	-3,604,907	-13.9	-10.8
35	Industrial Machinery	10,497,197	9,229,872	9,270,587	-1,267,325	40,715	-12.1	0.4
36	Electronic/Electrical Equipment	19,343,480	17,190,837	16,513,065	-2,152,643	-677,772	-11.1	-3.9
37	Transportation Equipment	49,000,295	44,529,471	41,216,035	-4,470,824	-3,313,436	-9.1	-7.4
38	Measurement/Photographic Instruments	8,330,260	6,251,374	5,528,591	-2,078,886	-722,783	-25.0	-11.6
39	Misc. Manufacturing Industries	6,539,453	4,710,827	4,594,857	-1,828,626	-115,970	-28.0	-2.5
	Multiple Codes 20–39	72,789,068	62,243,574	60,336,003	-10,545,494	-1,907,571	-14.5	-3.1
	Total	**1,131,728,088**	**1,118,109,988**	**1,065,613,711**	**-13,618,100**	**-52,496,277**	**-1.2**	**-4.7**

➤ Data from Sections 8.1 plus 8.7 on TRI Form R; 1995 data from 1995 reporting forms; 1997 and 1999 data from 1997 reporting forms.

increase (40,715 kg) projected by the industrial machinery sector (US SIC code 35), after a 12 percent reduction (1.3 million kg) since 1995. The chemical manufacturing industry (US SIC code 28) expected to make about the same reduction (projected decrease of 20.6 million kg, or 5.5 percent) as reported over the previous two years (actual decrease of 20.8 million kg, or 5.2 percent). The paper products industry (US SIC code 26) reported a reduction of 3.9 million kg (three percent) from 1995 to 1997 and projected a reduction of 5.0 million kg (four percent) by 1999. The third-largest reduction expected was 4.1 million kg by the petroleum and coal products industry (US SIC code 29). This industry reported a 2.4 million kg increase from 1995 to 1997. The petroleum industry's projected 15 percent reduction compares to an actual 10 percent increase for 1995 to 1997 (**Table 5–62**).

Two industries with relatively small reported releases and transfers projected the largest percentage reductions. The apparel industry (US SIC code 23) expected reductions of 34 percent for 1997 to 1999, continuing the reductions of 38 percent achieved from 1995 to 1997. The textile mill products industry (US SIC code 22) expected reductions of 27 percent to more than reverse the increase of nine percent reported from 1995 to 1997.