LEGEND

M Matched Chemicals/Industries

MY Multi-year Matched Chemicals/Industries

A All Chemicals/Industries

LEGEND

M Matched Chemicals/Industries

MY Multi-year Matched Chemicals/Industries

A All Chemicals/Industries

Key Findings

- The data reported on forms for chemicals and industrial categories common to both NPRI and TRI represented 68 percent of the total releases and transfers in the NPRI database and 84 percent of those in TRI. Distribution of the types of releases and transfers in the matched data set was similar to that in the individual databases.
- For 1995 to 1997, NPRI facilities projected a reduction in total releases and transfers of 14 percent, compared to 4 percent for TRI facilities (these TRI projections are based on waste management quantities for release, disposal, and transfers to treatment, comparable to total releases and transfers). Industries projecting the largest reductions were the Canadian pulp and paper industry and the US chemical industry—each with about one-half the net decrease projected for NPRI and for TRI, respectively.
- Average releases and transfers per facility were twice as high in NPRI as in TRI. This significant difference does not appear to arise from the average number of forms (chemicals) reported by each facility, from differences predominating in the use of chemicals at NPRI versus TRI facilities, or from differences in reporting thresholds between the two PRTRs.
- Differences in average releases and transfers between NPRI and TRI facilities also do not appear to reflect the distribution of industries in the two countries. Average releases and transfers per form were greater in NPRI for 15 of 20 matched industrial categories (using two-digit US SIC codes), including the industries with the largest total releases and transfers in both PRTRs. These differences were not consistent within industrial sectors. For some three-digit US SIC codes, NPRI releases and transfers are substantially greater than TRI releases and transfers, while for others, they are much smaller, as would be expected from the rather different distribution of industries in the two countries.

4.1 Introduction

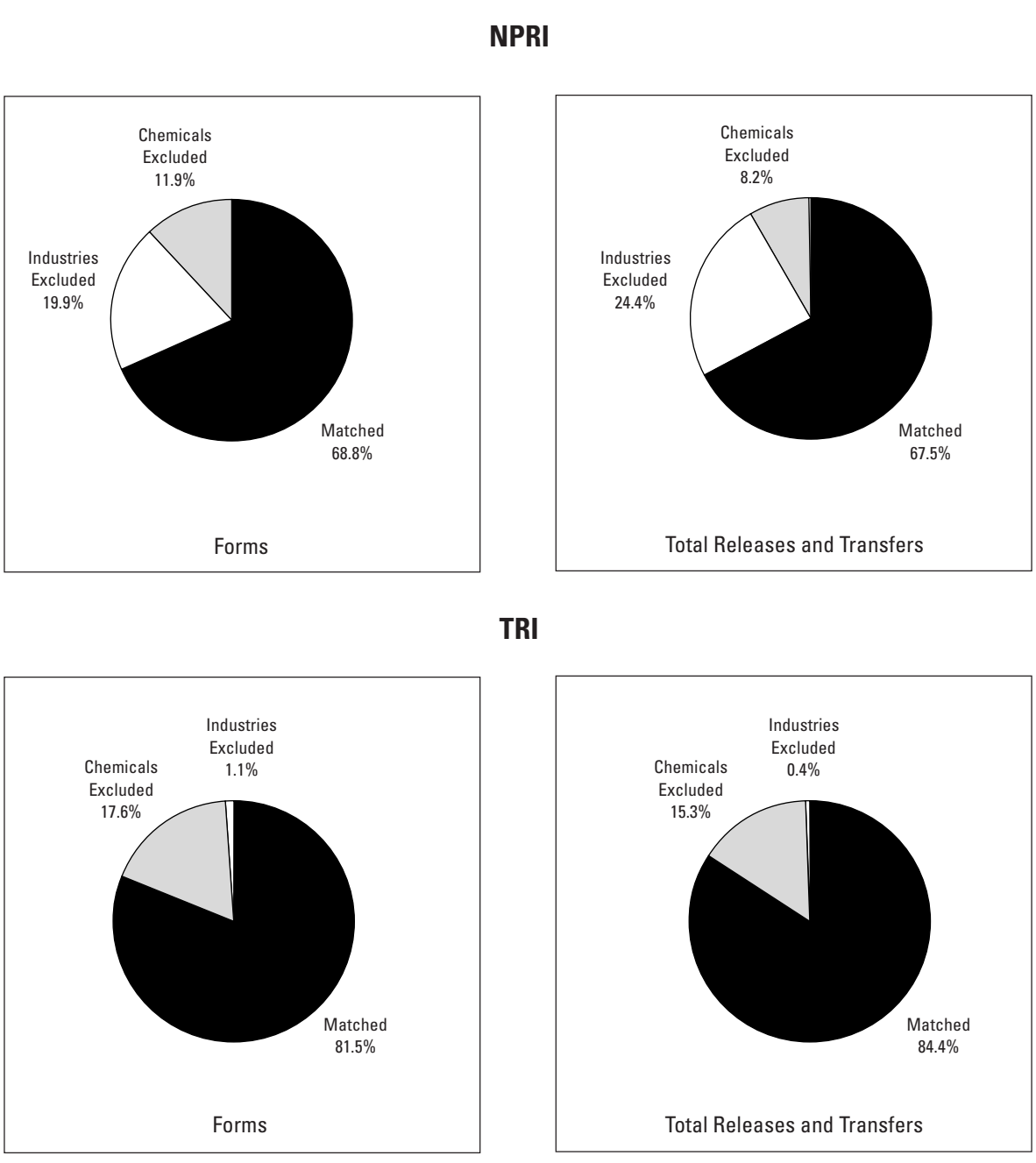
Canada's NPRI and the US TRI cover different selections of chemicals and industrial categories. To obtain a better comparison between these databases, the chemicals and industrial groups that appear only in one or the other, but not both, were removed from the analysis. This meant omitting from both databases all forms from non-manufacturing facilities (those that report US SIC codes outside the range of 20 to 39), because TRI covers only manufacturing (plus federal facilities). In contrast, NPRI requires any facility that handles an NPRI chemical (with a few exceptions) to report. TRI will add certain non-manufacturing industry groups for 1998 (metal mining, coal mining, electric utilities, commercial hazardous waste treatment, wholesale chemical products, petroleum bulk stations and solvent recovery services).

In addition, some chemicals on the NPRI list are not on the TRI list and vice versa. For this analysis, all forms for these chemicals were also removed, leaving a total of 169 chemicals that appeared on both lists in 1995.

Chapter 3 summarized North American PRTR reporting for 1995, using this matched data set of common chemicals and industries. This chapter considers comparisons between NPRI and TRI, using the matched data. It also explores the striking difference between NPRI and TRI in average releases and transfers per facility.

Figure 4–1
M 1995

Matching NPRI and TRI for Chemicals and Industries (US SIC Codes)



4.2 Effects of Matching

Figure 4–1 illustrates the effect of removing the non-comparable elements. For NPRI, 20 percent of all reporting forms were excluded because the industry SIC code did not match TRI criteria. Twelve percent of NPRI forms were removed because of the chemical reported. For total releases and transfers, the effect was somewhat different: 24 percent were excluded because the facility did not engage primarily in manufacturing, but only 8 percent because the NPRI chemical did not appear on the TRI list. Thus, the net effect was to exclude 33 percent of NPRI total releases and transfers from the analysis.

For TRI, the effects were smaller and reversed: More forms were removed because of the chemicals reported (18 percent) than because of industrial group (1 percent), and the overall result was the exclusion of 16 percent of total releases and transfers. The resulting data set of matched industries and chemicals, therefore, incorporated 68 percent of the total NPRI releases and transfers and 84 percent of the total TRI releases and transfers.

Reduction of the two complete databases to these common elements makes little difference in the overall distribution of releases and transfers in the two systems, as seen in the summary tables in **Chapter 3** (**Tables 3–1** and **3–2**). It does mean, however, that some of the top NPRI facilities for total releases and transfers in the complete NPRI database were excluded, because they are non-manufacturing entities. Also, some top facilities in both NPRI and TRI were excluded because of differences in chemical coverage between the two systems (particularly in the forms of sulfuric acid and hydrochloric acid that are reportable).

Similarly, some chemicals with the largest releases or transfers in one

Table 4–1
M 1995

Releases and Transfers, NPRI and TRI

	NPRI		TRI	
	Number		Number	
Total Facilities	1,309		19,786	
Total Forms	4,328		59,764	
	kg	%	kg	%
Total Air Emissions	79,547,053	51.3	560,407,943	48.5
Surface Water Discharges	15,419,582	9.9	60,570,521	5.2
Underground Injection	9,937,227	6.4	92,783,273	8.0
On-Site Land Releases	11,690,712	7.5	123,219,666	10.7
Matched Releases	**116,744,327**	**75.3**	**836,981,403**	**72.5**
Treatment/Destruction	13,148,001	8.5	103,959,767	9.0
Sewage/POTWs	4,457,382	2.9	95,796,854	8.3
Disposal/Containment	20,654,350	13.3	117,927,818	10.2
Matched Transfers	**38,259,733**	**24.7**	**317,684,439**	**27.5**
Total Releases and Transfers	**155,004,060**	**100.0**	**1,154,665,842**	**100.0**

system or the other were excluded from the matched data set. Some are reportable only to TRI (for example, n-hexane), and others are reportable to the two PRTRs in different forms (for example, hydrochloric acid and sulfuric acid). Further, some chemicals with the largest releases or transfers in NPRI do not rank highly in the matched data set because they are reported largely by facilities in industries that do not report to TRI (for example, ethylene glycol, arsenic and carbon disulfide).

Industry differences also affect rankings of NPRI industries: metals mining, for example, is a significant factor in NPRI reporting but is excluded at present from TRI. On the other hand, the "multiple codes" category in TRI—facilities reporting more than one SIC code—remains in this analysis because these are all within the manufacturing range. This chapter concludes with a brief examination of 1995 reporting to NPRI by industries that will be added to TRI with the 1998 reporting year.

4.3 Patterns of Release and Transfer

The result of the exclusions described above is a matched set of consistent data to support direct comparison of the two PRTRs. **Table 4–1** presents summary NPRI and TRI data for this matched data set. The overall proportion of releases to transfers in the two PRTRs was similar: releases were about three times as large as transfers.

Air emissions were the largest release type, at 51 percent of total releases and transfers for NPRI and 49 percent for TRI. NPRI surface water discharges and TRI on-site land releases were the next largest types of releases, respectively. Disposal/containment was the largest transfer destination in both inventories, but a much smaller proportion of the NPRI total was directed to sewage/POTWs than was the case in TRI. **Figure 4–2** shows the relative distribution of releases and of transfers for both NPRI and TRI in the matched data set.

Figure 4–2
M 1995

Distribution of Releases and Transfers, NPRI and TRI

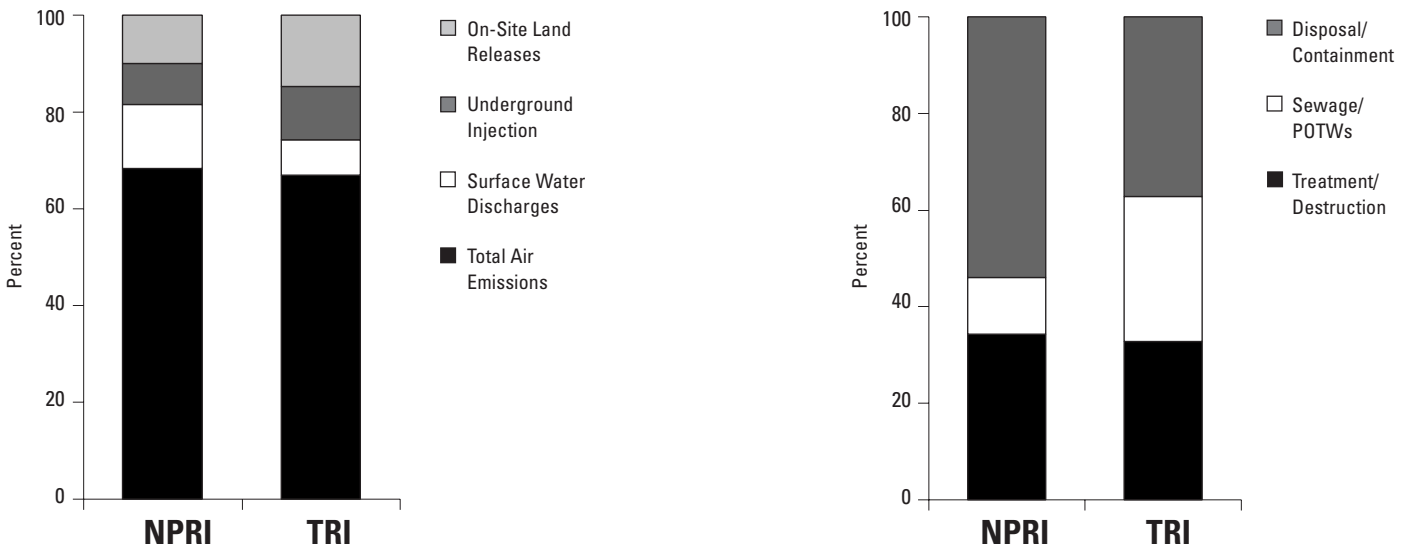


Table 4–2
M 1995

NPRI and TRI Surface Water Discharges and Transfers to Sewage/POTWs, by Industry (US SIC Codes)

US SIC Code	Industry	Forms		Surface Water Discharges			Transfers to Sewage/POTWs			Total		
		Number	%	kg	%	kg/form	kg	%	kg/form	kg	%	kg/form
NPRI												
26	Paper Products	90	12.4	11,879,113	77.0	131,990	21,133	0.5	235	11,900,246	59.9	132,225
28	Chemicals	186	25.7	1,459,115	9.5	7,845	3,424,972	76.8	18,414	4,884,087	24.6	26,259
20	Food Products	14	1.9	39,006	0.3	2,786	399,661	9.0	28,547	438,667	2.2	31,333
33	Primary Metal Industries	164	22.6	1,671,428	10.8	10,192	274,703	6.2	1,675	1,946,131	9.8	11,867
	Subtotal	**454**	**62.6**	**15,048,662**	**97.6**	**33,147**	**4,120,469**	**92.4**	**9,076**	**19,169,131**	**96.4**	**42,223**
	All Others	**271**	**37.4**	**370,920**	**2.4**	**1,369**	**336,913**	**7.6**	**1,243**	**707,833**	**3.6**	**2,612**
	NPRI Total	**725**	**100.0**	**15,419,582**	**100.0**	**21,268**	**4,457,382**	**100.0**	**6,148**	**19,876,964**	**100.0**	**27,417**
TRI												
26	Paper Products	900	5.4	7,622,282	12.6	8,469	18,890,688	19.7	20,990	26,512,970	17.0	29,459
28	Chemicals	4,845	29.1	39,475,511	65.2	8,146	47,419,309	49.5	9,785	86,894,819	55.6	17,931
20	Food Products	748	4.5	2,624,087	4.3	3,508	8,910,949	9.3	11,913	11,535,036	7.4	15,421
	Multiple Codes 20–39*	1,464	8.8	4,316,580	7.1	2,948	5,946,552	6.2	4,062	10,263,132	6.6	7,010
33	Primary Metal Industries	1,885	11.3	3,697,017	6.1	1,961	2,314,163	2.4	1,228	6,011,180	3.8	3,189
	Subtotal	**9,842**	**59.1**	**57,735,476**	**95.3**	**5,866**	**83,481,661**	**87.1**	**8,482**	**141,217,137**	**90.3**	**14,348**
	All Others	**6,823**	**40.9**	**2,835,045**	**4.7**	**416**	**12,315,192**	**12.9**	**1,805**	**15,150,237**	**9.7**	**2,220**
	TRI Total	**16,665**	**100.0**	**60,570,521**	**100.0**	**3,635**	**95,796,854**	**100.0**	**5,748**	**156,367,374**	**100.0**	**9,383**

* Multiple SIC codes reported only in US data.

4.3.1 Surface Water Discharges and Transfers to Sewage/POTWs

Canadian facilities reported a greater proportion of releases as discharges to surface water than did US facilities. In the matched data set, these direct releases to water totaled 15 million kg reported to NPRI and nearly 61 million kg reported to TRI. Of total releases and transfers, Canadian facilities reported releases of 10 percent to surface water, versus 5 percent for US facilities. This preponderance of surface water discharges in NPRI contrasted with TRI facilities' transfers to sewage/POTWs. Canadian facilities reported transfers of 3 percent to sewage/POTWs, versus 8 percent for US facilities (see **Table 4–1**).

The relationship between these two release/transfer categories is not arbitrary. Some listed chemicals in waste may be either directly discharged into surface water bodies or piped to municipal sewage treatment plants. Thus, the higher degree of surface water discharges in NPRI suggests that Canadian facilities may be making direct releases of listed substances, whereas their US counterparts are transferring similar waste streams to publicly owned plants for further potential processing. The degree to which this affords environmental protection will vary according to the methods used by the sewage treatment plant and according to the chemicals involved. Volatile chemicals, for example, are likely to evaporate into the air, whether released directly to water or sent to a municipal facility. Some sewage treatment plants may remove metals and dispose of them in landfills, but many will simply pass them through for further discharge to water.

Some amounts that would have been reported to NPRI as surface water discharges in 1994 may be reported as

Table 4–3
M 1995

NPRI and TRI Surface Water Discharges and Transfers to Sewage/POTWs, by Industry (US SIC Codes) Without Surface Water Discharges and Transfers to Sewage Greater than 1,500,000 kg

US SIC Code	Industry	Forms		Surface Water Discharges			Transfers to Sewage/POTWs			Total		
		Number	%	kg	%	kg/form	kg	%	kg/form	kg	%	kg/form
NPRI												
26	Paper Products	86	11.9	2,873,797	44.8	33,416	21,133	1.6	246	2,894,930	37.5	33,662
28	Chemicals	185	25.7	1,459,115	22.7	7,887	274,972	21.0	1,486	1,734,087	22.5	9,373
20	Food Products	14	1.9	39,006	0.6	2,786	399,661	30.6	28,547	438,667	5.7	31,333
33	Primary Metal Industries	164	22.8	1,671,428	26.1	10,192	274,703	21.0	1,675	1,946,131	25.2	11,867
	Subtotal	**449**	**62.4**	**6,043,346**	**94.2**	**36,850**	**970,469**	**74.2**	**5,917**	**7,013,815**	**90.8**	**42,767**
	All Others	**271**	**37.6**	**370,920**	**5.8**	**1,369**	**336,913**	**25.8**	**1,243**	**707,833**	**9.2**	**2,612**
	NPRI Total	**720**	**100.0**	**6,414,266**	**100.0**	**8,909**	**1,307,382**	**100.0**	**1,816**	**7,721,648**	**100.0**	**10,725**
TRI												
26	Paper Products	892	5.4	5,703,915	17.1	6,395	2,113,517	3.2	2,369	7,817,432	7.8	8,764
28	Chemicals	4,837	29.1	16,450,590	49.2	3,401	36,866,694	55.7	7,622	53,317,283	53.5	11,023
20	Food Products	747	4.5	2,624,087	7.9	3,513	6,648,735	10.0	8,901	9,272,822	9.3	12,413
	Multiple Codes 20–39*	1,463	8.8	2,094,358	6.3	1,432	5,946,552	9.0	4,065	8,040,910	8.1	5,496
33	Primary Metal Industries	1,885	11.3	3,697,017	11.1	1,961	2,314,163	3.5	1,228	6,011,180	6.0	3,189
	Subtotal	**9,824**	**59.0**	**30,569,966**	**91.5**	**3,112**	**53,889,661**	**81.4**	**5,486**	**84,459,627**	**84.8**	**8,597**
	All Others	**6,823**	**41.0**	**2,835,045**	**8.5**	**416**	**12,315,192**	**18.6**	**1,805**	**15,150,237**	**15.2**	**2,220**
	Total	**16,647**	**100.0**	**33,405,011**	**100.0**	**2,007**	**66,204,854**	**100.0**	**3,977**	**99,609,864**	**100.0**	**5,984**

* Multiple SIC codes reported only in US data.

transfers to sewage in 1995, in accordance with revised reporting requirements, as described in **Chapter 2**.

The same few industries in both countries (paper products, chemicals, food products, and primary metals), plus the "multiple codes" category in the US TRI, accounted for more than 90 percent of surface water discharges and transfers to sewage/POTWs combined. Significant differences appear, however, in comparing industry performances within NPRI and TRI and between the two PRTRs. **Tables 4–2** and **4–3** explore these differences.

The chief example occurred in the paper products industry, where NPRI facilities averaged 131,990 kg of surface water discharges per chemical form submitted. This was six times the national average for surface water releases for all industry groups. NPRI facilities in the paper industry also reported releasing to surface waters 550 times the amount of chemicals they transferred to sewage/POTWs.

These extreme results arose from the reporting by just a few facilities. Among the 90 forms from paper products facilities were four that exceeded 1.5 million kg of surface water discharges. Excluding these forms from the analysis would reduce overall NPRI surface water discharges from 15 million kg to 6 million. The remaining forms from the paper industry would average 33,416 kg each in surface water discharges, but this is still four times the surface-water average for all industries, without the large reporters. The paper industry's average for combined surface water and sewage/POTW reporting (per NPRI form) would also be almost four times the comparable average for TRI paper facilities.

Submitting 12 percent of all forms in NPRI, the paper industry accounted for 77 percent of all surface water

Table 4–4
M 1995

The 50 NPRI Facilities with Largest Total Releases

Rank	Facility	City, State/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	Sherritt Inc.	Fort Saskatchewan, AB	37	28	14	4,277,316	302,517	0	3,646	4,583,739
2	Sherritt Inc.	Redwater, AB	37	28	11	2,085,465	79,883	1,655,240	111,063	3,931,751
3	Irving Pulp and Paper/Irving Tissue Co.	Saint John, NB	27	26	3	275,185	3,387,916	0	0	3,663,101
4	Celanese Canada Inc.	Edmonton, AB	37	28	10	339,568	0	3,156,460	1,143	3,497,171
5	Methanex Corporation	Medicine Hat, AB	37	28	6	3,351,900	0	0	1,320	3,353,220
6	Canadian Fertilizers Limited	Medicine Hat, AB	37	28	4	2,618,992	25,663	0	0	2,644,759
7	Shell Scotford Refinery	Fort Saskatchewan, AB	36	29	11	53,925	112	2,515,001	662	2,569,700
8	Cartons St-Laurent Inc.	LaTuque, QC	27	26	5	489,840	1,930,205	0	0	2,420,045
9	Co-Steel Lasco	Whitby, ON	29	33	6	13,986	221	0	2,397,300	2,411,507
10	James River-Marathon, Ltd.	Marathon, ON	27	26	3	129,000	2,061,100	0	0	2,190,100
11	Novacor Chemicals Ltd.-St. Clair Site	Corunna, ON	37	28	9	2,155,900	790	0	0	2,156,690
12	Bayer Rubber Inc.	Sarnia, ON	37	28	15	2,035,106	1,845	0	0	2,036,951
13	General Chemical Canada Ltd.	Amherstburg, ON	37	28	2	1,758,300	184,400	0	0	1,942,700
14	Carseland Nitrogen Operations	Calgary, AB	37	28	4	1,920,250	0	0	500	1,920,750
15	Algoma Steel Inc.	Sault Ste. Marie, ON	29	33	17	209,120	328,558	0	1,372,425	1,911,731
16	Domtar Packaging, Red Rock Mill	Red Rock, ON	27	26	1	240,000	1,660,000	0	0	1,900,000
17	Petro-Canada, Edmonton Refinery	Edmonton, AB	36	29	15	186,100	600	1,698,800	2,100	1,887,600
18	Terra Lambton Works	Courtright, ON	37	28	5	1,584,700	42,700	0	0	1,627,400
19	General Motors of Canada Limited, Car Plant	Oshawa, ON	32	37	13	1,550,042	0	0	0	1,550,042
20	Sidbec Dosco (ISPAT) Inc.-Acierie	Contrecoeur, QC	29	33	5	98,575	972	0	1,410,840	1,510,387
21	Nutrite Inc.-Nitrogen Division	Maitland, ON	37	28	5	914,851	201,140	0	590	1,116,581
22	Strathcona Refinery, Imperial Oil	Edmonton, AB	36	29	22	201,930	3,960	900,784	905	1,107,579
23	Simplot Canada Ltd.	Brandon, MB	37	28	10	968,153	69,900	0	30,500	1,068,679
24	Avenor Inc.	Thunder Bay, ON	27	26	6	1,008,193	21,310	0	0	1,029,503
25	Peace River Pulp Division, Daishowa Marubeni	Peace River, AB	27	26	5	978,600	47,300	0	0	1,025,900
26	Canadian General-Tower Ltd.	Cambridge, ON	16	30	7	959,775	0	0	0	959,979
27	Standard Products (Can.) Ltd.-Rubber Plant #1	Stratford, ON	15	30	3	951,015	0	0	0	951,015
28	General Motors of Canada Limited, Truck Plant	Oshawa, ON	32	37	13	867,277	0	0	0	867,901
29	Les Papiers Perkins Lte.	Candiac, QC	27	26	2	842,660	0	0	0	842,660
30	Dofasco Inc.	Hamilton, ON	29	33	18	644,921	125,973	0	125	771,019
31	Gerdau MRM Steel Inc.	Selkirk, MB	29	33	4	0	0	0	762,000	762,000
32	Aciers Inoxydables Atlas	Tracy, QC	29	33	10	22,625	725,500	0	0	748,125
33	DuPont Canada Inc.-Maitland Site	Augusta, ON	37	28	16	327,005	375,410	0	42,500	744,915
34	Fletcher Challenge Canada (FCCL) Elk Falls Mill	Campbell River, BC	27	26	3	534,700	173,000	0	0	707,700
35	Sunworthy Wallcoverings, Borden Co.	Brampton, ON	27	26	5	705,800	0	0	0	705,800
36	Stelco Lake Erie Works	Nanticoke, ON	29	33	20	181,698	65,244	0	428,000	674,976
37	Weyerhaeuser Saskatchewan Ltd.	Prince Albert, SK	27	26	4	631,732	35,000	0	0	666,732
38	Union Carbide Canada Inc.	Red Deer, AB	37	28	5	653,025	0	0	0	653,459
39	Noranda-Fonderie Horne	Rouyn Noranda	29	33	12	633,430	13,280	0	0	648,045
40	Ford Motor Co., St. Thomas Assembly Plant	St. Thomas, ON	32	37	13	636,000	7,680	0	0	643,680
41	Morbern Incorporated	Cornwall, ON	16	30	3	632,240	0	0	0	632,240
42	AltaSteel Ltd.	Edmonton, AB	29	33	6	6,303	2,029	0	618,501	626,833
43	Saskferco Products Inc.	Belle Plaine, SK	37	28	6	626,300	0	0	0	626,319
44	Inco Limited Copper Cliff Smelter Complex	Copper Cliff, ON	29	33	6	621,640	0	0	0	621,640
45	St. Anne-Nackawic Pulp Company Ltd.	Nackawic, NB	27	26	8	508,177	91,940	0	10,690	610,807
46	Domtar Fine Papers	Cornwall, ON	27	26	5	323,630	250,890	0	0	574,520
47	Skeena Cellulose Pulp Operations	Prince Rupert, BC	27	26	3	562,000	0	0	0	562,000
48	Sydney Steel Corporation	Sydney, NS	29	33	10	0	3,000	0	530,500	533,500
49	Stelco Hilton Works	Hamilton, ON	29	33	21	264,485	235,030	0	1,800	503,095
50	Chrysler Canada Ltd.-Windsor Assembly Plant	Windsor, ON	32	37	12	501,398	0	0	0	501,398
	Subtotal				**422**	**42,082,833**	**12,455,068**	**9,926,285**	**7,727,110**	**72,197,944**
	% of Total				**9.8**	**52.9**	**80.8**	**99.9**	**66.1**	**61.8**
	Total				**4,328**	**79,547,053**	**15,419,582**	**9,937,227**	**11,690,712**	**116,744,327**

* Chemicals accounting for more than 70% of total releases from the facility. Data on all chemicals can be found on the Internet at <http://www.ec.gc.ca> for NPRI facilities.

➤ QIT-Fer et Titane Inc., Tracy, QC, erroneously reported 2,000 tonnes of total releases. The facility has been removed from this table. UIJ=underground injection.

Rank	Major Chemicals Reported (Primary Media)*
1	Ammonia, methanol (air)
2	Ammonia (air, UIJ)
3	Methanol (water)
4	Methanol, methyl ethyl ketone (UIJ)
5	Methanol (air)
6	Ammonia (air)
7	Ammonia (UIJ)
8	Methanol (water)
9	Copper/zinc and compounds (land)
10	Methanol (water)
11	Cyclohexane (air)
12	Chloromethane, cyclohexane, benzene (air)
13	Ammonia (air)
14	Ammonia (air)
15	Manganese and compounds, ammonia (land, water)
16	Methanol (water)
17	Ammonia (UIJ)
18	Ammonia (air)
19	Xylene, toluene (air)
20	Zinc and compounds (land)
21	Ammonia (air)
22	Ammonia (UIJ)
23	Ammonia (air)
24	Methanol (air)
25	Methanol (air)
26	Methyl ethyl ketone (air)
27	Xylene (air)
28	Xylene, toluene, n-butyl alcohol (air)
29	Xylene (air)
30	Benzene, ammonia (air, water)
31	Zinc and compounds (land)
32	Nitric acid and nitrate compounds (water)
33	Nitric acid and nitrate compounds, ammonia, cyclohexane (water, air)
34	Methanol (air)
35	Methyl ethyl ketone, toluene (air)
36	Manganese and compounds (land), benzene (air)
37	Methanol, chlorine (air)
38	Ethylene glycol, ethylene (air)
39	Lead/copper and compounds (air)
40	Xylene, methyl isobutyl ketone, n-butyl alcohol (air)
41	Methyl ethyl ketone (air)
42	Zinc/manganese and compounds (land)
43	Ammonia (air)
44	Nickel/copper and compounds (air)
45	Methanol, chlorine dioxide, chlorine, methyl ethyl ketone (air)
46	Methanol (air)
47	Methanol, chlorine (air)
48	Zinc/manganese and compounds (land)
49	Ammonia, benzene (water, air)
50	Xylene, methyl ethyl ketone (air)

discharges when all its forms are considered and 45 percent without the large reports. For the combined total of surface water discharges and transfers to sewage/POTWs, the paper industry led NPRI reporting both in total amounts and in average per form—with and without the large-quantity forms.

In contrast, TRI paper products manufacturers reported transfers to sewage/POTWs that were about two and a half times the quantity of their discharges to surface water. Their averages per form for these two categories also exceeded national averages for all manufacturing industries by two to three times. (**Chapter 8** further examines PRTR reporting by the Canadian and US pulp and paper industry.)

To a lesser degree, chemical manufacturers dominated NPRI reporting of transfers to sewage/POTWs. NPRI facilities in this industry averaged 18,414 kg of such transfers per chemical form submitted, three times the national average, and they reported 77 percent of all NPRI transfers to sewage/POTWs. Just one form, among 186 submitted, accounted for this disproportionate reporting. Omitting this form would substantially reduce the role of the chemical industry in NPRI transfers to sewage/POTWs, leaving food processors with the largest quantity and one of the largest averages per form submitted. Removing this large report would also leave chemical industry facilities in NPRI with a smaller average of surface water and sewage/POTW reporting combined (per form) than that of TRI chemical facilities.

In TRI, the chemical industry played the dominant role for both surface water discharges and transfers to sewage/POTWs. Averages per form submitted by this industry were roughly twice the national average in both categories. Eighteen TRI forms exceeded 1.5 million kg in these two release/transfer categories, including eight each from the chemical and paper industries. Removing the large reports would reduce TRI surface water discharges from 61 million kg to 33 million and sewage/POTW transfers from 96 million kg to 66 million.

4.4 Facility Reporting

Tables 4–4 through **4–7** list the 50 facilities in each country that reported the largest total releases, and the largest total releases and transfers, of the matched chemical/industrial data set in 1995. (As stated earlier, it is important to note that any evaluation of the relative health and environmental impacts of these facilities must also take into account the toxicity of the chemicals released, local climatic conditions and the proximity of people and ecologically sensitive areas to the released waste streams. Discussion of other issues involved in ranking facilities appears in the box in **Section 3.3** of **Chapter 3**.)

These tables also identify the chemicals and the release media or transfer types that accounted for at least 70 percent of the facility's reporting. (Data on all chemicals can be found on the Internet at <http://www.ec.gc.ca> for NPRI facilities and <http://www.rkt.net> for TRI facilities.) The top 10 facilities in each country for total releases and the top 10 for total releases and transfers also appear on **Map 4–1**.

As shown in **Table 4–4**, the top 50 NPRI facilities accounted for 62 percent of total NPRI releases. For 28 of the these facilities, a single chemical released to a single environmental medium accounted for more than 70 percent of the facility's releases, as is also indicated in **Table 4–4**. Most frequently, the chemical was ammonia or methane.

These 50 NPRI facilities reported 53 percent of NPRI air emissions and

Table 4–5
M 1995

The 50 NPRI Facilities with Largest Total Releases and Transfers

Rank	Facility	City, State/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	Co-Steel Lasco	Whitby, ON	29	33	6	13,986	221	0	2,397,300	2,411,507
2	Sherritt Inc.	Fort Saskatchewan, AB	37	28	14	4,277,316	302,517	0	3,646	4,583,739
3	Sherritt Inc.	Redwater, AB	37	28	11	2,085,465	79,883	1,655,240	111,063	3,931,751
4	Irving Pulp and Paper/Irving Tissue Co.	Saint John, NB	27	26	3	275,185	3,387,916	0	0	3,663,101
5	Celanese Canada Inc.	Edmonton, AB	37	28	10	339,568	0	3,156,460	1,143	3,497,171
6	Methanex Corporation	Medicine Hat, AB	37	28	6	3,351,900	0	0	1,320	3,353,220
7	Dominion Colour Corp.	Ajax, ON	37	28	6	0	0	0	0	100
8	Dofasco Inc.	Hamilton, ON	29	33	18	644,921	125,973	0	125	771,019
9	Canadian Fertilizers Limited	Medicine Hat, AB	37	28	4	2,618,992	25,663	0	0	2,644,759
10	Shell Scotford Refinery	Fort Saskatchewan, AB	36	29	11	53,925	112	2,515,001	662	2,569,700
11	Cartons St-Laurent Inc.	LaTuque, QC	27	26	5	489,840	1,930,205	0	0	2,420,045
12	Bayer Rubber Inc.	Sarnia, ON	37	28	15	2,035,106	1,845	0	0	2,036,951
13	Novacor Chemicals Ltd.-St. Clair Site	Corunna, ON	37	28	9	2,155,900	790	0	0	2,156,690
14	James River-Marathon, Ltd.	Marathon, ON	27	26	3	129,000	2,061,100	0	0	2,190,100
15	CXY Chemicals	Nanaimo, BC	37	28	2	0	0	0	0	244
16	General Chemical Canada Ltd.	Amherstburg, ON	37	28	2	1,758,300	184,400	0	0	1,942,700
17	Carseland Nitrogen Operations	Calgary, AB	37	28	4	1,920,250	0	0	500	1,920,750
18	Algoma Steel Inc.	Sault Ste. Marie, ON	29	33	17	209,120	328,558	0	1,372,425	1,911,731
19	Domtar Packaging, Red Rock Mill	Red Rock, ON	27	26	1	240,000	1,660,000	0	0	1,900,000
20	Petro-Canada, Edmonton Refinery	Edmonton, AB	36	29	15	186,100	600	1,698,800	2,100	1,887,600
21	Stelco Mcmaster Lte.	Contrecoeur, QC	29	33	5	9,330	0	0	0	10,030
22	Fraser Inc.	Edmundston, NB	27	26	8	173,120	0	0	0	173,120
23	Terra Lambton Works	Courtright, ON	37	28	5	1,584,700	42,700	0	0	1,627,400
24	General Motors of Canada Limited, Car Plant	Oshawa, ON	32	37	13	1,550,042	0	0	0	1,550,042
25	Ivaco Rolling Mills	L'Orignal, ON	29	33	5	15,387	1	0	0	16,256
26	Sidbec Dosco (ISPAT) Inc.-Acierie	Contrecoeur, QC	29	33	5	98,575	972	0	1,410,840	1,510,387
27	Dominion Castings Ltd.	Hamilton, ON	29	33	3	1,027	100	0	0	1,227
28	Slater Steels, H.S.B. Division	Hamilton, ON	29	33	6	9,504	0	0	300	10,104
29	Aciers Inoxydables Atlas	Tracy, QC	29	33	10	22,625	725,500	0	0	748,125
30	Strathcona Refinery, Imperial Oil	Edmonton, AB	36	29	22	201,930	3,960	900,784	905	1,107,579
31	Nutrite Inc.-Nitrogen Division	Maitland, ON	37	28	5	914,851	201,140	0	590	1,116,581
32	Simplot Canada Ltd.	Brandon, MB	37	28	10	968,153	69,900	0	30,500	1,068,679
33	Avenor Inc.	Thunder Bay, ON	27	26	6	1,008,193	21,310	0	0	1,029,503
34	Peace River Pulp Division, Daishowa Marubeni	Peace River, AB	27	26	5	978,600	47,300	0	0	1,025,900
35	Standard Products (Can.) Ltd.-Rubber Plant #1	Stratford, ON	15	30	3	951,015	0	0	0	951,015
36	Canadian General-Tower Ltd.	Cambridge, ON	16	30	7	959,775	0	0	0	959,979
37	General Motors of Canada Ltd., Truck Plant	Oshawa, ON	32	37	13	867,277	0	0	0	867,901
38	Les Papiers Perkins Lte.	Candiac, QC	27	26	2	842,660	0	0	0	842,660
39	AltaSteel Ltd.	Edmonton, AB	29	33	6	6,303	2,029	0	618,501	626,833
40	Stelco Hilton Works	Hamilton, ON	29	33	21	264,485	235,030	0	1,800	503,095
41	Gerdau MRM Steel Inc.	Selkirk, MB	29	33	4	0	0	0	762,000	762,000
42	DuPont Canada Inc.-Maitland Site	Augusta, ON	37	28	16	327,005	375,410	0	42,500	744,915
43	AT Plastics Inc.	Edmonton, AB	37	28	4	148,788	0	0	485	149,778
44	Sunworthy Wallcoverings, Borden Co.	Brampton, ON	27	26	5	705,800	0	0	0	705,800
45	Fletcher Challenge Canada (FCCL) Elk Falls Mill	Campbell River, BC	27	26	3	534,700	173,000	0	0	707,700
46	Kronos Canada, Inc.	Varennes, QC	37	28	6	1,800	40,700	0	0	42,500
47	Stelco Lake Erie Works	Nanticoke, ON	29	33	20	181,698	65,244	0	428,000	674,976
48	Weyerhaeuser Saskatchewan Ltd.	Prince Albert, SK	27	26	4	631,732	35,000	0	0	666,732
49	Ford Motor Co., St. Thomas Assembly Plant	St. Thomas, ON	32	37	13	636,000	7,680	0	0	643,680
50	Union Carbide Canada Inc.	Red Deer, AB	37	28	5	653,025	0	0	0	653,459
	Subtotal				**402**	**38,032,974**	**12,136,759**	**9,926,285**	**7,186,705**	**67,290,834**
	% of Total				**9.3**	**47.8**	**78.7**	**99.9**	**61.5**	**57.6**
	Total				**4,328**	**79,547,053**	**15,419,582**	**9,937,227**	**11,690,712**	**116,744,327**

* Chemicals accounting for more than 70% of total releases and transfers from the facility. Data on all chemicals can be found on the Internet at <http://www.ec.gc.ca> for NPRI facilities.

➤ QIT-Fer et Titane Inc., Tracy, QC, erroneously reported 2,000 tonnes of total releases. The facility has been removed from this table. UIJ=underground injection.

Rank	Treatment/ Destruction (kg)	Sewage/ POTWs (kg)	Disposal/ Containment (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Major Chemicals Reported (Primary Media/Transfers)*
1	0	24	6,030,800	6,030,824	8,442,331	Zinc and compounds (transfers to disposal)
2	0	0	16,370	16,370	4,600,109	Ammonia, methanol (air)
3	0	0	0	0	3,931,751	Ammonia (air)
4	0	0	0	0	3,663,101	Methanol (water)
5	0	0	35,658	35,658	3,532,829	Methanol, methyl ethyl ketone (UIJ)
6	0	74,900	30	74,930	3,428,150	Methanol (air)
7	0	3,150,000	186,100	3,336,100	3,336,200	Nitric acid and nitrate compounds (transfers to sewage)
8	0	1,830	1,929,455	1,931,285	2,702,304	Manganese/zinc and compounds (transfers to disposal), benzene (air)
9	0	0	0	0	2,644,759	Ammonia (air)
10	0	0	0	0	2,569,700	Ammonia (UIJ)
11	0	0	948	948	2,420,993	Methanol (water)
12	211,350	0	170,000	381,350	2,418,301	Chloromethane (air), cyclohexane, benzene (air, transfers to treatment)
13	15,120	0	25,140	40,260	2,196,950	Cyclohexane (air)
14	0	0	610	610	2,190,710	Methanol (water)
15	0	0	1,988,000	1,988,000	1,988,244	Asbestos (transfers to disposal)
16	0	0	0	0	1,942,700	Ammonia (air)
17	0	0	0	0	1,920,750	Ammonia (air)
18	0	0	0	0	1,911,731	Manganese and compounds, ammonia (land, water)
19	0	0	0	0	1,900,000	Methanol (water)
20	0	0	0	0	1,887,600	Ammonia (UIJ)
21	1,864,400	0	0	1,864,400	1,874,430	Zinc and compounds (transfers to treatment)
22	1,410,110	0	134,630	1,544,740	1,717,860	Methanol (transfers to treatment)
23	0	0	12,000	12,000	1,639,400	Ammonia (air)
24	0	87	15,625	15,712	1,565,754	Xylene, toluene (air)
25	0	0	1,532,610	1,532,610	1,548,866	Zinc and compounds (transfers to disposal)
26	0	0	0	0	1,510,387	Zinc and compounds (land)
27	0	0	1,485,964	1,485,964	1,487,191	Chromium and compounds (transfers to disposal)
28	1,445,650	245	0	1,445,895	1,455,999	Zinc/lead and compounds (transfers to treatment)
29	453,070	0	0	453,070	1,201,195	Nitric acid and nitrate comp., chromium and comp. (water, transfers to treatment)
30	0	0	32,100	32,100	1,139,679	Ammonia (UIJ)
31	0	0	3,000	3,000	1,119,581	Ammonia (air)
32	0	0	0	0	1,068,679	Ammonia (air)
33	0	0	0	0	1,029,503	Methanol (air)
34	0	0	0	0	1,025,900	Methanol (air)
35	6,379	0	10,986	17,365	968,380	Xylene (air)
36	4,299	0	160	4,459	964,438	Methyl ethyl ketone (air)
37	0	18,021	5,285	23,306	891,207	Xylene, toluene, n-butyl alcohol (air)
38	0	0	0	0	842,660	Xylene (air)
39	0	0	179,183	179,183	806,016	Zinc/manganese and compounds (land, transfers to disposal)
40	59,000	47,000	196,380	302,380	805,475	Ammonia, benzene, asbestos (water, air, transfers to disposal)
41	0	0	0	0	762,000	Zinc and compounds (land)
42	0	0	0	0	744,915	Nitric acid and nitrate compounds, ammonia, cyclohexane (water, air)
43	588,390	0	0	588,390	738,168	Vinyl acetate (transfers to treatment)
44	0	2,700	0	2,700	708,500	Methyl ethyl ketone, toluene (air)
45	0	0	0	0	707,700	Methanol (air)
46	0	0	633,000	633,000	675,500	Manganese and compounds (transfers to disposal)
47	0	0	0	0	674,976	Manganese and compounds (land), benzene (air)
48	0	0	0	0	666,732	Methanol, chlorine (air)
49	10,832	0	10,065	20,897	664,577	Xylene, methyl isobutyl ketone, n-butyl alcohol (air)
50	0	0	0	0	653,459	Ethylene glycol, ethylene (air)
	6,068,600	**3,294,807**	**14,634,099**	**23,997,506**	**91,288,340**	
	46.2	**73.9**	**70.9**	**62.7**	**58.9**	
	13,148,001	**4,457,382**	**20,654,350**	**38,259,733**	**155,004,060**	

66 percent of on-site land releases, but they were most notably dominant in surface water discharges (81 percent) and underground injection (nearly 100 percent).

For total releases and transfers, presented in **Table 4–5**, the top 50 facilities represented 59 percent of the NPRI reporting. In only two categories did these 50 facilities account for less than half of the NPRI total: emissions to air (48 percent) and transfers to treatment/destruction (46 percent).

This dominance of NPRI reporting by the largest facilities is much greater than in TRI, where the top 50 facilities accounted for 34 percent of total releases (see **Table 4–6**). The difference is particularly striking in reporting of emissions to air: TRI's top 50 facilities accounted for 15 percent of such releases, compared to 53 percent by the NPRI's largest reporters. A larger percentage of the top TRI facilities' releases were on-site land releases (74 percent) than was the case in NPRI. Thirty facilities reported one chemical and one environmental medium as more than 70 percent of their releases; the particular chemicals varied.

The top 50 TRI facilities for total releases and transfers, listed in **Table 4–7**, reported 29 percent of the TRI total. This, too, was a much smaller proportion than in NPRI. The largest TRI facilities accounted for more than half of two categories: 79 percent of underground injection and 68 percent of on-site land releases. One-third of their off-site transfers went to disposal.

Table 4–6
M 1995

The 50 TRI Facilities with Largest Total Releases

Rank	Facility	City, State	SIC Code	Number of Forms	Total Air Emissions (kg)	Surface Water Discharges (kg)	Underground Injection (kg)	On-Site Land Releases (kg)	Total Releases (kg)
1	Magnesium Corp. of America	Rowley, UT	33	5	26,384,163	0	0	0	26,384,163
2	ASARCO Inc.	East Helena, MT	33	9	43,652	233	0	17,870,556	17,914,440
3	Courtaulds Fibers Inc.	Axis, AL	28	4	15,163,039	23,492	0	240,091	15,426,621
4	Cytec Industries Inc.	Westwego, LA	28	22	270,745	22,935	11,633,788	0	11,927,468
5	Lenzing Fibers Corp.	Lowland, TN	28	6	10,521,887	14,104	0	0	10,535,991
6	DuPont	Beaumont, TX	28	24	316,524	2,022	9,272,194	0	9,590,740
7	DuPont	Victoria, TX	28	29	164,471	708	9,338,080	4,194	9,507,453
8	ASARCO Inc.	Hayden, AZ	33	8	454,888	0	0	7,794,636	8,249,523
9	BASF Corp.	Freeport, TX	28	26	152,088	7,714,761	12,154	0	7,879,003
10	Arcadian Fertilizer L.P.	Geismar, LA	28	10	696,290	6,691,922	2	199,071	7,587,285
11	Northwestern Steel & Wire Co.	Sterling, IL	33	6	67,947	707	0	7,074,830	7,143,484
12	Elkem Metals Co.	Marietta, OH	33	6	1,956,983	273,469	0	4,858,957	7,089,410
13	Sterling Chemicals Inc.	Texas City, TX	28	36	479,409	558	6,170,968	0	6,650,935
14	General Motors Corp.	Defiance, OH	33	18	347,699	11,961	0	6,258,631	6,618,292
15	Hoechst Celanese Chemical	Pasadena, TX	28	20	456,104	0	5,715,283	0	6,171,388
16	Monsanto Co.	Cantonment, FL	28	22	84,873	486	5,954,254	0	6,039,612
17	PCS Phosphate Co. Inc.	Aurora, NC	28	6	1,610,757	2	0	4,414,671	6,025,431
18	BP Chemicals Inc.	Lima, OH	28	28	183,288	0	5,727,320	0	5,910,608
19	BP Chemicals Inc.	Port Lavaca, TX	28	17	90,938	327	5,634,195	4,106	5,729,566
20	IMC-Agrico Co.	St. James, LA	28	7	2,990,289	2,113,388	0	178,516	5,282,193
21	U.S. Steel	Gary, IN	33	29	3,177,896	14,576	0	2,038,392	5,230,864
22	Cyprus Miami Mining Corp.	Claypool, AZ	33	5	15,360	126	0	4,858,091	4,873,576
23	Phelps Dodge Hidalgo Inc.	Playas, NM	33	1	73,161	0	0	4,469,064	4,542,226
24	American Chrome & Chemicals	Corpus Christi, TX	28	3	41,088	1,837	0	4,263,039	4,305,964
25	Coastal Chem Inc.	Cheyenne, WY	28	13	492,449	0	3,704,308	272	4,197,029
26	IMC-Agrico Co.	Mulberry, FL	Mult.	2	249,161	0	0	3,673,469	3,922,630
27	Monsanto Co.	Alvin, TX	28	20	61,108	0	3,818,617	19,048	3,898,772
28	Bayer Corp.	New Martinsville, WV	28	29	243,410	3,589,628	0	261	3,833,298
29	Doe Run Co.	Herculaneum, MO	33	9	107,398	485	0	3,568,587	3,676,471
30	Rubicon Inc.	Geismar, LA	28	22	295,409	97	3,271,519	0	3,567,025
31	Vicksburg Chemical Co.	Vicksburg, MS	28	4	53,140	3,276,172	0	0	3,329,312
32	Occidental Chemical Corp.	Castle Hayne, NC	28	2	2,653	16	0	3,310,707	3,313,376
33	Pharmacia & Upjohn Co.	Portage, MI	28	26	498,449	58,299	2,748,934	0	3,305,683
34	PCS Phosphate	White Springs, FL	28	4	235,832	304	0	2,993,197	3,229,333
35	Chino Mines Co.	Hurley, NM	33	1	16,503	0	0	3,137,437	3,153,940
36	ASARCO Inc.	Annapolis, MO	33	6	177,505	20	0	2,782,020	2,959,545
37	Kennecott Utah Copper	Magna, UT	33	13	76,488	1,839	0	2,606,259	2,684,585
38	Eastman Kodak Co.	Rochester, NY	38	50	2,504,829	131,463	0	259	2,636,551
39	CF Industries, Inc.	Donaldsonville, LA	28	10	2,248,567	276,916	0	0	2,525,483
40	Weyerhaeuser Co.	Longview, WA	Mult.	16	2,283,871	219,354	0	0	2,503,225
41	Terra Nitrogen	Catoosa, OK	28	8	2,390,748	81,194	0	794	2,472,736
42	Angus Chemical Co.	Sterlington, LA	28	12	34,082	27,305	2,387,407	0	2,448,794
43	Granite City Steel	Granite City, IL	33	22	91,816	8,405	0	2,334,810	2,435,032
44	Westinghouse Electric Corp.	Hampton, SC	30	10	2,329,252	177	0	0	2,329,429
45	IBP Inc.	Joslin, IL	Mult.	5	16,333	2,239,116	0	18,254	2,273,703
46	Chemetals Inc.	New Johnsonville, TN	28	2	104,877	429	0	2,002,721	2,108,027
47	Dow Chemical Co.	Freeport, TX	28	70	1,748,165	320,325	0	28,943	2,097,433
48	Finch Pruyn & Co. Inc.	Glens Falls, NY	26	6	66,515	2,002,268	0	0	2,068,782
49	Shell Oil Co.	Deer Park, TX	Mult.	50	956,737	88,380	816,327	174,151	2,035,594
50	Monsanto Co.	Luling, LA	28	13	28,211	106,145	1,858,349	0	1,992,705
	Subtotal			**772**	**83,057,046**	**29,315,950**	**78,063,700**	**91,178,033**	**281,614,728**
	% of Total			**1.3**	**14.8**	**48.4**	**84.1**	**74.0**	**33.6**
	Total			**59,764**	**560,407,943**	**60,570,521**	**92,783,273**	**123,219,666**	**836,981,403**

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

Rank	Major Chemicals Reported (Primary Media)*
1	Chlorine (air)
2	Zinc and compounds (land)
3	Carbon disulfide (air)
4	Acetonitrile, acrylic acid, ammonia (UIJ)
5	Carbon disulfide (air)
6	Nitric acid and nitrate compounds, acetonitrile (UIJ)
7	Nitric acid and nitrate compounds (UIJ)
8	Copper/zinc and compounds (land)
9	Nitric acid and nitrate compounds (water)
10	Phosphoric acid (water)
11	Zinc/manganese and compounds (land)
12	Manganese and compounds, ammonia (land, air)
13	Nitric acid and nitrate compounds, ammonia, methanol (UIJ)
14	Zinc and compounds (land)
15	Ethylene glycol (UIJ)
16	Nitric acid and nitrate compounds (UIJ)
17	Phosphoric acid (land)
18	Acetonitrile, acrylonitrile, ammonia, acrylamide (UIJ)
19	Acetonitrile, ammonia, acrylamide (UIJ)
20	Ammonia, phosphoric acid (air, water)
21	Ammonia, zinc/manganese and compounds (air, land)
22	Copper and compounds (land)
23	Copper and compounds (land)
24	Chromium and compounds (land)
25	Nitric acid and nitrate compounds (UIJ)
26	Phosphoric acid (land)
27	Ammonia, acrylonitrile, methanol (UIJ)
28	Nitric acid and nitrate compounds (water)
29	Zinc and compounds (land)
30	Nitric acid and nitrate compounds, ammonia (UIJ, air)
31	Nitric acid and nitrate compounds (water)
32	Chromium and compounds (land)
33	Methanol (UIJ)
34	Phosphoric acid (land)
35	Copper and compounds (land)
36	Zinc/lead and compounds (land)
37	Copper/zinc/lead and compounds (land)
38	Dichloromethane, methanol (air)
39	Ammonia (air)
40	Methanol, acetaldehyde (air)
41	Ammonia (air)
42	Nitric acid and nitrate compounds, formaldehyde (UIJ)
43	Zinc and compounds (land)
44	Methanol (air)
45	Nitric acid and nitrate compounds (water)
46	Manganese and compounds (land)
47	Ethylene, ammonia, propylene, chlorine, dichloromethane, benzene (air, water)
48	Nitric acid and nitrate compounds (water)
49	Phenol, methyl ethyl ketone, toluene, 4,4'-isopropylidenediphenol (UIJ, air, land)
50	Formaldehyde (UIJ)

Table 4–7
M 1995

The 50 TRI Facilities with Largest Total Releases and Transfers

Rank	Facility	City, State	SIC Code	Number of Forms	Total Air Emissions (kg)	Surface Water Discharges (kg)	Underground Injection (kg)	On-Site Land Releases (kg)	Total Releases (kg)
1	Magnesium Corp. of America	Rowley, UT	33	5	26,384,163	0	0	0	26,384,163
2	ASARCO Inc.	East Helena, MT	33	9	43,652	233	0	17,870,556	17,914,440
3	Zinc Corp. of America	Monaca, PA	33	10	265,247	143	0	0	265,390
4	Courtaulds Fibers Inc.	Axis, AL	28	4	15,163,039	23,492	0	240,091	15,426,621
5	Cytec Industries Inc.	Westwego, LA	28	22	270,745	22,935	11,633,788	0	11,927,468
6	Lenzing Fibers Corp.	Lowland, TN	28	6	10,521,887	14,104	0	0	10,535,991
7	ASARCO Inc.	Hayden, AZ	33	8	454,888	0	0	7,794,636	8,249,523
8	DuPont	Victoria, TX	28	29	164,471	708	9,338,080	4,194	9,507,453
9	DuPont	Beaumont, TX	28	24	316,524	2,022	9,272,194	0	9,590,740
10	Air Products & Chemicals Inc.	Pasadena, TX	28	11	24,118	0	0	0	24,118
11	BASF Corp.	Freeport, TX	28	26	152,088	7,714,761	12,154	0	7,879,003
12	Arcadian Fertilizer L.P.	Geismar, LA	28	10	696,290	6,691,922	2	199,071	7,587,285
13	Hoechst Celanese Chemical	Pasadena, TX	28	20	456,104	0	5,715,283	0	6,171,388
14	Northwestern Steel & Wire Co.	Sterling, IL	33	6	67,947	707	0	7,074,830	7,143,484
15	Elkem Metals Co.	Marietta, OH	33	6	1,956,983	273,469	0	4,858,957	7,089,410
16	Sterling Chemicals Inc.	Texas City, TX	28	36	479,409	558	6,170,968	0	6,650,935
17	General Motors Corp.	Defiance, OH	33	18	347,699	11,961	0	6,258,631	6,618,292
18	National Steel Corp.	Ecorse, MI	33	15	137,793	7,604	0	0	145,397
19	Monsanto Co.	Cantonment, FL	28	22	84,873	486	5,954,254	0	6,039,612
20	PCS Phosphate Co. Inc.	Aurora, NC	28	6	1,610,757	2	0	4,414,671	6,025,431
21	BP Chemicals Inc.	Lima, OH	28	28	183,288	0	5,727,320	0	5,910,608
22	BP Chemicals Inc.	Port Lavaca, TX	28	17	90,938	327	5,634,195	4,106	5,729,566
23	IMC-Agrico Co.	St. James, LA	28	7	2,990,289	2,113,388	0	178,516	5,282,193
24	U.S. Steel	Gary, IN	33	29	3,177,896	14,576	0	2,038,392	5,230,864
25	Nucor Steel	Crawfordsville, IN	33	7	10,173	9	0	11	10,193
26	Quantum Chemical Corp.	La Porte, TX	28	23	1,006,231	2,880	0	8	1,009,119
27	Rouge Steel Co.	Dearborn, MI	33	8	20,755	5,469	0	0	26,224
28	DuPont	Leland, NC	28	21	1,016,099	203,813	0	170,628	1,390,539
29	Cyprus Miami Mining Corp.	Claypool, AZ	33	5	15,360	126	0	4,858,091	4,873,576
30	Pharmacia & Upjohn Co.	Portage, MI	28	26	498,449	58,299	2,748,934	0	3,305,683
31	Simpson Pasadena Paper Co.	Pasadena, TX	26	8	572,444	0	0	0	572,444
32	Phelps Dodge Hidalgo Inc.	Playas, NM	33	1	73,161	0	0	4,469,064	4,542,226
33	Consolidated Papers Inc.	Wisconsin Rapids, WI	26	13	1,180,410	340	0	0	1,180,751
34	American Chrome & Chemicals	Corpus Christi, TX	28	3	41,088	1,837	0	4,263,039	4,305,964
35	Coastal Chem Inc.	Cheyenne, WY	28	13	492,449	0	3,704,308	272	4,197,029
36	IMC-Agrico Co.	Mulberry, FL	Mult.	2	249,161	0	0	3,673,469	3,922,630
37	Monsanto Co.	Alvin, TX	28	20	61,108	0	3,818,617	19,048	3,898,772
38	Boise Cascade Corp.	Saint Helens, OR	26	8	266,397	0	0	0	266,397
39	Bayer Corp.	New Martinsville, WV	28	29	243,410	3,589,628	0	261	3,833,298
40	Rubicon Inc.	Geismar, LA	28	22	295,409	97	3,271,519	0	3,567,025
41	Doe Run Co.	Herculaneum, MO	33	9	107,398	485	0	3,568,587	3,676,471
42	Cerro Wire & Cable Co. Inc.	Hartselle, AL	33	3	14	7	0	0	20
43	Hercules Inc.	Hopewell, VA	28	12	358,380	0	0	0	358,380
44	Vicksburg Chemical Co.	Vicksburg, MS	28	4	53,140	3,276,172	0	0	3,329,312
45	Occidental Chemical Corp.	Castle Hayne, NC	28	2	2,653	16	0	3,310,707	3,313,376
46	PCS Phosphate	White Springs, FL	28	4	235,832	304	0	2,993,197	3,229,333
47	Stone Container Corp.	Panama City, FL	26	7	745,415	0	0	5,980	751,395
48	Chino Mines Co.	Hurley, NM	33	1	16,503	0	0	3,137,437	3,153,940
49	Keystone Steel & Wire Co.	Peoria, IL	33	3	29,206	717	0	55,692	85,615
50	ASARCO Inc.	Annapolis, MO	33	6	177,505	20	0	2,782,020	2,959,545
	Subtotal			**634**	**73,809,239**	**24,033,616**	**73,001,617**	**84,244,161**	**255,088,634**
	% of Total			**1.1**	**13.2**	**39.7**	**78.7**	**68.4**	**30.5**
	Total			**59,764**	**560,407,943**	**60,570,521**	**92,783,273**	**123,219,666**	**836,981,403**

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

Rank	Treatment/ Destruction (kg)	Sewage/ POTWs (kg)	Disposal/ Containment (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Major Chemicals Reported (Primary Media/Transfers)*
1	0	0	0	0	26,384,163	Chlorine (air)
2	0	180	0	180	17,914,620	Zinc and compounds (land)
3	12,172	0	15,717,212	15,729,385	15,994,775	Zinc/lead and compounds (transfers to disposal)
4	0	0	0	0	15,426,621	Carbon disulfide (air)
5	133	0	12,111	12,244	11,939,713	Acetonitrile, acrylic acid, ammonia (UIJ)
6	0	0	263,039	263,039	10,799,029	Carbon disulfide (air)
7	2,010,308	129	0	2,010,437	10,259,961	Copper/zinc and compounds (land)
8	737,706	0	0	737,706	10,245,159	Nitric acid and nitrate compounds (UIJ)
9	278,793	0	11,099	289,893	9,880,633	Nitric acid and nitrate compounds, acetonitrile (UIJ)
10	267,078	8,548,399	213	8,815,690	8,839,808	Nitric acid and nitrate compounds (transfers to sewage)
11	81,888	0	10,349	92,238	7,971,240	Nitric acid and nitrate compounds (water)
12	0	0	16,365	16,365	7,603,650	Phosphoric acid (water)
13	3,293	1,284,014	34,195	1,321,501	7,492,889	Ethylene glycol (UIJ)
14	311,565	0	0	311,565	7,455,049	Zinc/manganese and compounds (land)
15	0	0	23,129	23,129	7,112,539	Manganese and compounds, ammonia (land, air)
16	24,920	8,691	21,803	55,414	6,706,348	Nitric acid and nitrate compounds, ammonia, methanol (UIJ)
17	1,746	2,792	0	4,538	6,622,830	Zinc and compounds (land)
18	76,685	14,264	6,039,169	6,130,118	6,275,515	Zinc and compounds (transfers to disposal)
19	0	0	2,994	2,994	6,042,606	Nitric acid and nitrate compounds (UIJ)
20	0	0	0	0	6,025,431	Phosphoric acid (land)
21	6,807	0	630	7,438	5,918,045	Acetonitrile, acrylonitrile, ammonia, acrylamide (UIJ)
22	27,967	0	0	27,967	5,757,533	Acetonitrile, ammonia, acrylamide (UIJ)
23	0	0	0	0	5,282,193	Ammonia, phosphoric acid (air, water)
24	4,245	0	45,840	50,086	5,280,950	Ammonia, zinc/manganese and compounds (air, land)
25	1,478	0	5,203,062	5,204,540	5,214,733	Zinc and compounds (transfers to disposal)
26	4,142,622	0	0	4,142,622	5,151,741	Vinyl acetate (transfers to treatment)
27	0	0	5,071,787	5,071,787	5,098,011	Zinc and compounds (transfers to disposal)
28	3,557,400	0	31,333	3,588,733	4,979,273	Ethylene glycol (transfers to treatment)
29	0	0	0	0	4,873,576	Copper and compounds (land)
30	1,090,299	456,417	7,912	1,554,628	4,860,311	Methanol, dichloromethane (UIJ, transfers to treatment)
31	0	4,039,728	0	4,039,728	4,612,172	Methanol (transfers to sewage)
32	0	0	0	0	4,542,226	Copper and compounds (land)
33	3,308,755	0	0	3,308,755	4,489,506	Methanol (transfers to treatment)
34	36,735	0	4,127	40,862	4,346,825	Chromium and compounds (land)
35	0	0	48	48	4,197,077	Nitric acid and nitrate compounds (UIJ)
36	0	0	0	0	3,922,630	Phosphoric acid (land)
37	0	0	0	0	3,898,772	Ammonia, acrylonitrile, methanol (UIJ)
38	0	3,600,884	1,459	3,602,343	3,868,740	Methanol (transfers to sewage)
39	514	0	28,388	28,902	3,862,201	Nitric acid and nitrate compounds (water)
40	218,672	0	922	219,594	3,786,619	Nitric acid and nitrate compounds, ammonia (UIJ, air)
41	0	454	0	454	3,676,925	Zinc and compounds (land)
42	0	0	3,415,766	3,415,766	3,415,786	Copper and compounds (transfers to disposal)
43	0	2,974,425	0	2,974,425	3,332,805	Nitric acid and nitrate compounds, ethylene glycol (trans. to sewage)
44	0	0	0	0	3,329,312	Nitric acid and nitrate compounds (water)
45	1,723	0	0	1,723	3,315,100	Chromium and compounds (land)
46	0	0	0	0	3,229,333	Phosphoric acid (land)
47	0	2,403,175	0	2,403,175	3,154,570	Methanol (transfers to sewage)
48	0	0	0	0	3,153,940	Copper and compounds (land)
49	0	0	2,927,800	2,927,800	3,013,415	Zinc and compounds (transfers to disposal)
50	0	0	0	0	2,959,545	Zinc/lead and compounds (land)
	16,203,507	**23,333,552**	**38,890,752**	**78,427,811**	**333,516,445**	
	15.6	**24.4**	**33.0**	**24.7**	**28.9**	
	103,959,767	**95,796,854**	**117,927,818**	**317,684,439**	**1,154,665,842**	

Map 4–1
M 1995

Largest Sources of Releases and Transfers: Top 10 Facilities in Canada and Top 10 Facilities in the United States

4/3 Rank for Total Releases and Transfers/Rank for Total Releases (if among top 50 facilities for total releases)
Facility List: Rank for Total Releases and Transfers: Facility, City, State/Province – Amount of Total Releases and Transfers: Rank for Total Releases (if among top 50 facilities for total releases) – Amount of Total Releases

NPRI:Top 10 Facilities for Total Releases and Transfers and Top 10 Facilities for Total Releases

1 Co-Steel Lasco, Whitby, ON – 8,442,331 kg
9 –2,411,507 kg
2 Sherritt Inc., Fort Saskatchewan, AB – 4,600,109 kg
1 – 4,583,739 kg
3 Sherritt Inc., Redwater, AB – 3,931,751 kg
2 – 3,931,751
4 Irving Pulp and Paper, Saint John, NB – 3,663,101 kg
3 – 3,663,101 kg
5 Celanese Canada Inc., Edmonton, AB – 3,532,829 kg
4 – 3,497,171 kg
6 Methanex Corporation, Medicine Hat, AB – 3,428,150 kg
5 – 3,353,220 kg
7 Dominion Colour Corp., Ajax, ON – 3,336,200 kg
[—] – 100 kg
8 Dofasco Inc., Hamilton, ON – 2,702,304 kg
[30] – 771,019 kg
9 Canadian Fertilizers Limited, Medicine Hat, AB – 2,644,759 kg
6 – 2,644,759 kg
10 Shell Scotford Refinery, Fort Saskatchewan, AB – 2,569,700 kg
7 – 2,569,700 kg
(11) Cartons St-Laurent Inc., LaTuque, QC – 2,420,993 kg
8 – 2,420,045 kg
(14) James River-Marathon, Ltd., Marathon, ON – 2,190,710 kg
10 –2,190,100 kg

TRI: Top 10 Facilities for Total Releases and Transfers andTop 10 Facilities for Total Releases

1 Magnesium Corp. of America, Rowley, UT – 26,384,163 kg
1 – 26,384,163 kg
2 ASARCO Inc., East Helena, MT – 17,914,620 kg
2 – 17,914,440 kg
3 Zinc Corp. of America, Monaca, PA – 15,994,775 kg
[—] – 265,390 kg
4 Courtaulds Fibers Inc., Axis, AL – 15,426,621 kg
3 – 15,426,621 kg
5 Cytec Industries Inc., Westwego, LA – 11,939,713 kg
4 – 11,927,468 kg
6 Lenzing Fibers Corp., Lowland, TN – 10,799,029 kg
5 – 10,535,991 kg
7 ASARCO Inc., Hayden, AZ – 10,259,961 kg
8 – 8,249,523 kg
8 DuPont, Victoria, TX – 10,245,159 kg
7 – 9,507,453 kg
9 DuPont, Beaumont, TX – 9,880,633 kg
6 – 9,590,740 kg
10 Air Products & Chemicals Inc., Pasadena, TX – 8,839,808 kg
[—] – 24,118 kg
(11) BASF Corp., Freeport, TX – 7,971,240 kg
9 – 7,879,003 kg
(12) Arcadian Fertilizer L.P., Geismar, LA – 7,603,650 kg
10 – 7,587,285 kg

Table 4–8
M 1995

The 25 Chemicals with the Largest NPRI Releases

Rank	CAS Number	Chemical	Total Air Emissions (kg)	Surface Water Discharges (kg)	Underground Injection (kg)	On-Site Land Releases (kg)	Total Releases (kg)
1	67-56-1	Methanol	18,263,659	9,945,176	1,820,000	9,971	30,044,719
2	—	Ammonia (total)	16,320,324	2,924,323	6,380,300	70,419	25,700,495
3	1330-20-7	Xylene (mixed isomers)	7,575,733	2,692	10,570	1,253	7,602,908
4	108-88-3	Toluene	6,280,291	9,103	16,796	2,080	6,316,146
5	78-93-3	Methyl ethyl ketone	3,804,169	2,401	930,000	115	4,743,069
6	—	Zinc (and its compounds)	466,831	99,566	1,400	3,746,697	4,323,406
7	—	Manganese (and its compounds)	58,972	124,232	0	3,066,622	3,255,111
8	110-82-7	Cyclohexane	2,803,239	998	0	921	2,805,283
9	74-85-1	Ethylene	2,323,376	0	0	0	2,324,660
10	75-09-2	Dichloromethane	2,138,007	0	0	25	2,140,064
11	67-63-0	Isopropyl alcohol (manufacturing)	2,020,686	55,696	0	100	2,083,400
12	—	Nitric acid and nitrate compounds	24,807	1,575,263	320,000	46,535	1,970,053
13	71-43-2	Benzene	1,760,199	6,370	26,090	736	1,793,395
14	—	Copper (and its compounds)	426,508	11,604	0	1,314,104	1,756,991
15	7664-39-3	Hydrogen fluoride	1,696,230	0	0	0	1,696,245
16	—	Lead (and its compounds)	525,599	18,505	40	796,090	1,345,727
17	71-36-3	n-Butyl alcohol	1,258,281	14,438	0	308	1,278,038
18	7782-50-5	Chlorine	1,230,272	23,218	0	0	1,258,157
19	115-07-1	Propylene	1,248,709	0	0	0	1,248,941
20	7429-90-5	Aluminum (fume or dust)	18,546	1,300	0	1,202,650	1,225,797
21	50-00-0	Formaldehyde	813,117	342,972	40,140	180	1,199,147
22	10049-04-4	Chlorine dioxide	1,062,204	0	0	0	1,062,318
23	74-87-3	Chloromethane	970,780	66	0	0	970,846
24	—	Nickel (and its compounds)	638,252	43,045	0	105,933	789,712
25	79-01-6	Trichloroethylene	760,270	65	0	0	761,075
		Subtotal	**74,489,061**	**15,201,033**	**9,545,336**	**10,364,739**	**109,695,703**
		% of Total NPRI Releases	**93.6**	**98.6**	**96.1**	**88.7**	**94.0**
		Total NPRI Releases	**79,547,053**	**15,419,582**	**9,937,227**	**11,690,712**	**116,744,327**

4.5 Chemicals Reported

Tables 4–8 and **4–9** present the 25 chemicals from the matched data set with the largest reported releases in NPRI and TRI, respectively. Seventeen chemicals appear on both tables, and five of the top six chemicals are also the same in the two systems: methanol, ammonia, xylene (mixed isomers), toluene, and zinc (and its compounds).

The 25 chemicals with the largest reported transfers in NPRI and TRI, respectively, appear in **Tables 4–10** and **4–11**. Twenty-one chemicals appear on both tables, but among the top six, only four are the same: zinc (and its compounds), manganese, methanol, and nitric acid and nitrate compounds.

Figure 4–3 shows releases of the top five chemicals in NPRI and/or TRI, and **Figure 4–4** compares transfers of the top five NPRI and TRI chemicals.

Table 4–12 presents the top 10 chemicals in each release and transfer category for NPRI. This matrix shows that methanol, ammonia, and zinc (and its compounds) led the list because they ranked in the top 10 for at least five of the seven release/transfer categories. The clustering seen among chemicals ranked highly for releases or transfers remains quite striking. While theoretically 70 chemicals (seven categories of release/transfer with 10 top chemicals each) could be represented, only 28 are. Twenty of these were in the top 10 for at least two categories.

Table 4–13 presents the top 10 TRI chemicals in each release and transfer category. Methanol and nitric acid (and nitrates) led the TRI matrix, as they did for NPRI. The third chemical in TRI was ammonia. These chemicals also ranked in the top 10 for at least five of the seven categories. Thirty-three chemicals occupy the 70 positions in the matrix, and 20 were in the top 10 for at least two categories.

Table 4–9
M 1995

The 25 Chemicals with the Largest TRI Releases

Rank	CAS Number	Chemical	Total Air Emissions (kg)	Surface Water Discharges (kg)	Underground Injection (kg)	On-Site Land Releases (kg)	Total Releases (kg)
1	67-56-1	Methanol	95,233,645	3,796,670	11,109,937	744,532	110,884,785
2	—	Ammonia (total)	70,983,400	4,531,649	10,524,239	2,139,671	88,178,958
3	—	Nitric acid and nitrate compounds	1,153,295	40,040,655	29,503,509	1,292,896	71,990,356
4	108-88-3	Toluene	65,845,652	24,130	137,593	29,740	66,037,115
5	—	Zinc (and its compounds)	3,071,424	536,411	96,528	39,884,093	43,588,456
6	1330-20-7	Xylene (mixed isomers)	43,101,901	15,286	39,838	44,869	43,201,893
7	75-15-0	Carbon disulfide	38,152,222	18,079	1,807	120	38,172,228
8	78-93-3	Methyl ethyl ketone	31,094,507	27,809	252,429	39,844	31,414,589
9	7782-50-5	Chlorine	29,808,694	144,273	33,616	6,106	29,992,688
10	7664-38-2	Phosphoric acid	572,639	9,252,921	3,429	16,274,141	26,103,130
11	75-09-2	Dichloromethane	24,791,883	12,849	517,159	936	25,322,827
12	—	Manganese (and its compounds)	1,591,258	425,766	1,636	22,520,088	24,538,747
13	—	Copper (and its compounds)	1,387,650	54,538	133,283	19,016,655	20,592,126
14	100-42-5	Styrene	18,803,896	7,968	95,213	77,556	18,984,633
15	74-85-1	Ethylene	15,447,161	12,392	0	0	15,459,553
16	75-05-8	Acetonitrile	460,334	3,390	12,624,572	5	13,088,301
17	71-36-3	n-Butyl alcohol	11,439,320	52,314	1,026,466	2,097	12,520,196
18	79-01-6	Trichloroethylene	11,451,258	670	249	1,567	11,453,744
19	—	Chromium (and its compounds)	540,382	69,150	26,204	9,819,873	10,455,610
20	108-10-1	Methyl isobutyl ketone	9,696,594	23,257	71,927	3,193	9,794,972
21	115-07-1	Propylene	9,750,116	1,834	0	19	9,751,969
22	107-21-1	Ethylene glycol	3,145,663	360,830	5,693,338	166,991	9,366,823
23	50-00-0	Formaldehyde	5,256,965	125,668	3,316,569	60,692	8,759,894
24	—	Lead (and its compounds)	901,274	29,066	414	6,643,190	7,573,944
25	75-07-0	Acetaldehyde	6,087,542	102,424	274,778	70,456	6,535,200
		Subtotal	**499,768,675**	**59,670,000**	**75,484,732**	**118,839,330**	**753,762,737**
		% of Total TRI Releases	**89.2**	**98.5**	**81.4**	**96.4**	**90.1**
		Total TRI Releases	**560,407,943**	**60,570,521**	**92,783,273**	**123,219,666**	**836,981,403**

Table 4–10
M 1995

The 25 Chemicals with the Largest NPRI Transfers

Rank	CAS Number	Chemical	Treatment/ Destruction (kg)	Sewage/ POTWs (kg)	Disposal/ Containment (kg)	Total Transfers (kg)
1	—	Zinc (and its compounds)	3,013,951	12,922	9,191,307	12,218,180
2	—	Nitric acid and nitrate compounds	84,407	3,747,160	166,369	3,997,936
3	—	Manganese (and its compounds)	477,945	3,797	2,771,499	3,253,241
4	1332-21-4	Asbestos (friable)	0	0	3,252,048	3,252,048
5	—	Chromium (and its compounds)	481,074	7,510	2,090,853	2,579,437
6	67-56-1	Methanol	1,835,750	105,623	152,206	2,093,579
7	—	Lead (and its compounds)	491,433	2,558	1,476,296	1,970,287
8	108-88-3	Toluene	1,315,657	1,503	10,641	1,327,801
9	1330-20-7	Xylene (mixed isomers)	1,267,065	16	22,741	1,289,822
10	67-63-0	Isopropyl alcohol (manufacturing)	527,019	79,717	176,949	783,685
11	—	Ammonia (total)	418,580	315,470	1,159	735,209
12	108-05-4	Vinyl acetate	592,740	660	5	593,405
13	7664-38-2	Phosphoric acid	54,005	67,290	346,887	468,182
14	—	Copper (and its compounds)	102,633	3,844	314,884	421,361
15	78-93-3	Methyl ethyl ketone	412,837	72	7,873	420,782
16	—	Nickel (and its compounds)	164,479	2,541	189,277	356,297
17	107-21-1	Ethylene glycol	242,143	39,934	49,141	331,218
18	108-95-2	Phenol	189,850	30,029	13,137	233,016
19	100-42-5	Styrene	196,891	448	33,008	230,347
20	71-36-3	n-Butyl alcohol	185,749	3,370	27,852	216,971
21	50-00-0	Formaldehyde	154,806	9,640	23,715	188,161
22	71-43-2	Benzene	129,136	2	133	129,271
23	7429-90-5	Aluminum (fume or dust)	0	0	127,619	127,619
24	110-82-7	Cyclohexane	117,789	0	122	117,911
25	95-63-6	1,2,4-Trimethylbenzene	115,168	41	2,643	117,852
		Subtotal	**12,571,107**	**4,434,147**	**20,448,364**	**37,453,618**
		% of NPRI Transfers	**95.6**	**99.5**	**99.0**	**97.9**
		Total NPRI Transfers	**13,148,001**	**4,457,382**	**20,654,350**	**38,259,733**

Table 4–11
M 1995

The 25 Chemicals with the Largest TRI Transfers

Rank	CAS Number	Chemical	Treatment/ Destruction (kg)	Sewage/ POTWs (kg)	Disposal/ Containment (kg)	Total Transfers (kg)
1	67-56-1	Methanol	14,135,847	40,357,079	924,580	55,417,506
2	—	Zinc (and its compounds)	7,712,051	263,151	45,810,301	53,785,503
3	—	Nitric acid and nitrate compounds	6,476,576	24,569,566	4,513,391	35,559,533
4	—	Manganese (and its compounds)	2,390,044	181,914	15,380,167	17,952,126
5	107-21-1	Ethylene glycol	7,180,192	8,720,584	614,271	16,515,047
6	—	Lead (and its compounds)	3,410,187	26,453	9,188,826	12,625,466
7	—	Chromium (and its compounds)	2,489,243	162,469	9,367,010	12,018,722
8	—	Copper (and its compounds)	1,432,722	147,929	9,498,916	11,079,567
9	108-88-3	Toluene	9,489,337	385,068	382,715	10,257,120
10	—	Ammonia (total)	1,123,416	7,951,077	686,195	9,760,688
11	1330-20-7	Xylene (mixed isomers)	6,766,921	240,972	407,332	7,415,225
12	75-09-2	Dichloromethane	4,864,025	362,501	56,343	5,282,868
13	—	Nickel (and its compounds)	914,218	81,491	3,880,691	4,876,399
14	108-05-4	Vinyl acetate	4,019,673	124,509	18,949	4,163,131
15	108-95-2	Phenol	1,460,332	1,749,701	577,284	3,787,317
16	100-42-5	Styrene	1,783,745	53,887	1,914,128	3,751,759
17	7664-38-2	Phosphoric acid	814,922	1,539,932	813,910	3,168,764
18	7429-90-5	Aluminum (fume or dust)	137,876	5,208	2,786,018	2,929,102
19	78-93-3	Methyl ethyl ketone	2,589,948	227,676	78,452	2,896,076
20	75-05-8	Acetonitrile	1,904,193	415,922	4,940	2,325,055
21	—	Antimony (and its compounds)	403,484	51,306	1,423,429	1,878,220
22	1332-21-4	Asbestos (friable)	2	341	1,860,120	1,860,463
23	7664-39-3	Hydrogen fluoride	1,103,128	174,188	459,246	1,736,562
24	71-36-3	n-Butyl alcohol	673,155	803,760	196,689	1,673,604
25	50-00-0	Formaldehyde	310,668	1,060,689	108,487	1,479,844
		Subtotal	**83,585,905**	**89,657,374**	**110,952,390**	**284,195,669**
		% of Total TRI Transfers	**80.4**	**93.6**	**94.1**	**89.5**
		Total TRI Transfers	**103,959,767**	**95,796,854**	**117,927,818**	**317,684,439**

Figure 4–3
M 1995

Top Five Chemicals for Total Releases in NPRI and/or TRI

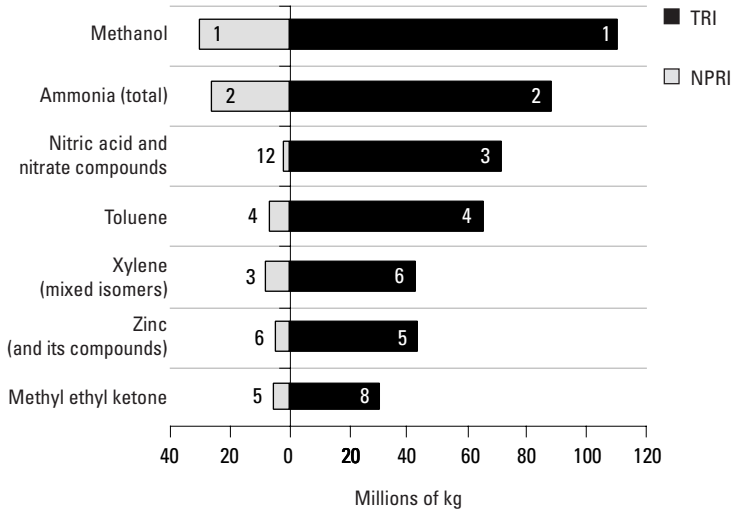


Figure 4–4
M 1995

Top Five Chemicals for Total Transfers in NPRI and/or TRI

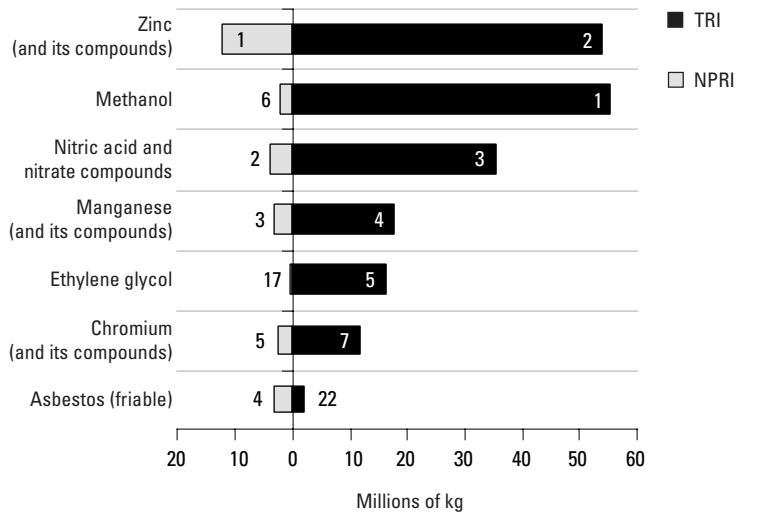


Table 4–12
M 1995

Top 10 NPRI Chemicals for Release/Transfer Categories

CAS Number	Chemical	Rankings by Release/Transfer Category: Releases: Air Emissions	Releases: Surface Water Discharges	Releases: Underground Injection	Releases: On-Site Land Releases	Transfers: Treatment/ Destruction	Transfers: Sewage/ POTWs	Transfers: Disposal/ Containment
67-56-1	Methanol	1	1	2	—	2	3	—
—	Ammonia (total)	2	2	1	—	10	2	—
—	Zinc (and its compounds)	—	6	—	1	1	8	1
1330-20-7	Xylene (mixed isomers)	3	—	—	—	4	—	—
108-88-3	Toluene	4	—	10	—	3	—	—
—	Manganese (and its compounds)	—	5	—	2	9	—	3
7697-37-2	Nitric acid and nitrate compounds	—	3	4	—	—	1	10
78-93-3	Methyl ethyl ketone	5	—	3	—	—	—	—
1332-21-4	Asbestos (friable)	—	—	—	7	—	—	2
—	Lead (and its compounds)	—	—	—	5	7	—	5
—	Chromium (and its compounds)	—	—	—	6	8	—	4
110-82-7	Cyclohexane	6	—	—	—	—	—	—
67-63-0	Isopropyl alcohol (manufacturing)	9	8	—	—	6	4	9
74-85-1	Ethylene	7	—	—	—	—	—	—
75-09-2	Dichloromethane	8	—	—	—	—	—	—
—	Copper (and its compounds)	—	—	—	3	—	—	7
71-43-2	Benzene	10	—	9	—	—	—	—
50-00-0	Formaldehyde	—	4	8	—	—	10	—
7429-90-5	Aluminum (fume or dust)	—	—	—	4	—	—	—
—	Nickel (and its compounds)	—	10	—	10	—	—	8
107-21-1	Ethylene glycol	—	7	—	—	—	6	—
108-05-4	Vinyl acetate	—	—	5	—	5	—	—
108-95-2	Phenol	—	9	—	—	—	7	—
7664-38-2	Phosphoric acid	—	—	—	9	—	5	6
75-07-0	Acetaldehyde	—	—	6	—	—	—	—
7440-62-2	Vanadium (fume or dust)	—	—	—	8	—	—	—
111-42-2	Diethanolamine	—	—	—	—	—	9	—
75-65-0	tert-Butyl alcohol	—	—	7	—	—	—	—

➤ Chemicals listed in descending order of total release and transfer quantities.

Table 4–13
M 1995

Top 10 TRI Chemicals for Release/Transfer Categories

CAS Number	Chemical	Rankings by Release/Transfer Category: Releases: Air Emissions	Releases: Surface Water Discharges	Releases: Underground Injection	Releases: On-Site Land Releases	Transfers: Treatment/ Destruction	Transfers: Sewage/ POTWs	Transfers: Disposal/ Containment
67-56-1	Methanol	1	4	3	—	1	1	—
—	Nitric acid and nitrate compounds	—	1	1	8	6	2	6
—	Ammonia (total)	2	3	4	7	—	4	—
—	Zinc (and its compounds)	—	5	—	1	3	—	1
108-88-3	Toluene	3	—	—	—	2	—	—
1330-20-7	Xylene (mixed isomers)	4	—	—	—	5	—	—
—	Manganese (and its compounds)	—	6	—	2	—	—	2
75-15-0	Carbon disulfide	5	—	—	—	—	—	—
78-93-3	Methyl ethyl ketone	6	—	—	—	10	—	—
—	Copper (and its compounds)	—	—	—	3	—	—	3
75-09-2	Dichloromethane	8	—	—	—	7	—	—
7782-50-5	Chlorine	7	10	—	—	—	—	—
7664-38-2	Phosphoric acid	—	2	—	4	—	6	—
107-21-1	Ethylene glycol	—	7	5	—	4	3	—
100-42-5	Styrene	9	—	—	—	—	—	9
—	Chromium (and its compounds)	—	—	—	5	—	—	4
—	Lead (and its compounds)	—	—	—	6	9	—	5
74-85-1	Ethylene	10	—	—	—	—	—	—
75-05-8	Acetonitrile	—	—	2	—	—	—	—
71-36-3	n-Butyl alcohol	—	—	—	—	—	9	—
50-00-0	Formaldehyde	—	—	7	—	—	7	—
108-95-2	Phenol	—	—	—	—	—	5	—
—	Nickel (and its compounds)	—	—	—	9	—	—	7
108-05-4	Vinyl acetate	—	—	—	—	8	—	—
67-66-3	Chloroform	—	9	—	—	—	—	—
7429-90-5	Aluminum (fume or dust)	—	—	—	10	—	—	8
79-10-7	Acrylic acid	—	—	6	—	—	—	—
107-13-1	Acrylonitrile	—	—	9	—	—	—	—
—	Cyanide compounds	—	—	10	—	—	—	—
79-06-1	Acrylamide	—	—	8	—	—	—	—
1332-21-4	Asbestos (friable)	—	—	—	—	—	—	10
111-42-2	Diethanolamine	—	8	—	—	—	8	—
109-86-4	2-Methoxyethanol	—	—	—	—	—	10	—

➤ Chemicals listed in descending order of total release and transfer quantities.

4.6 Industry Reporting

In both countries, the three industries with the largest reported total releases and transfers in the matched data set were the chemical, primary metal products and paper products industries (see **Tables 4–14** and **4–15**). Chemical manufacturers reported the largest releases in both countries and the largest transfers in TRI, while the primary metals industry reported the largest transfers in NPRI.

The chemical industry reported 33 percent of total releases and transfers in NPRI, but 38 percent in TRI. The primary metals industry, ranked second, accounted for nearly 24 percent of NPRI releases and transfers, compared to 20 percent in TRI. Among these leading industries, however, the greatest difference occurred in the paper industry, which reported nearly twice the percentage of NPRI total releases and transfers (19 percent) as for TRI (10 percent). (As mentioned above, **Chapter 8** further examines data from the paper products industry.) Thus, in NPRI, the three top industries accounted for three-quarters of total releases and transfers, but in TRI, only two-thirds, as shown in **Figure 4-5**.

Other differences between the two PRTRs can be noted not only in the ranking of industries, but also in the relationship of releases and transfers within industries. The primary metals industry reported almost equal amounts of releases and transfers to NPRI, but a higher percentage of releases to TRI—that is, releases were 50 percent of the industry's reporting to NPRI but 61 percent in TRI. Primary metals ranked first among NPRI industries for total transfers, but second in TRI. On the other hand, releases accounted for 93 percent of the paper products industry's reporting to NPRI, but in TRI, releases were 79 percent of this industry's total. The paper industry ranked second for total releases in NPRI, but third in TRI. **Figure 4–6** illustrates these differences.

Table 4–14
M 1995

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

Rank	US SIC Code	Industry	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	% of Total
1	28	Chemicals	1,443	39,413,177	12,207,978	51,621,155	33.3
2	33	Primary Metal Industries	583	18,355,170	18,075,255	36,430,425	23.5
3	26	Paper Products	312	27,352,922	1,979,422	29,332,344	18.9
4	29	Petroleum and Coal Products	364	10,091,591	422,692	10,514,283	6.8
5	37	Transportation Equipment	304	7,004,820	960,287	7,965,107	5.1
6	30	Rubber and Plastics Products	279	6,205,906	997,468	7,203,374	4.6
7	34	Fabricated Metal Products	371	1,799,212	1,575,912	3,375,124	2.2
8	32	Stone/Clay/Glass Products	90	1,285,015	406,628	1,691,643	1.1
9	24	Lumber and Wood Products	139	1,267,545	65,370	1,332,915	0.9
10	27	Printing and Publishing	40	1,120,378	172,753	1,293,131	0.8
11	22	Textile Mill Products	19	963,400	8,004	971,404	0.6
12	36	Electronic/Electrical Equipment	91	264,468	560,391	824,859	0.5
13	20	Food Products	105	260,777	409,904	670,681	0.4
14	35	Industrial Machinery	69	487,422	129,081	616,503	0.4
15	25	Furniture and Fixtures	31	505,376	7,793	513,169	0.3
16	39	Misc. Manufacturing Industries	81	123,789	212,165	335,954	0.2
17	23	Apparel and Other Textile Products	2	225,000	0	225,000	0.1
18	31	Leather Products	4	18,358	67,130	85,488	0.1
19	38	Measurement/Photographic Inst.	1	1	1,500	1,501	0.0
		Total NPRI Releases and Transfers	**4,328**	**116,744,327**	**38,259,733**	**155,004,060**	**100.0**

Table 4–15
M 1995

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

Rank	SIC Code	Industry	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	% of Total
1	28	Chemicals	16,721	313,376,058	121,974,312	435,350,369	37.7
2	33	Primary Metal Industries	5,773	140,132,700	90,447,742	230,580,443	20.0
3	26	Paper Products	1,864	89,089,575	24,138,112	113,227,686	9.8
4		Multiple Codes 20–39	4,306	55,376,036	18,426,053	73,802,089	6.4
5	30	Rubber and Plastics Products	3,079	43,770,540	7,027,100	50,797,640	4.4
6	37	Transportation Equipment	3,766	40,829,110	7,779,533	48,608,643	4.2
7	34	Fabricated Metals Products	6,459	26,191,151	11,071,083	37,262,234	3.2
8	29	Petroleum and Coal Products	2,799	23,481,712	4,303,927	27,785,639	2.4
9	20	Food Products	3,178	14,476,232	9,647,909	24,124,141	2.1
10	36	Electronic/Electrical Equipment	2,603	9,589,186	9,274,994	18,864,181	1.6
11	25	Furniture and Fixtures	1,337	17,633,944	438,568	18,072,512	1.6
12	27	Printing and Publishing	414	13,702,767	259,834	13,962,600	1.2
13	24	Lumber and Wood Products	1,606	13,549,787	249,338	13,799,125	1.2
14	32	Stone/Clay/Glass Products	1,363	8,753,694	3,411,999	12,165,693	1.1
15	35	Industrial Machinery	2,411	8,211,712	2,841,768	11,053,480	1.0
16	22	Textile Mill Products	586	7,239,512	1,560,512	8,800,024	0.8
17	38	Measurement/Photographic Inst.	608	5,261,181	2,162,532	7,423,713	0.6
18	39	Misc. Manufacturing Industries	665	4,818,423	1,443,867	6,262,290	0.5
19	31	Leather Products	169	851,109	1,134,777	1,985,886	0.2
20	23	Apparel and Other Textile Products	38	449,527	40,021	489,548	0.0
21	21	Tobacco Products	19	197,446	50,458	247,903	0.0
		Total TRI Releases and Transfers	**59,764**	**836,981,403**	**317,684,439**	**1,154,665,842**	**100.0**

Figure 4–5
M 1995

Industries with Largest Total Releases and Transfers, NPRI and TRI

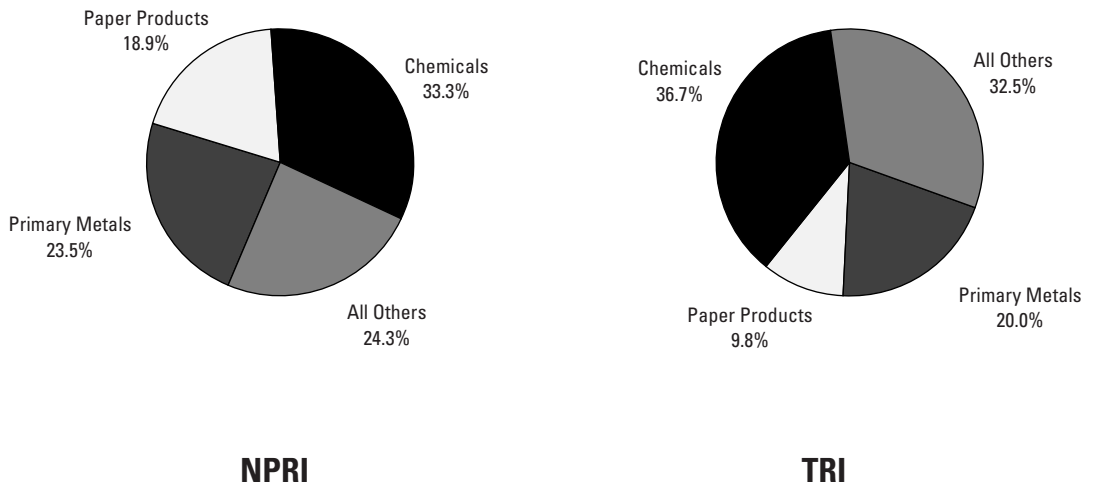


Figure 4–6
M 1995

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

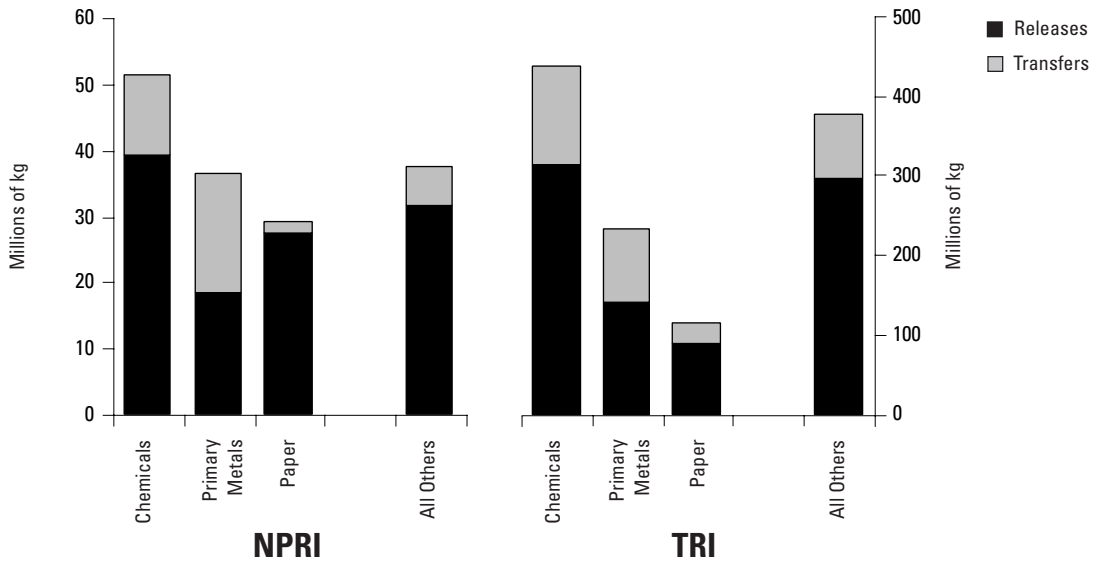


Table 4–16
M 1995

Projections of Total Releases and Transfers, NPRI and TRI, 1995–1997

	1995 (kg)	Projections for 1996 (kg)	Change 1995–1996 (%)	Projections for 1997 (kg)	Change 1995–1997 (%)
NPRI	155,004,060	139,767,641	-9.8	132,655,719	-14.4
TRI*	1,138,388,073	1,124,535,737	-1.2	1,091,755,576	-4.1

* As reported in Sections 8.1 and 8.7 on the TRI Form R.

4.7 Projections of Future Releases and Transfers

NPRI facilities project their total releases and total transfers for three years, while TRI facilities report projections in seven waste management categories two years ahead. Thus, projections can be compared only for the next two years and only with the two TRI categories (quantity released/disposed of and quantity treated off-site) that correspond to releases and transfers. The projections as well as current year amounts are provided in a different part of the TRI reporting form (in Section 8) than the amounts for releases and transfers (from Sections 5 and 6 of the TRI form) presented in other parts of this report. Therefore, the actual numbers for 1995 will differ somewhat.

Table 4–16 shows these projections for NPRI and TRI. NPRI facilities in the set of matched data projected a decrease in total releases and transfers of 10 percent from 1995 to 1996 and 14 percent from 1995 to 1997. Matched TRI facilities projected much smaller decreases: 1 percent from 1995 to 1996 and 4 percent from 1995 to 1997.

Table 4–17 analyzes the data from NPRI and TRI forms as they projected decreases, increases or no change in total releases and transfers. A slightly higher proportion of forms in NPRI (33 percent) projected decreases in total releases and transfers from 1995 to 1997 than in TRI (29 percent). A lower percentage of NPRI forms (24 percent) projected increases, compared to nearly 31 percent for TRI. Further, projected changes in NPRI averaged considerably higher per form than in TRI, especially for decreases. Thus, the greater projected reductions in NPRI arise more from the larger reduction projected on the average NPRI form than from having more forms that project decreases.

Projected percentage changes from 1995 to 1997 for individual chemicals varied widely from that for all matched chemicals for both countries. For methanol, the chemical with the largest total releases and transfers in both countries, NPRI facilities projected a decrease of 35 percent, while TRI facilities projected less than 7 percent decrease. NPRI projections for the top 25 chemicals for total releases and transfers ranged from an increase of 80 percent for hydrogen fluoride to a decrease of 77 percent for asbestos (see **Table 4–18**). Among the top 25 TRI chemicals, projections ranged from a 28 percent increase in total releases and transfers of copper and its compounds to a 33 percent decrease in ethylene glycol (see **Table 4–19**).

Tables 4–20 and **4–21** present the projected changes by industry. In NPRI, the paper products industry projected the greatest absolute change for 1995–1997 and a greater percentage reduction than other industries (except apparel, in which only two facilities reported). In TRI, the paper industry projected a rate of reduction for the period that is below the average for all industry sectors.

The chemicals industry projected substantial decreases in both PRTRs; in TRI, this amounted to more than half the net decrease projected by all industries. The primary metals industry projected the largest absolute increase in TRI, but in NPRI, its projection represents the third largest decrease.

Table 4–17
M 1995

Distribution of Forms with Projected Changes in Total Releases and Transfers, 1995–1997

NPRI

Change 1995–1996	Number of Forms	% of Total	1995 (kg)	Projections 1996 (kg)	% Change 1995–1996	Average Change per Form
Decrease	1,387	32.0	92,600,842	67,284,612	-27.3	-18,253
Increase	1,062	24.5	39,904,002	49,983,813	25.3	9,491
Stay same	1,879	43.4	22,499,216	22,499,216	0.0	
Total	**4,328**	**100.0**	**155,004,060**	**139,767,641**	**-9.8**	**-3,520**

Change 1995–1997	Number of Forms	% of Total	1995 (kg)	Projections 1997 (kg)	% Change 1995–1997	Average Change per Form
Decrease	1,443	33.3	94,135,123	61,999,289	-34.1	-22,270
Increase	1,045	24.1	39,248,922	49,036,415	24.9	9,366
Stay same	1,840	42.5	21,620,015	21,620,015	0.0	
Total	**4,328**	**100.0**	**155,004,060**	**132,655,719**	**-14.4**	**-5,164**

TRI

Change 1995–1996	Number of Forms	% of Total	1995 (kg)	Projections 1996 (kg)	% Change 1995–1996	Average Change per Form
Decrease	16,832	28.2	451,385,239	345,068,328	-23.6	-6,316
Increase	17,936	30.0	423,721,676	516,186,252	21.8	5,155
Stay same	24,996	41.8	263,281,158	263,281,157	0.0	
Total	**59,764**	**100.0**	**1,138,388,073**	**1,124,535,737**	**-1.2**	**-232**

Change 1995–1997	Number of Forms	% of Total	1995 (kg)	Projections 1997 (kg)	% Change 1995–1997	Average Change per Form
Decrease	17,460	29.2	474,105,146	320,366,133	-32.4	-8,805
Increase	18,201	30.5	421,742,122	528,848,637	25.4	5,885
Stay same	24,103	40.3	242,540,805	242,540,806	0.0	
Total	**59,764**	**100.0**	**1,138,388,073**	**1,091,755,576**	**-4.1**	**-780**

Table 4–18
M 1995

Projected Change for the 25 Chemicals with Largest NPRI Total Releases and Transfers, 1995–1997

CAS Number	Chemical	Number of Forms	1995 Total Releases and Transfers (kg)	Projected Change 1995–1996 kg	Projected Change 1995–1996 %	Projected Change 1995–1997 kg	Projected Change 1995–1997 %
67-56-1	Methanol	224	32,138,298	-8,593,697	-26.7	-11,152,259	-34.7
—	Ammonia (total)	177	26,435,704	-1,611,751	-6.1	-2,438,198	-9.2
—	Zinc (and its compounds)	290	16,541,586	-2,738,236	-16.6	-2,356,960	-14.2
1330-20-7	Xylene (mixed isomers)	217	8,892,730	-1,149,670	-12.9	-1,350,242	-15.2
108-88-3	Toluene	232	7,643,947	-706,481	-9.2	-1,177,699	-15.4
—	Manganese (and its compounds)	210	6,508,352	12,373	0.2	-70,382	-1.1
—	Nitric acid and nitrate compounds	120	5,967,989	37,961	0.6	-127,499	-2.1
78-93-3	Methyl ethyl ketone	114	5,163,851	147,592	2.9	46,243	0.9
1332-21-4	Asbestos (friable)	31	3,475,355	-2,236,055	-64.3	-2,678,733	-77.1
—	Lead (and its compounds)	130	3,316,014	1,878,367	56.6	433,438	13.1
—	Chromium (and its compounds)	202	3,241,139	-191,181	-5.9	11,850	0.4
110-82-7	Cyclohexane	31	2,923,194	-6,895	-0.2	-9,104	-0.3
67-63-0	Isopropyl alcohol (manufacturing)	175	2,867,085	-177,765	-6.2	-539,905	-18.8
74-85-1	Ethylene	41	2,325,242	-107,378	-4.6	-150,082	-6.5
75-09-2	Dichloromethane	50	2,207,405	-116,654	-5.3	-33,284	-1.5
—	Copper (and its compounds)	217	2,178,352	140,031	6.4	221,209	10.2
71-43-2	Benzene	44	1,922,666	-224,374	-11.7	-597,206	-31.1
7664-39-3	Hydrogen fluoride	32	1,702,145	1,363,109	80.1	1,360,109	79.9
71-36-3	n-Butyl alcohol	76	1,495,009	15,618	1.0	25,306	1.7
50-00-0	Formaldehyde	82	1,387,308	-231,386	-16.7	-209,704	-15.1
7429-90-5	Aluminum (fume or dust)	30	1,353,416	-746,721	-55.2	-746,712	-55.2
7782-50-5	Chlorine	114	1,258,157	-274,951	-21.9	-342,743	-27.2
115-07-1	Propylene	34	1,248,941	-86,362	-6.9	-131,985	-10.6
—	Nickel (and its compounds)	131	1,146,009	-30,426	-2.7	-42,194	-3.7
10049-04-4	Chlorine dioxide	43	1,062,318	-18,785	-1.8	-64,543	-6.1
	Subtotal	**3,047**	**144,402,212**	**-15,653,717**	**-10.8**	**-22,121,279**	**-15.3**
	as % of Total	**70.4**	**93.2**				
	Total	**4,328**	**155,004,060**	**-15,236,419**	**-9.8**	**-22,348,341**	**-14.4**

Table 4–19
M 1995

Projected Change for the 25 Chemicals with Largest TRI Total Releases and Transfers, 1995–1997

CAS Number	Chemical	Number of Forms	1995 Total Releases and Transfers* (kg)	Projected Change 1995–1996 kg	Projected Change 1995–1996 %	Projected Change 1995–1997 kg	Projected Change 1995–1997 %
67-56-1	Methanol	2,390	168,498,918	-8,293,687	-4.9	-11,020,498	-6.5
—	Nitric acid and nitrate compounds	2,410	109,301,028	9,475,155	8.7	7,235,679	6.6
—	Ammonia (total)	2,824	96,710,670	-557,766	-0.6	-3,185,912	-3.3
—	Zinc (and its compounds)	2,912	95,413,717	5,153,269	5.4	6,616,397	6.9
108-88-3	Toluene	3,325	73,680,385	-6,386,502	-8.7	-9,073,541	-12.3
1330-20-7	Xylene (mixed isomers)	3,183	48,784,133	-4,089,781	-8.4	-5,623,809	-11.5
—	Manganese (and its compounds)	2,423	41,879,814	1,041,886	2.5	1,746,034	4.2
75-15-0	Carbon disulfide	90	38,595,973	-2,757,603	-7.1	-10,782,960	-27.9
78-93-3	Methyl ethyl ketone	2,217	34,006,257	-3,223,292	-9.5	-5,154,758	-15.2
7782-50-5	Chlorine	1,319	30,521,258	784,898	2.6	-97,600	-0.3
75-09-2	Dichloromethane	939	30,516,849	-2,806,660	-9.2	-4,239,241	-13.9
—	Copper (and its compounds)	3,988	28,840,687	10,226,806	35.5	8,168,852	28.3
7664-38-2	Phosphoric acid	2,722	27,583,324	-3,295,486	-11.9	-6,155,646	-22.3
107-21-1	Ethylene glycol	1,240	25,349,680	-9,191,606	-36.3	-8,296,693	-32.7
100-42-5	Styrene	1,482	22,384,980	-93,240	-0.4	344,168	1.5
—	Chromium (and its compounds)	3,196	21,368,266	986,108	4.6	1,137,115	5.3
—	Lead (and its compounds)	1,630	18,017,865	526,204	2.9	669,959	3.7
74-85-1	Ethylene	280	16,220,878	2,133,763	13.2	1,083,703	6.7
75-05-8	Acetonitrile	85	15,932,937	1,434,317	9.0	116,498	0.7
71-36-3	n-Butyl alcohol	1,082	14,241,970	-501,405	-3.5	-97,265	-0.7
79-01-6	Trichloroethylene	712	12,374,645	-1,989,171	-16.1	-3,968,914	-32.1
108-10-1	Methyl isobutyl ketone	985	10,916,194	-693,722	-6.4	-1,634,584	-15.0
50-00-0	Formaldehyde	786	10,083,929	-104,434	-1.0	251,665	2.5
115-07-1	Propylene	337	9,467,334	1,445,787	15.3	761,828	8.0
108-95-2	Phenol	728	9,242,035	-535,315	-5.8	-1,386,847	-15.0
	Subtotal	**43,285**	**1,009,933,727**	**-11,311,475**	**-1.1**	**-42,586,370**	**-4.2**
	% of Total	**72.4**	**88.7**				
	Total	**59,764**	**1,138,388,073**	**-13,852,336**	**-1.2**	**-46,632,497**	**-4.1**

* As reported in Sections 8.1 and 8.7 on the TRI Form R.

Table 4–20
M 1995

Projected Change in NPRI Total Releases and Transfers, by Industry, 1995–1997

Rank	US SIC Code	Industry	Number of Forms	Releases and Transfers (kg)	Projected Change 1995–1996 kg	Projected Change 1995–1996 %	Projected Change 1995–1997 kg	Projected Change 1995–1997 %
1	28	Chemicals	1,443	51,621,155	-4,109,973	-8.0	-7,022,305	-13.6
2	33	Primary Metal Industries	583	36,430,425	-1,759,297	-4.8	-3,118,633	-8.6
3	26	Paper Products	312	29,332,344	-9,307,470	-31.7	-11,078,675	-37.8
4	29	Petroleum and Coal Products	364	10,514,283	-106,653	-1.0	-250,635	-2.4
5	37	Transportation Equipment	304	7,965,107	-363,048	-4.6	-580,548	-7.3
6	30	Rubber and Plastics Products	279	7,203,374	-175,896	-2.4	-518,656	-7.2
7	34	Fabricated Metal Products	371	3,375,124	568,743	16.9	519,331	15.4
8	32	Stone/Clay/Glass Products	90	1,691,643	-355,932	-21.0	-584,353	-34.5
9	24	Lumber and Wood Products	139	1,332,915	117,727	8.8	173,473	13.0
10	27	Printing and Publishing	40	1,293,131	-26,678	-2.1	-78,233	-6.0
11	22	Textile Mill Products	19	971,404	-33,746	-3.5	-144,746	-14.9
12	36	Electronic/Electrical Equipment	91	824,859	-54,304	-6.6	-106,009	-12.9
13	20	Food Products	105	670,681	271,566	40.5	257,223	38.4
14	35	Industrial Machinery	69	616,503	249,098	40.4	429,141	69.6
15	25	Furniture and Fixtures	31	513,169	19,324	3.8	35,924	7.0
16	39	Misc. Manufacturing Industries	81	335,954	-97,392	-29.0	-101,152	-30.1
17	23	Apparel and Other Textile Products	2	225,000	-65,000	-28.9	-169,000	-75.1
18	31	Leather Products	4	85,488	-7,488	-8.8	-10,488	-12.3
19	38	Measurement/Photographic Inst.	1	1,501	0	0.0	0	0.0
		Total	**4,328**	**155,004,060**	**-15,236,419**	**-9.8**	**-22,348,341**	**-14.4**

Table 4–21
M 1995

Projected Change in TRI Total Releases and Transfers, by Industry, 1995–1997

Rank	US SIC Code	Industry	Number of Forms	Releases and Transfers* (kg)	Projected Change 1995–1996 kg	Projected Change 1995–1996 %	Projected Change 1995–1997 kg	Projected Change 1995–1997 %
1	28	Chemicals	16,721	433,370,269	-948,032	-0.2	-24,537,727	-5.7
2	33	Primary Metal Industries	5,773	220,649,551	7,537,893	3.4	11,415,139	5.2
3	26	Paper Products	1,864	112,968,291	-1,207,074	-1.1	-3,406,659	-3.0
4		Multiple Codes 20–39	4,306	72,652,034	1,436,633	2.0	-1,416,060	-1.9
5	30	Rubber and Plastics Products	3,079	49,893,476	-3,680,201	-7.4	-4,914,410	-9.8
6	37	Transportation Equipment	3,766	47,840,890	-3,231,018	-6.8	-3,291,371	-6.9
7	34	Fabricated Metal Products	6,459	36,290,298	-4,646,899	-12.8	-6,424,963	-17.7
8	29	Petroleum and Coal Products	2,799	28,014,976	-122,769	-0.4	-633,222	-2.3
9	20	Food Products	3,178	23,630,014	-439,204	-1.9	-514,329	-2.2
10	25	Furniture and Fixtures	1,337	20,469,197	-904,129	-4.4	-1,014,631	-5.0
11	36	Electronic/Electrical Equipment	2,603	18,327,488	-1,642,478	-9.0	-2,164,135	-11.8
12	24	Lumber and Wood Products	1,606	13,295,147	-737,059	-5.5	-1,199,091	-9.0
13	27	Printing and Publishing	414	12,948,230	-502,107	-3.9	-656,347	-5.1
14	32	Stone/Clay/Glass Products	1,363	11,956,761	-895,326	-7.5	-1,335,122	-11.2
15	35	Industrial Machinery	2,411	10,649,645	-749,002	-7.0	-1,575,810	-14.8
16	22	Textile Mill Products	586	8,819,174	-1,260,383	-14.3	-1,655,022	-18.8
17	38	Measurement/Photographic Inst.	608	7,425,856	-1,175,112	-15.8	-1,755,569	-23.6
18	39	Misc. Manufacturing Industries	665	6,513,186	-633,665	-9.7	-1,264,422	-19.4
19	31	Leather Products	169	1,938,873	-65,558	-3.4	-136,089	-7.0
20	23	Apparel and Other Textile Products	38	486,939	13,392	2.8	-166,468	-34.2
21	21	Tobacco Products	19	247,777	-237	-0.1	13,809	5.6
		Total	**59,764**	**1,138,388,073**	**-13,852,335**	**-1.2**	**-46,632,497**	**-4.1**

* As reported in Sections 8.1 and 8.7 on TRI Form R.

Table 4–22
M 1995

Average Releases and Transfers per Facility, NPRI and TRI

	NPRI Number	TRI Number
Total Facilities	1,309	19,786
Total Forms	4,328	59,764
Average Forms per Facility	3.3	3.0
	kg	**kg**
Average Releases per Facility	89,186	42,302
Average Transfers per Facility	29,228	16,056
Average Releases and Transfers per Facility	118,414	58,358

4.8 Releases and Transfers per Facility

On average, releases and transfers from NPRI facilities were twice those of TRI facilities (118,414 kg per facility in NPRI versus 58,358 kg in TRI). NPRI facilities reported an average of 89,186 kg in total releases—more than twice the TRI average. Transfers averaged 29,228 kg per NPRI facility, which amounts to a little less than twice those in TRI (see **Table 4–22**).

Facilities in the two countries submitted roughly the same average number of forms: 3.3 forms per facility in Canada and 3.0 in the United States. Releases and transfers per form therefore show essentially the same differential as the average for facilities: 35,814 kg per form submitted to NPRI versus 19,320 kg per form in TRI, or almost twice as large for NPRI, on average, as for TRI (see **Table 4–23**).

Data in the matched data set can be analyzed for possible explanations of this significant discrepancy between the two systems. There are several possible reasons for these differences, some of which can be explored with the PRTR data and are examined in this chapter. These reasons include, for example, differing industrial or chemical mixes. Other possible reasons, such as differing regulatory environments in the two countries, cannot be examined with the PRTR data.

4.8.1 Releases and Transfers by Type

NPRI's tendency to have higher average releases and transfers per form holds true for all but one release/transfer type (transfers to sewage/POTWs, see **Table 4–23**). NPRI facilities averaged twice the air emissions per form, for example, as did TRI facilities. The contrast between NPRI and TRI reporting of surface water discharges, on the one hand, and transfers to sewage/POTWs, on the other, discussed above, also influences these averages. Surface water discharges averaged 3.5 times higher per form in NPRI than in TRI, while transfers to sewage/POTWs was the only category in which NPRI facilities averaged less per form than TRI.

Table 4–23
M 1995

Average Releases and Transfers per Form, NPRI and TRI

	NPRI Number		TRI Number		
Total Forms	4,328		59,764		
	kg	**kg/form**	**kg**	**kg/form**	**Ratio of Average per Form NPRI/TRI**
Total Air Emissions	79,547,053	18,380	560,407,943	9,377	2.0
Surface Water Discharges	15,419,582	3,563	60,570,521	1,013	3.5
Underground Injection	9,937,227	2,296	92,783,273	1,552	1.5
On-Site Land Releases	11,690,712	2,701	123,219,666	2,062	1.3
Matched Releases	**116,744,327**	**26,974**	**836,981,403**	**14,005**	**1.9**
Treatment/Destruction	13,148,001	3,038	103,959,767	1,740	1.7
Sewage/POTWs	4,457,382	1,030	95,796,854	1,603	0.6
Disposal/Containment	20,654,350	4,772	117,927,818	1,973	2.4
Matched Transfers	**38,259,733**	**8,840**	**317,684,439**	**5,316**	**1.7**
Total Releases and Transfers	**155,004,060**	**35,814**	**1,154,665,842**	**19,320**	**1.9**

Table 4–24
M 1995

Distribution of NPRI and TRI Total Releases and Transfers and Facilities

	NPRI		TRI	
Quantity per Facility	Number of Facilities	Total Releases and Transfers (kg)	Number of Facilities	Total Releases and Transfers (kg)
Greater than 4,000,000 kg	2	13,042,440	35	281,596,752
From 1,000,000 kg to 4,000,000 kg	33	68,284,527	153	267,517,387
From 100,000 kg to 1,000,000 kg	193	59,056,461	1,403	408,228,931
From 10,000 kg to 100,000 kg	367	13,689,295	5,123	171,692,502
From 1,000 kg to10,000 kg	225	866,771	5,323	24,248,380
From 1 to 1,000 kg	255	64,566	4,941	1,381,891
0 kg	234	0	2,808	0
Total	**1,309**	**155,004,060**	**19,786**	**1,154,665,842**
	% of Total	**% of Total**	**% of Total**	**% of Total**
Greater than 4,000,000 kg	0.2	8.4	0.2	24.4
From 1,000,000 kg to 4,000,000 kg	2.5	44.1	0.8	23.2
From 100,000 kg to 1,000,000 kg	14.7	38.1	7.1	35.4
From10,000 kg to 100,000 kg	28.0	8.8	25.9	14.9
From 1,000 kg to10,000 kg	17.2	0.6	26.9	2.1
From 1 to 1,000 kg	19.5	0.0	25.0	0.1
0 kg	17.9	0.0	14.2	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**

4.8.2 Facilities with Very Large or Very Small Releases

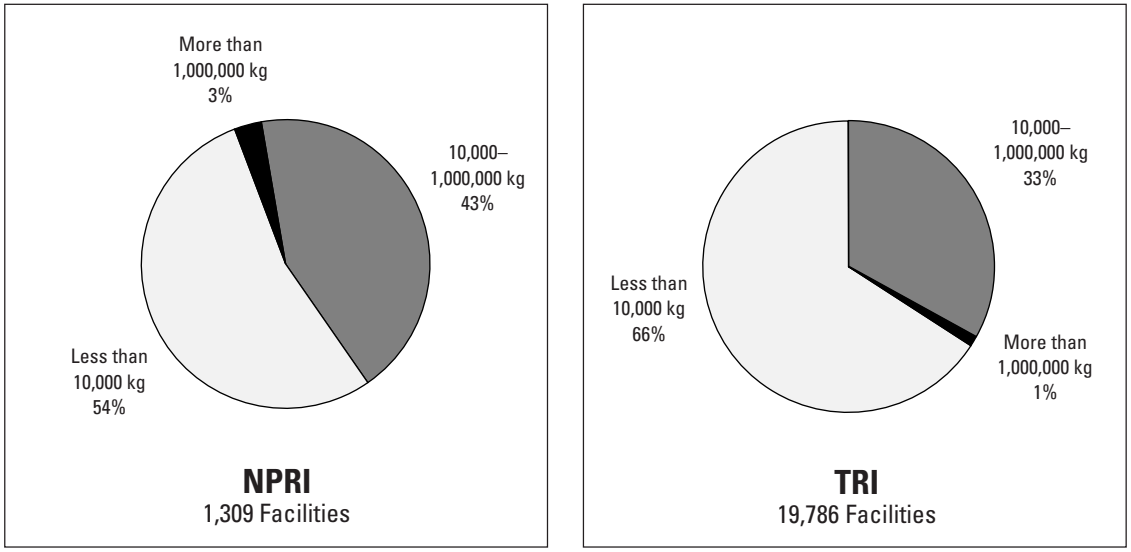
As noted above, the top 50 facilities account for twice the proportion (59 percent) of total releases and transfers in NPRI than do the top 50 facilities in TRI (29 percent). One reason for this difference is the relative numbers of facilities reporting large and small release and transfer amounts. In NPRI, 3 percent of facilities reported total releases and transfers greater than 1 million kg, while 1 percent of TRI facilities did. The medium-size facilities reporting between 10,000 and 1 million kg accounted for the other half of total releases and transfers in both countries' data, although they represented 33 percent of TRI facilities and 43 percent of NPRI facilities. Facilities reporting less than 10,000 kg comprised one-half of all NPRI facilities, but two-thirds of all TRI facilities (see **Table 4–24** and **Figure 4–7**).

In all of the upper ranges in **Table 4–24**, the NPRI facilities represented a greater percentage of the NPRI total than did the corresponding TRI facilities. Thus, there were relatively more facilities in NPRI reporting the largest total releases and transfers than there were in TRI, and more facilities in TRI reporting the smallest total releases and transfers than in NPRI. In short, releases and transfers in NPRI were more concentrated in fewer facilities.

Figure 4–7
M 1995

Distribution of Reporting in NPRI and TRI, by Amount of Total Releases and Transfers and according to Facility Output

Distribution of Facilities by Amount of Total Releases and Transfers



Distribution of Total Releases and Transfers according to Facility Output

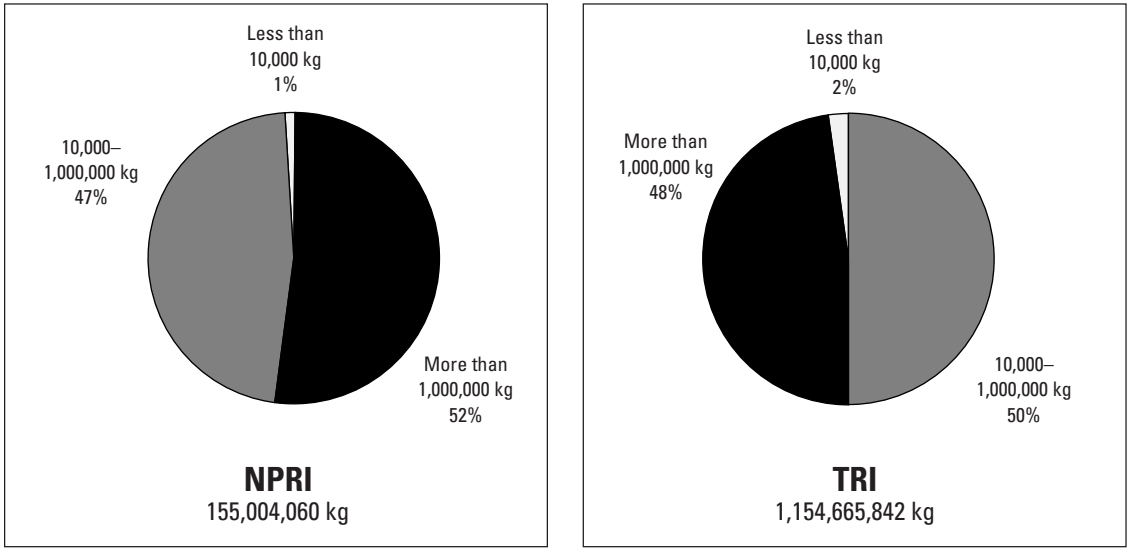


Table 4–25
M 1995

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

Rank	US SIC Code	Industry	NPRI (kg/form)	TRI (kg/form)	Ratio of Average per Form NPRI/TRI
1	23	Apparel and Other Textile Products	112,500	12,883	8.7
2	22	Textile Mill Products	51,127	15,017	3.4
3	29	Petroleum and Coal Products	28,885	9,927	2.9
4	32	Stone/Clay/Glass Products	18,796	8,926	2.1
5	37	Transportation Equipment	26,201	12,907	2.0
6	35	Industrial Machinery	8,935	4,585	1.9
7	31	Leather Products	21,372	11,751	1.8
8	30	Rubber and Plastics Products	25,819	16,498	1.6
9	33	Primary Metal Industries	62,488	39,941	1.6
10	34	Fabricated Metal Products	9,097	5,769	1.6
11	26	Paper Products	94,014	60,744	1.5
12	28	Chemicals	35,773	26,036	1.4
13	36	Electronic/Electrical Equipment	9,064	7,247	1.3
14	25	Furniture and Fixtures	16,554	13,517	1.2
15	24	Lumber and Wood Products	9,589	8,592	1.1
16	27	Printing and Publishing	32,328	33,726	1.0
17	20	Food Products	6,387	7,591	0.8
18	39	Misc. Manufacturing Industries	4,148	9,417	0.4
19	38	Measurement/Photographic Instruments	1,501	12,210	0.1
20		Multiple Codes 20–39*	—	17,139	—
21	21	Tobacco Products	—	13,048	—
		Total	**35,814**	**19,320**	**1.9**

* Multiple SIC codes reported only in US data.

4.8.3 Industrial Mix

Differences in the industrial mix of facilities reporting to the two PRTRs—within the matched set of industries—might account for some of the greater releases and transfers per facility in Canada. Relatively more producers of primary metal products, for instance, reported to NPRI than to TRI. Thirteen percent of NPRI forms in the matched data set came from the primary metals industry, compared to 10 percent of TRI forms (see **Tables 4–14** and **4–15**, above). If primary metals manufacturing tended to produce greater releases and transfers—in both countries—than other industries, then the relative prevalence of that industry in Canada would contribute to Canada's larger average of releases and transfers per facility. In fact, this is not the case.

Table 4–25 presents average releases and transfers per form for all industry groups. **Figure 4–8** illustrates these data. In 15 industry groups, NPRI data indicate higher releases and transfers per form than for TRI reporting in the same industries. Thus, differences in average releases and transfers between NPRI and TRI within industries outweigh the influence of the role of each industry within NPRI or TRI.

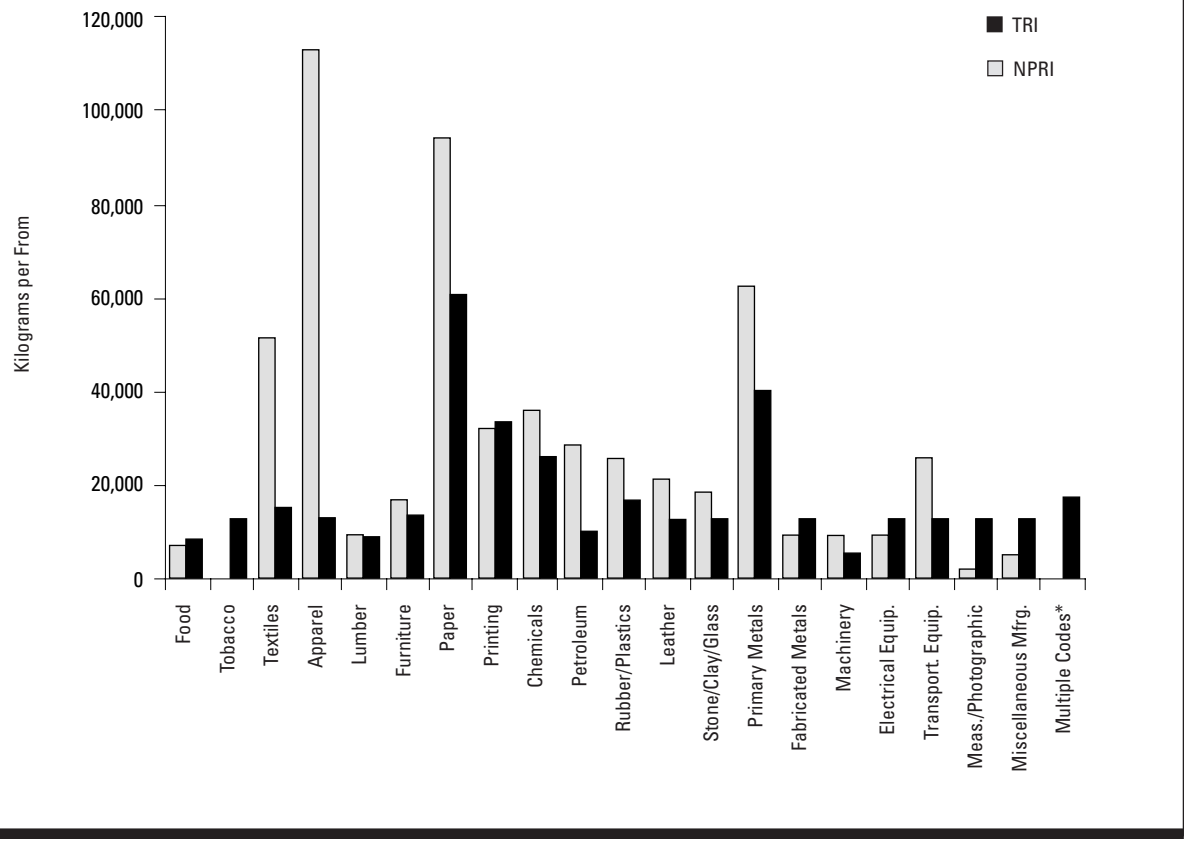
Canadian primary metals manufacturers, for example, averaged 62,488 kg per form in total releases and transfers, while their US counterparts averaged 39,941 kg per form. The greatest differences occurred in the apparel and textiles industries, but these NPRI averages reflect very few facilities (just one apparel manufacturer and nine in textile mill products). Other industries with NPRI averages more than twice as great as those in TRI were petroleum and coal products and stone/clay/glass manufacture. Industries with lower averages in Canada than in the United States were food products and miscellaneous manufacturing (the low ratio for measurement and photographic instruments depended on only one facility reporting to NPRI).

Differences between Canada and the United States in the mix of industrial activities within the major industrial groups could potentially explain differences in release and transfer patterns between the two countries. **Tables 4–26** through **4–28** examine three-digit SIC code activity for the chemical, primary metals, and pulp and paper industries, which were the three industrial categories with the largest releases and transfers in both PRTRs. Although the distribution of specific industrial activities varied considerably between the two countries, release-and-transfer patterns within the three-digit SIC codes varied even more. These data suggest that the higher NPRI averages for releases and transfers per form, in the industries contributing the most releases and transfers, do not arise from the mix of industrial activity at the three-digit level.

For example, in the chemical industry (SIC 28), NPRI releases and transfers per form were, on average, 37 percent higher than those in TRI. Industrial inorganic chemicals (SIC 281) represented one-quarter of the forms and

Figure 4–8
M 1995

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



*TRI only.

In the pulp and paper industry (SIC 26), release and transfer amounts per form were half again as high in NPRI as in TRI. Pulp mills (SIC 261) reporting to NPRI averaged 60 percent higher total releases and transfers per form than those reporting to TRI. Although they submitted roughly the same number of forms in each country (188 in NPRI versus 157 in TRI), pulp mills submitted 60 percent of the forms in SIC 26 for NPRI, but only 8 percent for TRI. Paper mills (SIC 262) accounted for similar shares of forms (20 percent) in the two systems, but their average releases and transfers per form were 44 percent higher in NPRI than in TRI.

The one three-digit group in which the TRI average greatly exceeded the NPRI average was paperboard mills (SIC 263); this group also constituted a larger share of TRI reporting in SIC 26. Facilities within SIC 26 reporting multiple SIC codes to TRI also had above-average release/transfer amounts per form (about the same as paperboard mills and pulp mills); NPRI includes no similar category. (See **Chapter 8** for further analysis of the pulp and paper industry.)

one-half of the releases and transfers in this industry in NPRI reporting. The resulting average per form was three times the comparable average in TRI. Thus, this industrial activity contributed to NPRI's higher average, not because it constituted a sizable portion of the Canadian chemical industry, but because its average releases and transfers per form were much higher than those of TRI facilities in the same business.

Some three-digit SIC code activities that played a smaller part still contributed a greater proportion to overall average releases and transfers. For agricultural chemicals (SIC 287), NPRI releases and transfers per form were four times as high as in TRI. Paints and allied products (SIC 285) represented 24 percent of NPRI forms in SIC 28 and only 4 percent of the corresponding releases and transfers. Average releases and transfers per form from this activity, however, were two-and-one-half times those of comparable US forms in SIC 28.

For primary metal products (SIC 33), releases and transfers per form in NPRI were 56 percent higher than those in TRI. NPRI releases and transfers per form were substantially higher for blast furnaces (SIC 331) and iron and steel foundries (SIC 332). These industries accounted for nearly half of both NPRI and TRI forms (46 percent and 44 percent, respectively) in SIC 33. These more than offset the very large average in TRI for primary nonferrous metals (SIC 333; nearly 14 times the average releases and transfers per form from NPRI facilities) and substantially higher TRI averages for other three-digit activities in the industry.

Table 4–26
M 1995

Total Releases and Transfers for Chemical Industry (US SIC Code 28)

US SIC Code	Industry	Number of Forms	% of All Forms	Total Releases and Transfers (kg)	% of Total	Average per Form (kg/form)
NPRI Facilities						
281	Industrial Inorganic Chemicals	353	24.5	27,162,560	52.6	76,948
282	Plastics Materials and Synthetics	207	14.3	5,692,918	11.0	27,502
283	Pharmaceuticals	42	2.9	1,698,833	3.3	40,448
284	Soap, Cleaners and Toilet Goods	149	10.3	172,452	0.3	1,157
285	Paints and Allied Products	349	24.2	1,999,473	3.9	5,729
286	Industrial Organic Chemicals	141	9.8	5,286,559	10.2	37,493
287	Agricultural Chemicals	50	3.5	8,998,974	17.4	179,979
289	Miscellaneous Chemical Products	152	10.5	609,386	1.2	4,009
	Total	**1,443**	**100.0**	**51,621,155**	**100.0**	**35,773**
TRI Facilities						
281	Industrial Inorganic Chemicals	1,061	6.3	25,529,088	5.9	24,061
282	Plastics Materials and Synthetics	1,765	10.6	42,633,420	9.8	24,155
283	Pharmaceuticals	564	3.4	23,130,352	5.3	41,011
284	Soap, Cleaners and Toilet Goods	810	4.8	2,955,754	0.7	3,649
285	Paints and Allied Products	2,673	16.0	6,136,849	1.4	2,296
286	Industrial Organic Chemicals	2,665	15.9	91,388,383	21.0	34,292
287	Agricultural Chemicals	854	5.1	35,179,849	8.1	41,194
289	Miscellaneous Chemical Products	1,786	10.7	12,135,990	2.8	6,795
	Multiple codes within SIC 28*	4,530	27.1	196,203,599	45.1	43,312
	SIC code not valid within SIC 28	13	0.1	57,087	0.0	4,391
	Total	**16,721**	**100.0**	**435,350,369**	**100.0**	**26,036**

* Multiple SIC codes reported only in US data.

Table 4–27
M 1995

Total Releases and Transfers for the Primary Metal Products Industry (US SIC Code 33)

US SIC Code	Industry	Number of Forms	% of All Forms	Total Releases and Transfers (kg)	% of Total	Average per Form (kg/form)
NPRI Facilities						
331	Blast Furnace and Basic Steel Products	193	33.1	25,551,663	70.1	132,392
332	Iron and Steel Foundries	75	12.9	5,802,435	15.9	77,366
333	Primary Nonferrous Metals	147	25.2	4,211,611	11.6	28,650
334	Secondary Nonferrous Metals	36	6.2	317,587	0.9	8,822
335	Nonferrous Rolling and Drawing	96	16.5	472,128	1.3	4,918
336	Nonferrous Foundries	25	4.3	74,273	0.2	2,971
339	Miscellaneous Primary Metal Products	11	1.9	728	0.0	66
	Total	**583**	**100.0**	**36,430,425**	**100.0**	**62,488**
TRI Facilities						
331	Blast Furnace and Basic Steel Products	1,514	26.2	74,597,530	32.4	49,272
332	Iron and Steel Foundries	1,051	18.2	23,551,196	10.2	22,408
333	Primary Nonferrous Metals	200	3.5	78,675,385	34.1	393,377
334	Secondary Nonferrous Metals	480	8.3	9,127,555	4.0	19,016
335	Nonferrous Rolling and Drawing	1,009	17.5	9,343,196	4.1	9,260
336	Nonferrous Foundries	624	10.8	2,366,490	1.0	3,792
339	Miscellaneous Primary Metal Products	393	6.8	2,579,317	1.1	6,563
	Multiple codes within SIC 33*	488	8.5	30,332,610	13.2	62,157
	SIC code not valid within SIC 33	14	0.2	7,164	0.0	512
	Total	**5,773**	**100.0**	**230,580,443**	**100.0**	**39,941**

* Multiple SIC codes reported only in US data.

Table 4–28
M 1995

Total Releases and Transfers for the Paper Products Industry (US SIC Code 26)

US SIC Code	Industry	Number of Forms	% of All Forms	Total Releases and Transfers (kg)	% of Total	Average per Form (kg/form)
NPRI Facilities						
261	Pulp Mills	188	60.3	21,991,313	80.2	116,975
262	Paper Mills	62	19.9	3,596,820	3.6	58,013
263	Paperboard Mills	4	1.3	95,770	1.3	23,943
265	Paperboard Boxes	7	2.2	146,803	0.3	20,972
267	Misc. Converted Paper Products	51	16.3	3,501,638	14.5	68,660
	Total	**312**	**100.0**	**29,332,344**	**100.0**	**94,014**
TRI Facilities						
261	Pulp Mills	157	8.4	11,532,702	10.2	73,457
262*	Paper Mills	373	20.0	14,982,441	13.2	40,167
263	Paperboard Mills	232	12.4	17,483,946	15.4	75,362
265	Paperboard Boxes	27	1.4	590,038	0.5	21,853
267**	Misc. Converted Paper Products	328	17.6	10,991,706	9.7	33,511
	Multiple codes within SIC 26***	747	40.1	57,646,853	50.9	77,171
	Total	**1,864**	**100.0**	**113,227,686**	**100.0**	**60,744**

* Includes 266 which was changed to 262 in 1987.
** Includes 264 which was changed to 267 in 1987.
*** Multiple SIC codes reported only in US data.

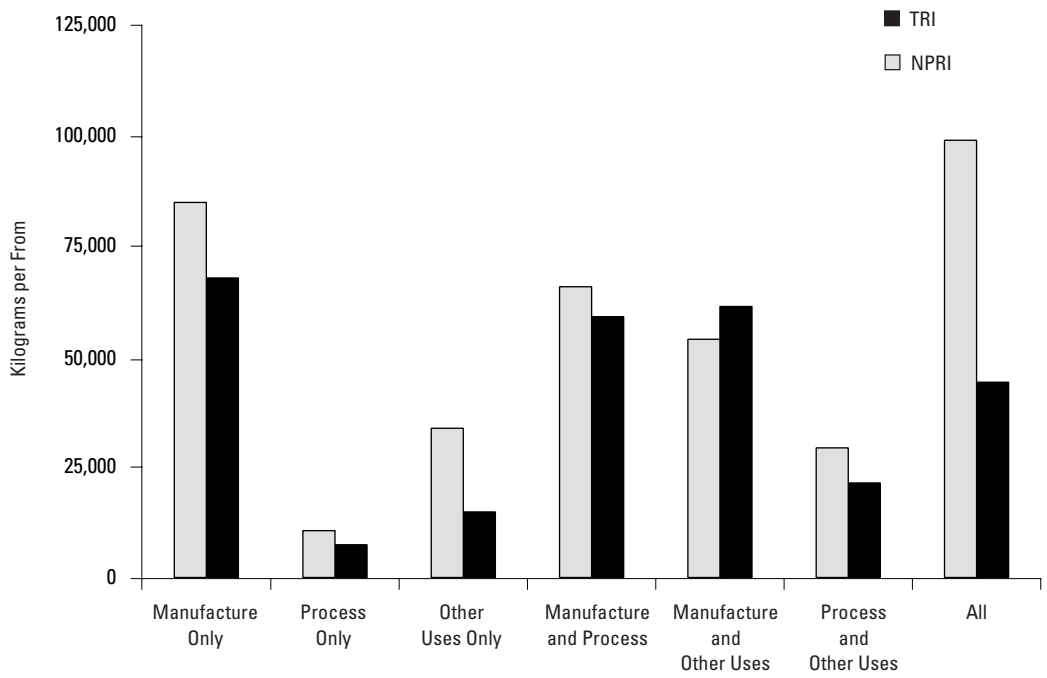
Table 4–29
M 1995

NPRI and TRI Average Total Releases and Transfers per Form, by Activity/Use Type

Type of Activity/Use	Average Total Releases and Transfers per Form: NPRI (kg)	Average Total Releases and Transfers per Form: TRI (kg)	Ratio of Average per Form NPRI/TRI
Manufacturing Only	84,513	68,067	1.2
Processing Only	11,212	7,698	1.5
Other Uses Only	33,658	14,679	2.3
Manufacturing and Processing	66,041	59,092	1.1
Manufacturing and Other Uses	54,350	61,594	0.9
Processing and Other Uses	29,241	21,513	1.4
All Three Activities/Uses	98,889	44,315	2.2
Total	**35,814**	**19,320**	**1.9**

Figure 4–9
M 1995

NPRI and TRI Average Total Releases and Transfers per Form, by Activity/Use Type



4.8.4 Chemical Use/Activity

Another potential reason for the higher releases and transfers per form of Canadian industries is to be found in the data indicating how facilities use the chemicals they report. Facilities may manufacture, process or otherwise use the chemicals they report, or they may report combinations of these activities. In all but one case, NPRI forms contained higher average total releases and transfers than those in TRI. The greatest differential appeared in forms reporting other uses only, with averages 2.3 times higher in NPRI than in TRI. Similarly, forms reporting all three activities had averages 2.2 times higher in NPRI. Only in the combination of manufacturing and other uses did NPRI forms carry a lower average than TRI forms (see **Table 4–29** and **Figure 4–9**).

4.8.5 Threshold Differences

The matched data set compiled for this analysis does not take into account two other differences between the two reporting systems: lower reporting thresholds in TRI for the "otherwise used" category and for chemicals identified as carcinogens by the United States Occupational Safety and Health Administration (OSHA). TRI facilities must report if they "otherwise use" more than 10,000 lbs (4,450 kg) of chemicals, whereas the threshold for reporting chemicals manufactured or processed is 25,000 lbs (11,350 kg). For OSHA-identified carcinogens, the TRI *de minimus* level for reporting is a concentration of 0.1 percent, rather than the 1.0 percent level that applies to all other TRI chemicals and to all NPRI chemicals.

Eliminating from the matched data set all TRI forms that report only in the "otherwise used" category and all forms from both PRTRs that report OSHA carcinogens controls for these differences. (Beginning in 1995, in calculating thresholds, NPRI facilities must also

Table 4–30
1995

Matching NPRI and TRI Forms on Thresholds

	Number of Forms	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	Average per Form (kg)
TRI Matched Chemicals/Industries	59,764	836,981,403	317,684,439	1,154,665,842	19,320
Minus "Other Uses" Only	17,362	192,654,911	62,207,969	254,862,880	14,679
Minus *de minimus* Chemicals	12,091	87,910,277	33,712,535	121,622,812	10,059
Plus *de minimus*/Other Uses Only*	1,781	24,079,064	8,417,876	32,496,940	18,246
TRI Matched Thresholds	**32,092**	**580,495,279**	**230,181,810**	**810,677,090**	**25,261**
NPRI Matched Chemicals/Industries	4,328	116,744,327	38,259,733	155,004,060	35,814
Minus "Other Uses" Only	915	25,488,660	5,308,857	30,797,517	33,658
Minus *de minimus* Chemicals	606	7,948,175	4,463,749	12,411,924	20,482
Plus *de minimus*/Other Uses Only*	101	2,274,529	1,367,241	3,641,770	36,057
NPRI Matched Thresholds	**2,908**	**85,582,021**	**29,854,368**	**115,436,389**	**39,696**

* To avoid double subtraction.

count the weight of a by-product released or transferred to disposal, even those in mixtures less than 1 percent concentration. This difference cannot be removed from the analysis.)

In the result (see **Table 4–30**), NPRI forms still averaged more than one-and-a-half times the total releases and transfers of those in TRI. Adjusting for threshold differences thus accounts for only about one-fifth of the difference between NPRI and TRI averages.

4.9 TRI Industry Expansion

EPA has added various non-manufacturing industries to TRI: metal mining facilities, coal mining, oil- and coal-fired power plants, hazardous waste treatment facilities, chemical distributors, petroleum bulk storage facilities and solvent recovery services. These industries will begin reporting for 1998. NPRI, because it includes these industries, offers some perspective on the value of the information to be gained under this expansion. Although the proportion of total releases and transfers these industries will represent in TRI will no doubt differ somewhat from their role in NPRI, the NPRI data do suggest the extent to which the expansion will add to TRI's information base.

In NPRI, facilities in these industries reported releases and transfers totaling 23 million kg in 1995, as shown in **Table 4–31**. Representing 7 percent of NPRI facilities, they were responsible for 15 percent of NPRI total releases and transfers.

Currently, 24 percent of NPRI total releases and transfers must be excluded from the matched data set in this report because they are reported by non-manufacturing industries (see **Figure 4–1**, above). Had the TRI expansion industries reported in 1995, only 10 percent of the NPRI totals would have been excluded because of industrial activity, a substantial increase in comparability between the two databases.

Table 4–31
M 1995

1995 NPRI Releases and Transfers from Industries Added to TRI Reporting

US SIC Code	Industry	Number of Facilities	Number of Forms	Total Air Emissions (kg)	Surface Water Discharges (kg)	Under-ground Injection (kg)	On-Site Land Releases (kg)	Total Releases (kg)	Treatment/ Destruction (kg)	Sewage/ POTWs (kg)	Disposal/ Containment (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)
10	Metal Mining	49	183	1,402,116	14,993,198	3,600,000	39,997	20,036,799	0	0	0	0	20,036,799
1021	Copper Ores	13	51	264,263	12,055,909	0	32,205	12,353,080	0	0	0	0	12,353,080
1031	Lead and Zinc Ores	7	39	1,038,416	2,807,715	0	7,792	3,854,023	0	0	0	0	3,854,023
1041	Gold Ores	26	84	64,694	127,482	3,600,000	0	3,792,861	0	0	0	0	3,792,861
1061	Ferroalloy Ores, except Vanadium	2	8	34,743	2,092	0	0	36,835	0	0	0	0	36,835
1099	Metal Ores, not elsewhere classified	1	1	0	0	0	0	0	0	0	0	0	0
12	Coal Mining												
1221	Bituminous Coal/Lignite Surface Mining	1	1	0	0	0	0	0	0	0	0	0	0
4911	Electric Generation, Transmission	21	41	1,946,874	19,038	0	464,317	2,430,229	16,512	0	313,320	329,832	2,760,061
4931	Electric and Other Services Combined	1	3	0	64,267	0	0	64,267	0	0	350	350	64,617
5169	Wholesale Trade of Chemicals	11	99	6,906	0	0	1,000	20,453	48,802	60	0	48,862	69,315
7389	Business Services (Solvent Recovery)	2	9	0	0	0	0	274	9,600	0	0	9,600	9,874
	Total in NPRI for TRI Expansion Industries	**85**	**336**	**3,355,896**	**15,076,503**	**3,600,000**	**505,314**	**22,552,022**	**74,914**	**60**	**313,670**	**388,644**	**22,940,666**
	Total in NPRI for Current TRI Industries/Matched Chemicals	**1,309**	**4,328**	**79,547,053**	**15,419,582**	**9,937,227**	**11,690,712**	**116,744,327**	**13,148,001**	**4,457,382**	**20,654,350**	**38,259,733**	**155,004,060**
	TRI Expansion Industries as % of Current TRI Industries, in NPRI	**6.5**	**7.8**	**4.2**	**97.8**	**36.2**	**4.3**	**19.3**	**0.6**	**0.0**	**1.5**	**1.0**	**14.8**

➤ Others on TRI expansion list but with no NPRI reports:
4939 Combination Utilities (Electric, Gas, Other)
4953 Refuse/Waste Disposal Systems
5171 Petroleum Bulk Stations and Terminals