

LEGEND	M	Matched Chemicals/Industries
	A	All Chemicals/Industries

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■ Key Findings

- More cross-border transfers were sent for recycling in 1996 than for any other waste management option: 97 percent of US transfers of TRI chemicals sent outside the country and 58 percent of NPRI substances sent outside the country from Canada. Beginning in reporting year 1996, NPRI facilities reported specific amounts of transfers to each destination, rather than a total amount sent to all destinations. This enabled a more comparable analysis of cross-border transfers between the United States and Canada.
- For transfers to treatment/destruction and disposal/containment in the matched data set, US facilities sent nearly 2 million kg in cross-boundary transfers to Canada in 1996 and Canadian facilities sent more than 4 million kg to the United States. Most of these transfers crossed between Ontario and Michigan. This analysis excludes transfers to sewage/POTWs, which are almost always local, and transfers to recycling or energy recovery, which are mandatory in TRI but voluntary in NPRI.
- The border area—100 kilometers on either side of the Canadian-US border—includes 74 percent of NPRI facilities and 19 percent of TRI facilities in the matched data set for 1996. Their total releases and transfers were smaller, however, than their numbers would suggest: 71 percent of NPRI's total and 14 percent of TRI's.
- The Great Lakes region dominates any border analysis: nine of every ten border facilities was located there. TRI facilities greatly outnumbered NPRI facilities in the Great Lakes region and reported 70 percent of the region's total releases and transfers. In the Eastern region, the opposite pattern prevailed, with NPRI facilities reporting 87 percent of all releases and transfers.
- Emissions to air constituted a larger percentage of releases in the border area than in Canada and the United States as a whole. All other release types—surface water discharges, underground injection, and on-site land releases—were a smaller percentage of releases reported within 100 kilometers of the border.

8.1 Introduction

Cross-boundary issues that can be examined with PRTR data include transfers of chemicals from facilities in one country to sites in another and releases and transfers reported by facilities located near borders. US TRI data supply information on transfers across the US-Mexican and US-Canadian borders. Beginning with the 1996 reporting year, Canadian NPRI data also specify clearly the amounts of pollutants in waste transferred into the United States.

In addition to these analyses of cross-border transfers, this chapter examines other characteristics of the US-Canadian border region, using data from facilities located within 100 kilometers on either side of the border.

8.2 Off-site Transfers across Borders

The amount of chemicals in waste transferred from reporting facilities to off-site locations is reported to both NPRI and TRI, along with the address of the site to which the chemical waste stream is shipped. Most reported transfers occurred to sites within a nation's borders, but listed substances can also be shipped to a North American neighbor or to other countries. Transfers to sewage/POTWs are not included in this analysis because they rarely cross national or even state/provincial boundaries (**Map 8-1**).

8.2.1 Cross-border Transfers from TRI Facilities

In 1996, TRI facilities reported transferring 71 million kg of listed substances out of the country (in the complete TRI database). The majority were sent to sites in Canada (55 percent) and Mexico (42 percent), primarily for recycling. Most transfers to Canada went to Ontario (30 million kg), followed by Quebec (10 million kg). Nearly all of the transfers to Mexico were to the city of Monterrey (29 million kg, see **Table 8-1**, p. 324).

Five percent of all US transfers were sent outside the country. Ninety-seven percent of the amounts that US facilities sent outside the country were for recycling, compared to 65 percent of transfers that took place within US borders (**Table 8-2**, p. 324 and **Figure 8-1**).

8.2.2 Cross-border Transfers from NPRI Facilities

NPRI facilities reported transfers of 32 million kg out of Canada (in the complete NPRI database), and 99 percent of that amount was sent to the United States. States receiving the largest amounts of NPRI listed substances were Ohio (10 million kg) and Michigan (9 million kg, see **Table 8-3**, p. 325). Because reporting off-site transfers to recycling and energy recovery is voluntary under NPRI, these numbers represent a lower-end estimate of off-site transfers.

Transfers outside Canada amounted to 21 percent of all NPRI transfers, four times the US percentage. Recycling was the largest transfer type, but fewer of the transfers outside Canada were to recycling (58 percent) than was the case for transfers within the country's borders (64 percent). However, these numbers also represent a lower-end estimate because of NPRI's voluntary reporting of transfers to recycling and energy recovery (**Table 8-4**, p. 326 and **Figure 8-2**).

8.2.3 Transfers between Canada and the United States

For transfers to treatment/destruction and disposal/containment, US facilities sent nearly 2 million kg of the matched chemicals in cross-boundary transfers to Canada in 1996 and Canadian facilities sent more than 4 million kg to the United States (see **Table 8-5**, p. 327 and **Map 8-2**). (This excludes transfers to sewage/POTWs, which are usually local, and transfers to recycling or energy recovery, which are mandatory in TRI but voluntary in NPRI.)

The majority of these transfers crossed between Ontario and Michigan. Facilities in Ontario shipped 95 percent of the Canada-to-US transfers, and 84 percent of that amount was sent to Michigan. At the same time, Michigan exported 56 percent of total US transfers, almost all of which went to Ontario.

Quebec facilities sent and received the second-largest amounts of US-Canadian cross-border transfers among the Canadian provinces. Among US states, New York ranked second for transfers sent to Canada and Ohio ranked second for transfers received from Canada.

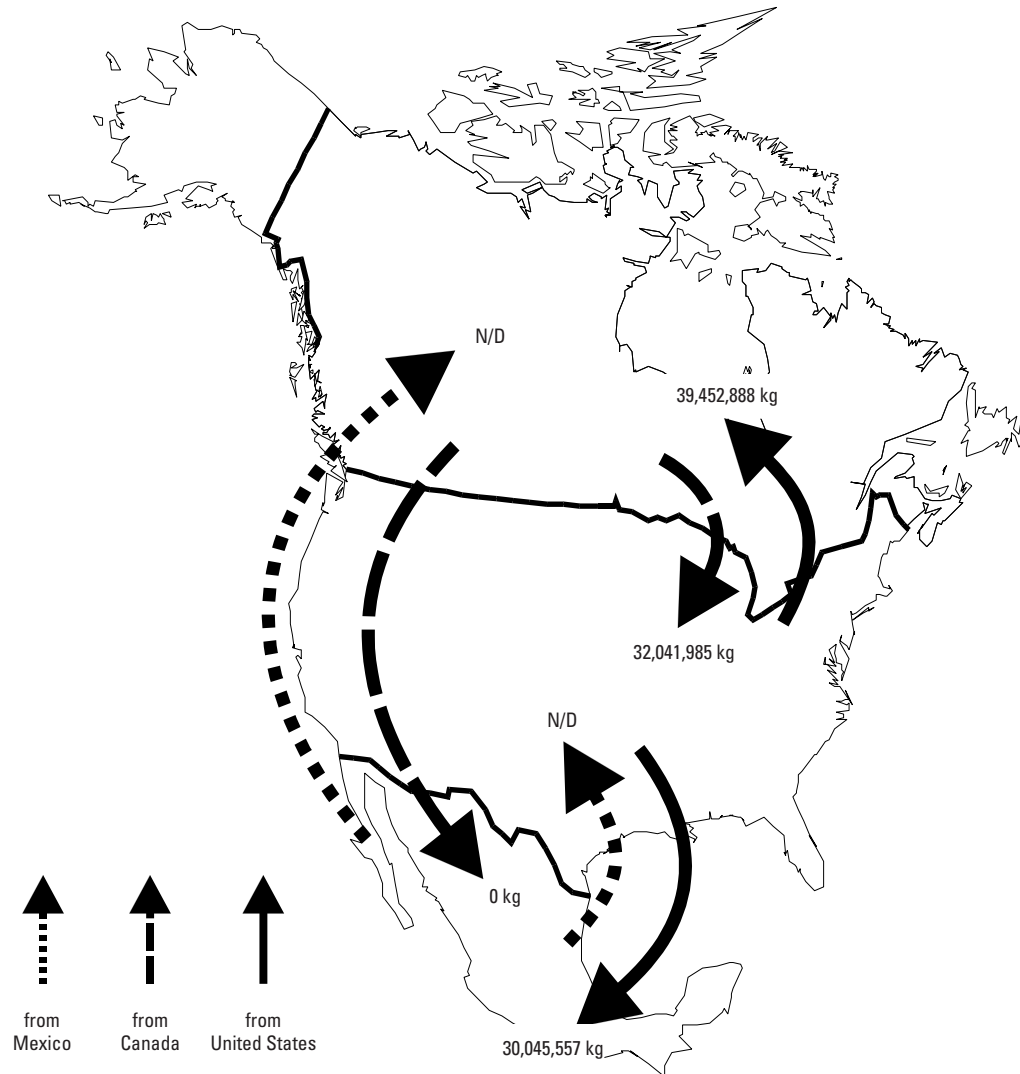
Three Canadian facilities, all in Ontario, reported sending cross-border transfers of more than 750,000 kg each in 1996. Two facilities reported transfers of 1.3 million kg and 877,000 kg, respectively, to sites in Michigan and New York for land disposal. Another NPRI facility reported 1.3 million kg of transfers to Michigan and Ohio for incineration. The US facility with the largest transfers to Canada reported 485,000 kg sent to Ontario for incineration/thermal treatment (**Table 8-6**, p. 328).

[Text continues on p. 329.]

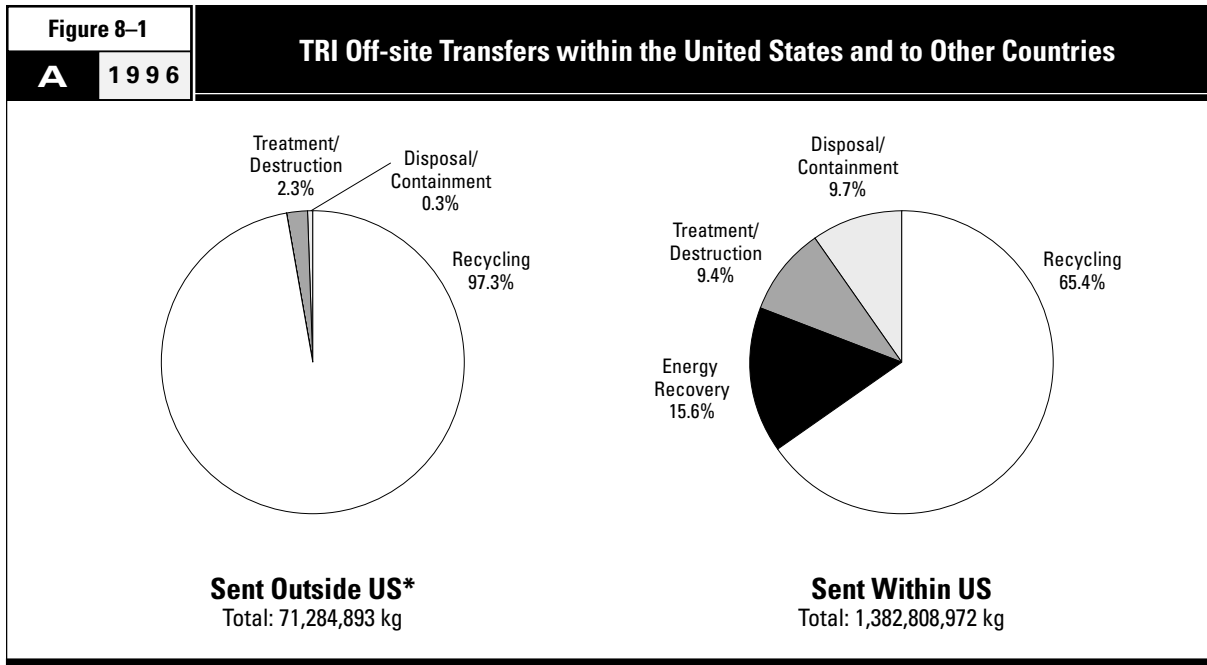
Map 8-1

A 1996

Off-site Transfers across North American Borders

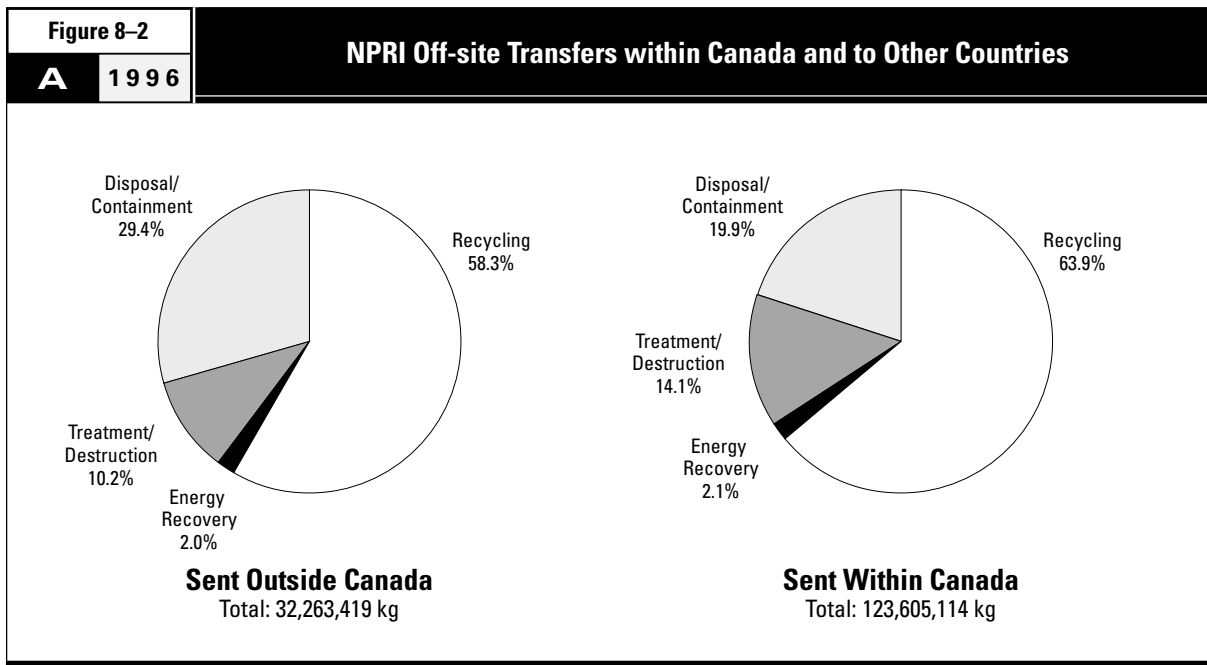


- Reporting of transfers to recycling and to energy recovery is voluntary in Canada; amounts given may not represent all such transfers from Canada.
- Amounts appear in receiving countries.
- Mexico data not collected for 1996.



* 0.1% for Energy Recovery does not appear.

➤ Does not include transfers to sewage/POTWs. Does not include transfers to unknown destinations (0.3% of total).



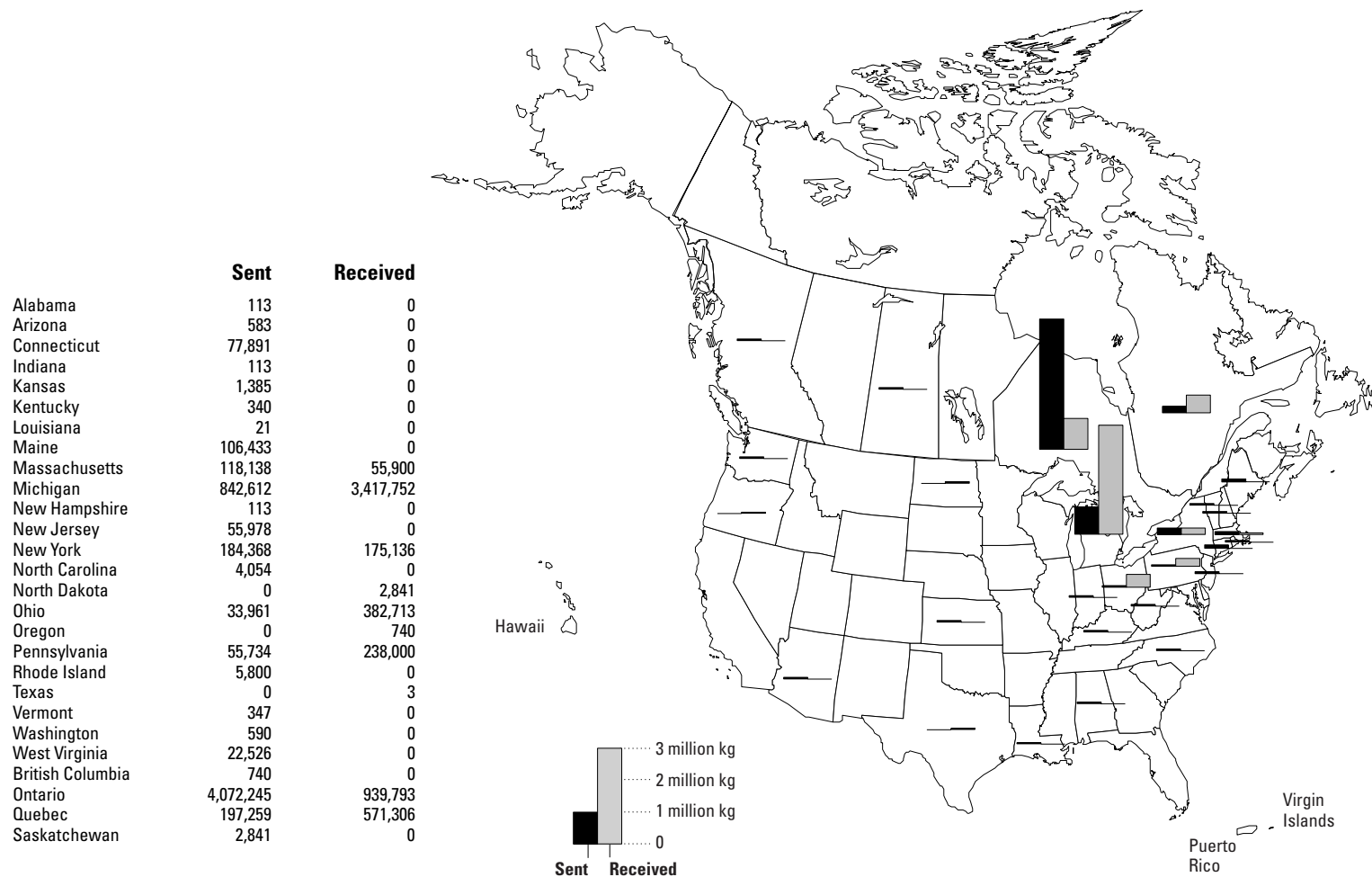
➤ Does not include transfers to sewage/POTWs. Does not include transfers to unknown destinations (1.1% of total).

➤ Reporting of transfers to recycling and to energy recovery is voluntary; amounts given may not represent all such transfers.

Map 8-2

M 1996

Off-site Transfers between the United States and Canada



► Does not include transfers to sewage/POTWs, recycling or energy recovery.

Table 8-1		TRI Off-site Transfers to Other Countries from the United States				
A	1996					
Receiving Country	Transfers to Recycling (kg)	Transfers to Energy Recovery (kg)	Treatment/ Destruction (kg)	Disposal/ Containment (kg)	Total Transfers Received (kg)	% of Transfers Outside US
Belgium	197,113	0	0	0	197,113	0.3
Canada	37,787,173	68,211	1,391,031	206,473	39,452,888	55.3
Ontario	28,462,882	52,317	913,864	111,165	29,540,229	41.4
Quebec	9,218,466	15,893	477,166	95,308	9,806,834	13.8
British Columbia	44,234	0	0	0	44,234	0.1
Alberta	40,194	0	0	0	40,194	0.1
Manitoba	21,397	0	0	0	21,397	0
China	14,054	0	0	0	14,054	0
Finland	8,209	0	0	0	8,209	0
France	103,481	0	0	0	103,481	0.1
Germany	711,544	0	0	0	711,544	1.0
Italy	926	0	0	0	926	0
Japan	270,018	0	0	0	270,018	0.4
Mexico	29,799,781	0	245,776	0	30,045,557	42.1
Monterrey	28,926,769	0	237,136	0	29,163,905	40.9
Other Cities	873,012	0	8,639	0	881,652	1.2
Singapore	45,263	0	0	0	45,263	0.1
United Arab Emirates	345,012	0	0	0	345,012	0.5
United Kingdom	90,822	0	6	0	90,828	0.1
Total Transferred Outside US	69,373,396	68,211	1,636,813	206,473	71,284,893	100.0

Table 8-2		TRI Off-site Transfers within the United States and to Other Countries					
A	1996	Outside US		Within US		Total Off-site Transfers	
		kg	%	kg	%	kg	%
Transfers to:							
Recycling		69,373,396	97.3	904,091,608	65.4	973,465,101	66.9
Energy Recovery		68,211	0.1	215,577,734	15.6	215,645,945	14.8
Treatment/Destruction		1,636,813	2.3	129,421,377	9.4	131,058,192	9.0
Disposal/Containment		206,473	0.3	133,718,253	9.7	133,924,726	9.2
Total Transfers		71,284,893	100.0	1,382,808,972	100.0	1,454,093,965	100.0
% of Total		4.9		95.1		100.0	

► Does not include transfers to sewage/POTWs. Does not include transfers to unknown destinations (0.3% of total).

Table 8-3		NPRI Off-site Transfers to Other Countries from Canada					
A 1996							
Receiving Country	Transfers to Recycling (kg)	Transfers to Energy Recovery (kg)	Treatment/ Destruction (kg)	Disposal/ Containment (kg)	Total Transfers Received (kg)	% of Transfers Outside Canada	
Germany	12,934	0	0	0	12,934	0	
Japan	191,000	0	0	0	191,000	0.6	
United Kingdom	17,500	0	0	0	17,500	0.1	
United States	18,597,493	655,917	3,291,099	9,497,476	32,041,985	99.3	
Ohio	2,775,937	37,152	377,831	6,902,720	10,093,640	31.3	
Michigan	4,763,858	301,700	2,262,380	2,165,544	9,493,482	29.4	
New York	4,122,657	19,700	410	187,588	4,330,355	13.4	
Illinois	2,874,912	0	149,528	0	3,024,440	9.4	
Pennsylvania	625,053	0	370,000	238,000	1,233,053	3.8	
Tennessee	1,015,000	0	0	0	1,015,000	3.1	
Louisiana	877,750	0	0	0	877,750	2.7	
Indiana	474,419	275,608	0	0	750,027	2.3	
New Jersey	494,213	0	0	0	494,213	1.5	
Texas	269,280	0	0	3	269,283	0.8	
California	136,510	0	0	0	136,510	0.4	
Mississippi	90,980	0	0	0	90,980	0.3	
Washington	0	222	75,050	0	75,272	0.2	
South Carolina	67,265	0	0	0	67,265	0.2	
Massachusetts	0	0	55,900	0	55,900	0.2	
Kansas	0	21,200	0	0	21,200	0.1	
Maryland	5,415	0	0	0	5,415	0	
North Dakota	0	0	0	2,841	2,841	0	
North Carolina	2,300	0	0	0	2,300	0	
Wisconsin	1,944	0	0	0	1,944	0	
Oregon	0	335	0	740	1,075	0	
Idaho	0	0	0	40	40	0	
Total Transferred Outside Canada	18,818,927	655,917	3,291,099	9,497,476	32,263,419	100.0	

► Reporting of transfers to recycling and to energy recovery is voluntary; amounts given may not represent all such transfers.

Table 8-4		NPRI Off-site Transfers within Canada and to Other Countries					
A	1996	Outside Canada		Within Canada		Total Off-site Transfers	
		kg	%	kg	%	kg	%
Transfers to:							
Recycling		18,818,927	58.3	78,998,260	63.9	97,817,187	62.8
Energy Recovery		655,917	2.0	2,597,730	2.1	3,253,647	2.1
Treatment/Destruction		3,291,099	10.2	17,375,193	14.1	20,666,292	13.3
Disposal/Containment		9,497,476	29.4	24,633,931	19.9	34,131,407	21.9
Total Transfers		32,263,419	100.0	123,605,114	100.0	155,868,533	100.0
% of Total		20.7		79.3		100.0	

- Does not include transfers to sewage/POTWs. Does not include transfers to unknown destinations (1.1% of total).
- Reporting of transfers to recycling and to energy recovery is voluntary; amounts given may not represent all such transfers.

Table 8-5		Off-site Transfers across National Boundaries, between Canada and the United States						
M 1996		Ontario		Quebec		Saskatchewan	Total Cross-boundary Transfers	
US State	British Columbia From B. C. (kg)	To Ontario (kg)	From Ontario (kg)	To Quebec (kg)	From Quebec (kg)	From Saskatchewan (kg)	To Canada (kg)	From Canada (kg)
Alabama	0	113	0	0	0	0	113	0
Arizona	0	583	0	0	0	0	583	0
Connecticut	0	0	0	77,891	0	0	77,891	0
Indiana	0	113	0	0	0	0	113	0
Kansas	0	0	0	1,385	0	0	1,385	0
Kentucky	0	0	0	340	0	0	340	0
Louisiana	0	0	0	21	0	0	21	0
Maine	0	0	0	106,433	0	0	106,433	0
Massachusetts	0	4,558	0	113,580	55,900	0	118,138	55,900
Michigan	0	841,836	3,410,193	776	7,559	0	842,612	3,417,752
New Hampshire	0	0	0	113	0	0	113	0
New Jersey	0	3,069	0	52,909	0	0	55,978	0
New York	0	4,818	175,136	179,550	0	0	184,368	175,136
North Carolina	0	0	0	4,054	0	0	4,054	0
North Dakota	0	0	0	0	0	2,841	0	2,841
Ohio	0	32,763	248,913	1,197	133,800	0	33,960	382,713
Oregon	740	0	0	0	0	0	0	740
Pennsylvania	0	48,900	238,000	6,834	0	0	55,734	238,000
Rhode Island	0	0	0	5,800	0	0	5,800	0
Texas	0	0	3	0	0	0	0	3
Vermont	0	0	0	347	0	0	347	0
Washington	0	0	0	590	0	0	590	0
West Virginia	0	3,039	0	19,487	0	0	22,526	0
Total	740	939,792	4,072,245	571,307	197,259	2,841	1,511,099	4,273,085

► Does not include transfers to sewage/POTWs, recycling or energy recovery.

Table 8-6		Largest North American Off-site Transfers to Treatment or Disposal across Canada-US Border		
M	1996			
Sending Facility	Receiving Site	Chemical	Amount Transferred (kg)	Type of Treatment or Disposal
Lake Erie Steel Company, Ltd., Nanticoke, ON	Pinetree Landfill, Lennox, MI Santarosa Group, Niagara Falls, NY	Zinc (and its compounds)	1,166,400	Land Disposal
		Manganese (and its compounds)	174,788	Land Disposal
		Total	1,341,188	
Aimco Solrec Ltd., Milton, ON	Systech Corp., Alpena, MI	Xylene (mixed isomers)	705,134	Incineration
		Toluene	185,562	Incineration
		Methyl ethyl ketone	148,449	Incineration
		Methanol	92,781	Incineration
		Methyl isobutyl ketone	18,555	Incineration
		n-Butyl alcohol	18,555	Incineration
		Total	1,317,949	
	Systech Corp., Paulding, OH	Xylene (mixed isomers)	89,820	Incineration
		Toluene	23,637	Incineration
		Methyl ethyl ketone	18,910	Incineration
		Methanol	11,818	Incineration
		Methyl isobutyl ketone	2,364	Incineration
		n-Butyl alcohol	2,364	Incineration
		Total	1,317,949	
Zalev Brothers Limited, Windsor, ON	Browning-Ferris Industries, Northville, MI	Zinc (and its compounds)	368,621	Land Disposal
		Copper (and its compounds)	260,740	Land Disposal
		Manganese (and its compounds)	75,011	Land Disposal
		Lead (and its compounds)	43,493	Land Disposal
		Nickel (and its compounds)	11,745	Land Disposal
		Cobalt (and its compounds)	2,913	Land Disposal
		Cadmium (and its compounds)	1,587	Land Disposal
	Wayne Disposal-Canton Inc., Canton, MI	Zinc (and its compounds)	54,692	Land Disposal
		Copper (and its compounds)	38,686	Land Disposal
		Manganese (and its compounds)	11,129	Land Disposal
		Lead (and its compounds)	6,453	Land Disposal
		Nickel (and its compounds)	1,743	Land Disposal
		Cobalt (and its compounds)	432	Land Disposal
		Cadmium (and its compounds)	236	Land Disposal
Total	877,481			
Dow Corning Corp., Midland Site, Midland, MI	Laidlaw Environmental Services, Corunna, ON	Methanol	161,223	Incineration/Thermal Treatment
		Toluene	152,582	Incineration/Thermal Treatment
		Xylene (mixed isomers)	131,428	Incineration/Thermal Treatment
		Ethylbenzene	34,937	Incineration/Thermal Treatment
		Chloroethane	4,648	Incineration/Thermal Treatment
		Chloromethane	94	Incineration/Thermal Treatment
		Benzene	88	Incineration/Thermal Treatment
		Biphenyl	23	Incineration/Thermal Treatment
Total	485,021			

8.3 Canada-US Border Regions

Seventy-four percent of NPRI facilities and 19 percent of those in TRI in the 1996 matched data set were located within 100 kilometers of the Canadian-US border (Table 8-7, p. 334). This analysis uses the latitude and longitude that facilities reported to TRI or NPRI, or the Universal Transverse Mercator coordinates reported to NPRI, to determine facility locations. Where geographic coordinates were not given a facility's postal code or city was used.

These facilities reported 71 percent of NPRI total releases and transfers in the border area and 14 percent of those in TRI, smaller percentages than suggested by the number of border facilities in the two PRTRs. Thus, although NPRI facilities generally cluster near the border, for both NPRI and TRI, the facilities reporting the largest amounts of releases and transfers were not necessarily located in the border area.

8.3.1 Releases and Transfers in the Border Regions

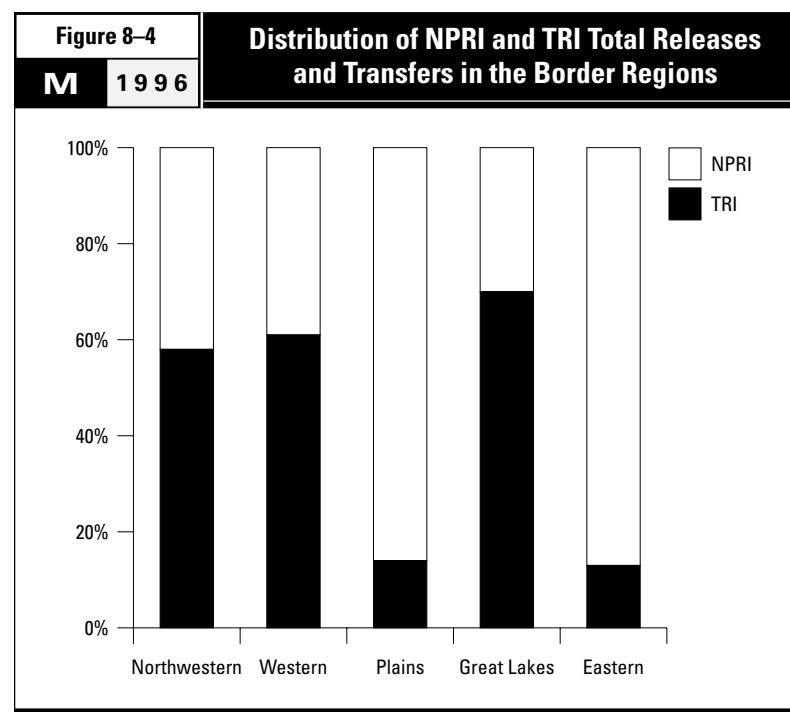
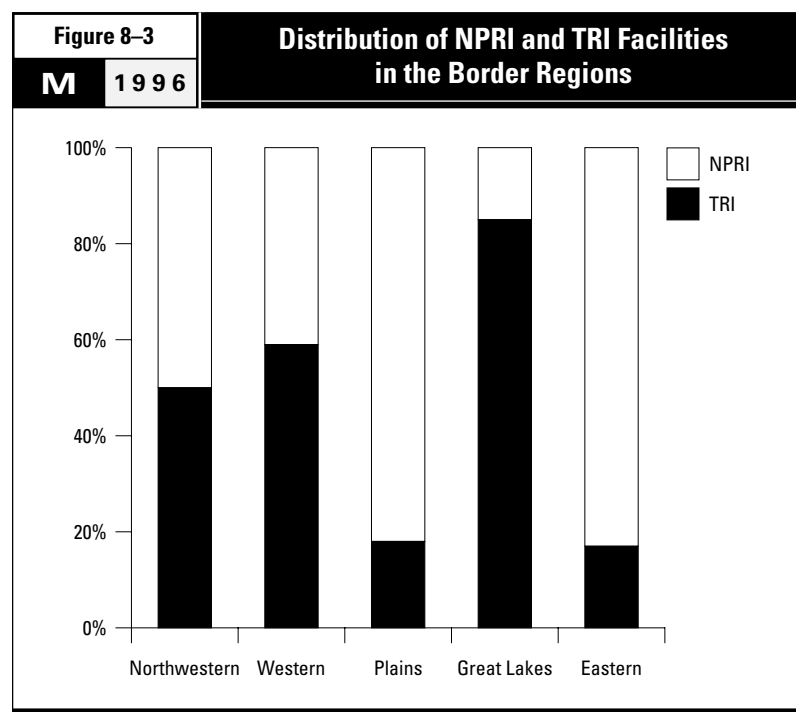
For the purposes of this analysis, the border area is divided into five regions from west to east: the Northwestern region, composed of the Alaskan panhandle and northern British Columbia; the Western region, extending from the Pacific coast to the continental divide; the Plains and northern Mississippi basin; the Great Lakes and Lake of the Woods area; and the eastern region, encompassing the Saint Lawrence River to the Atlantic (Map 8-3).

The five border regions vary substantially (Map 8-4). The 4,201 facilities in the Great Lakes region amounted to 89 percent of all border facilities, and this region contained almost six times as many TRI facilities as NPRI facilities. In the Eastern and Plains regions, the ratio was reversed—NPRI facilities outnumbered TRI facilities by a margin of five to one (Figure 8-3).

The pattern of total releases and transfers in the five regions roughly paralleled the distribution of facilities (compare Figures 8-3 and 8-4). TRI facilities reported 142 million kg or 70 percent of the total for the Great Lakes region (compared to its population of 85 percent of all reporting facilities in that region). In the Eastern region, NPRI facilities reported 24 million kg, or 87 percent of the region's total (with 83 percent of the facilities). However, the NPRI portion of releases and transfers exceeded NPRI's share of facilities in the Plains, Great Lakes, and Eastern regions.

Emissions to air were more prominent in the border regions than in Canada and the US as a whole, especially on the US side of the border area. US border facilities reported 76 percent of their releases as air emissions, compared to 64 percent for all of the United States. In NPRI, air emissions in the border area amounted to 82 percent of total releases, compared to 77 percent for all of Canada. Underground injection, on the other hand, is not widely practiced in the border regions; only TRI facilities in the Great Lakes region reported this release (Table 8-8, p. 335).

[Text continues on p. 332.]



Map 8-3

M 1996

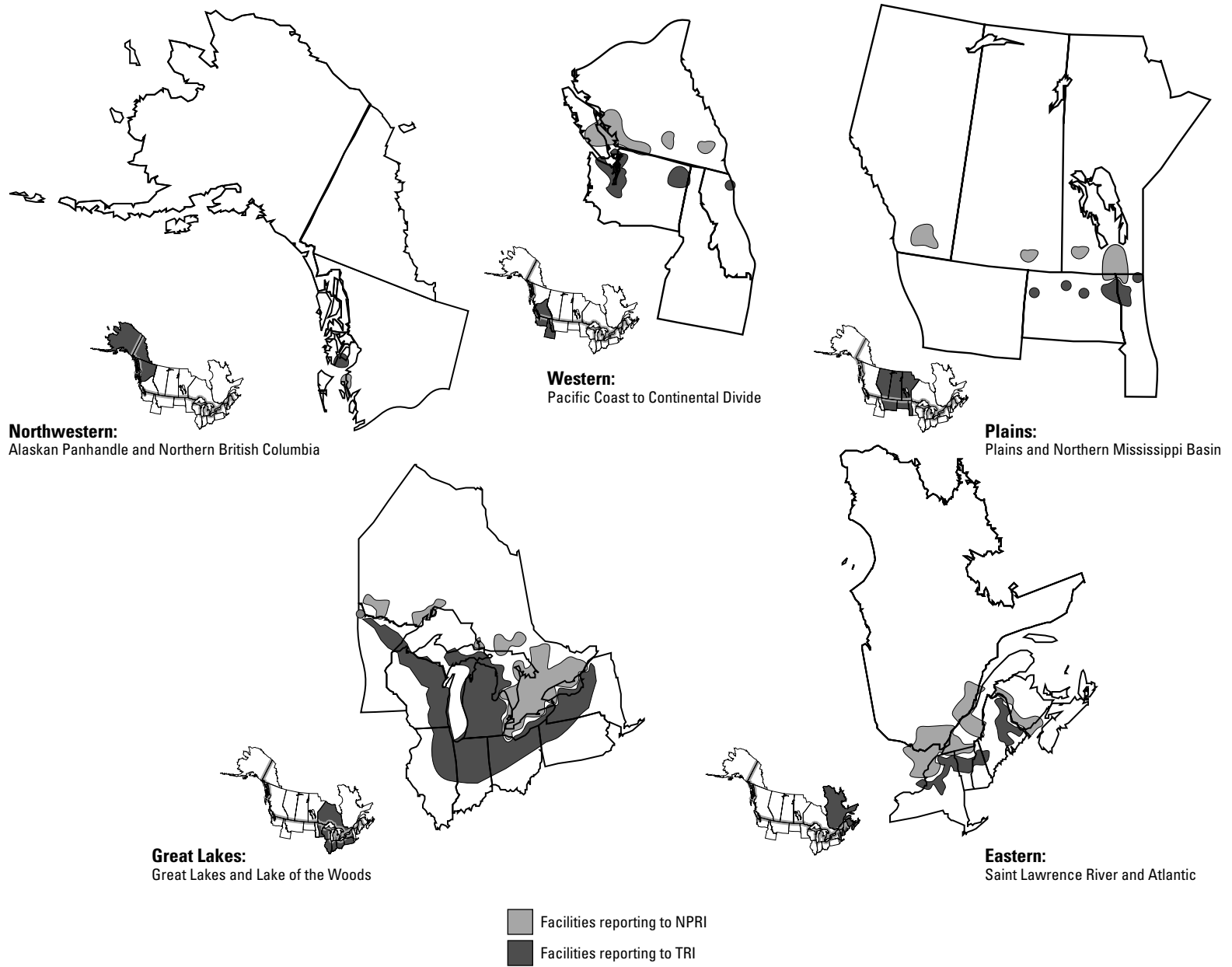
The 100-Kilometer Zone and the Five Geographical Regions of the Canada-US Border Area



Map 8-4

M 1996

NPRI and TRI Facilities in the Canada-US Border Regions



Patterns of releases also varied between the NPRI facilities and TRI facilities in each region. In the Eastern region, for example, on-site land releases amounted to about one-fifth of NPRI releases, but were negligible in TRI. In the Great Lakes region, however, on-site land releases constituted a larger proportion of the TRI total (17 percent) than that of NPRI (6 percent, see **Figure 8-5**).

More than half the transfers in the entire border area were made to disposal/containment in 1996. This was true for both NPRI facilities (55 percent of all transfers) and TRI facilities (52 percent of all transfers). In NPRI, the pattern of transfers in the border area resembles the Canada-wide pattern. In the United States, however, the percentage of transfers to disposal/containment from border facilities (52 percent) greatly exceeded the national average (39 percent, see **Table 8-9**, p. 336).

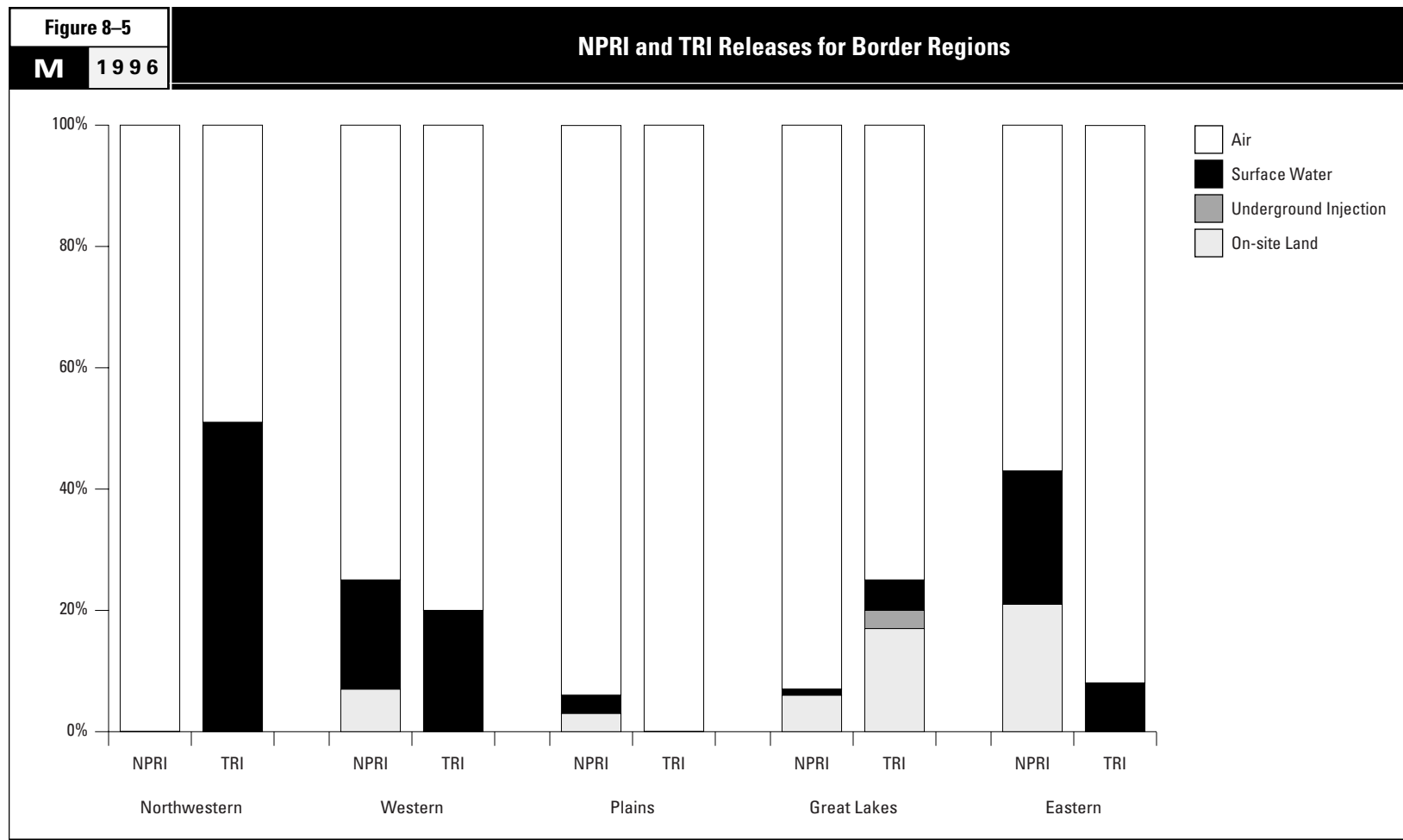
In the five border regions, NPRI facilities sent more of their transfers to disposal/containment, compared to TRI facilities, in all border regions except the Eastern (no transfers were reported in the Northwest). Facilities in the Western and Plains regions exhibited strikingly different patterns across the border. In the Western region, 92 percent of NPRI transfers were reported as sent to disposal/containment, while

61 percent of TRI transfers were to treatment/destruction. In the Plains, treatment/destruction accounted for 76 percent of NPRI transfers, while 88 percent of TRI transfers were to sewage/POTWs (**Figure 8-6**).

8.3.2 Top Chemicals in the Border Regions

Zinc and its compounds ranked first for total releases and transfers, and methanol second, on both sides of the border area in 1996. NPRI border facilities reported 16 million kg of zinc and its compounds and 9 million kg of methanol. The two chemicals accounted for 28 percent of the border area's releases and transfers in NPRI. TRI border facilities reported 27 million kg of zinc and its compounds and 20 million kg of methanol. Together, they accounted for 31 percent of TRI releases and transfers in the border area (**Table 8-10**, p. 337).

Zinc and its compounds ranked first in both NPRI and TRI reporting in the Great Lakes region and in NPRI reporting in the Eastern region. Methanol ranked first or second in NPRI and TRI reporting in the Eastern, Western, and Northwestern regions, as well as second for TRI facilities in the Great Lakes region.



8.3.3 Top Industries in the Border Regions

In most cases throughout the border area, a combination of two industries accounted for half or more of total releases and transfers. These were seldom the same industries, either from one border region to another or for both NPRI and TRI. In the border area as a whole, the primary metal and chemical industries reported the largest total releases and transfers—59 percent of the NPRI total and 47 percent of the TRI total. This principally reflects the importance of the two industries in the Great Lakes region. Primary metals was also a top industry in NPRI reporting in the Eastern and Western regions, while chemical manufacturing also ranked first in the Plains. The paper products industry was a leading industry in both NPRI and TRI reporting in the Eastern, Western, and Northwestern regions (**Table 8–11**, p. 338).

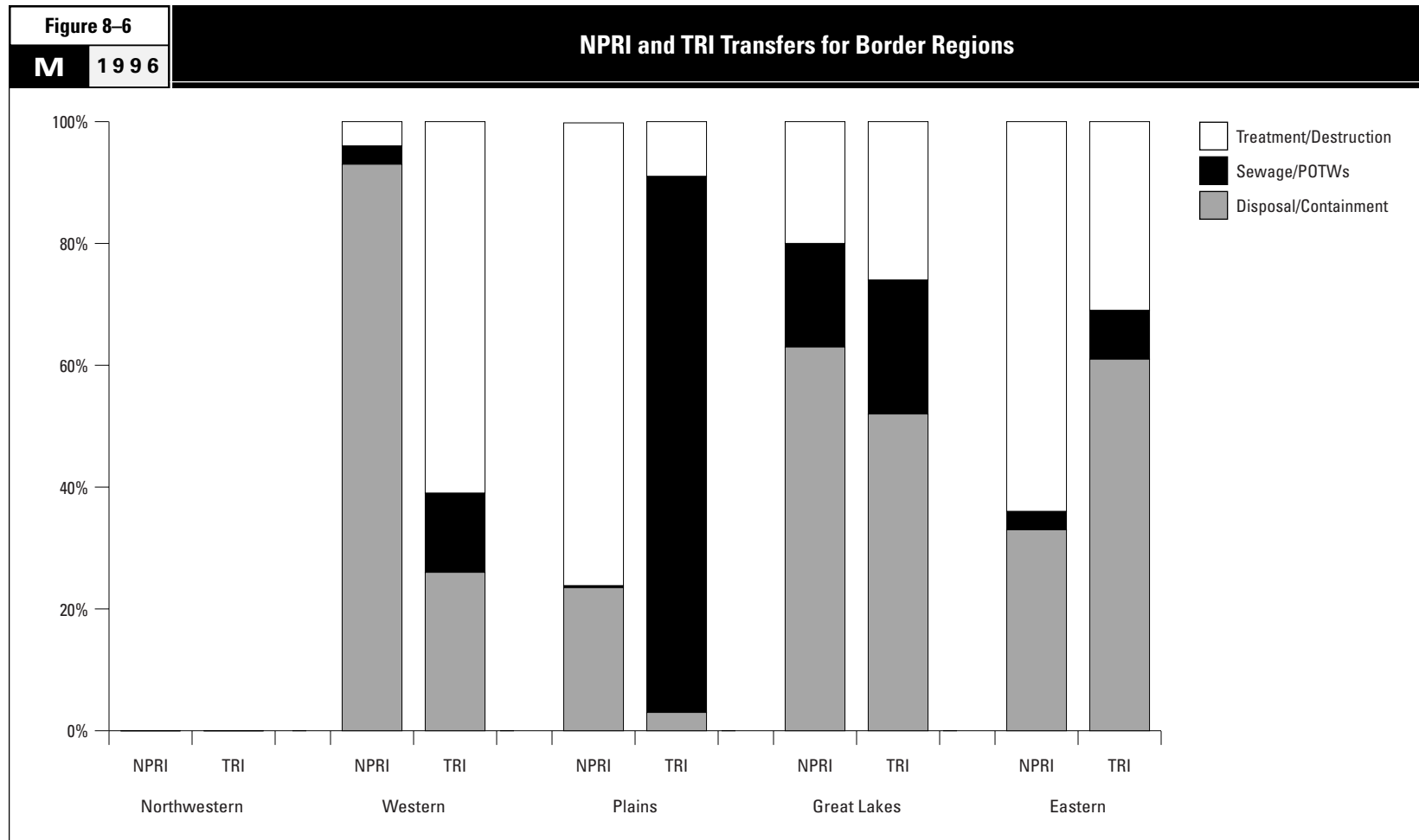


Table 8-7		Releases and Transfers for Border Regions					
M	1996	Facilities		Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers	
		Number	%			kg	%
NPRI-Canadian Facilities							
		285	21.2	14,106,563	10,110,352	24,216,915	19.5
		630	46.9	33,856,450	27,275,947	61,132,397	49.2
		32	2.4	485,010	292,572	777,582	0.6
		46	3.4	1,276,650	521,941	1,798,591	1.4
		1	0.1	616,600	0	616,600	0.5
		994	74.0	50,341,273	38,200,812	88,542,085	71.3
		1,344	100.0	82,596,460	41,532,687	124,129,147	100.0
TRI-US Facilities							
		57	0.3	2,980,831	620,267	3,601,098	0.3
		3,571	18.6	75,565,590	66,346,964	141,912,554	12.9
		7	0	110,132	11,811	121,943	0
		66	0.3	2,717,272	78,134	2,795,406	0.3
		1	0	851,211	0	851,211	0.1
		3,702	19.3	82,225,036	67,057,176	149,282,212	13.6
		19,190	100.0	780,621,952	321,079,591	1,101,701,543	100.0
Totals for US and Canadian Facilities							
		342	1.7	17,087,394	10,730,619	27,818,013	2.3
		4,201	20.5	109,422,040	93,622,911	203,044,951	16.6
		39	0.2	595,142	304,383	899,525	0.1
		112	0.5	3,993,922	600,075	4,593,997	0.4
		2	0	1,467,811	0	1,467,811	0.1
		4,696	22.9	132,566,309	105,257,988	237,824,297	19.4
		20,534	100.0	863,218,412	362,612,278	1,225,830,690	100.0

Table 8-8		Releases for Border Regions				
M	1996					
Border Region	Total Air Emissions (kg)	Surface Water Discharges (kg)	Underground Injection (kg)	On-site Land Releases (kg)	Total Releases (kg)	
NPRI-Canadian Facilities						
Eastern	7,996,275	3,061,872	0	3,028,934	14,106,563	
Great Lakes	31,389,385	317,843	0	2,079,570	33,856,450	
Plains	449,152	14,700	0	15,970	485,010	
Western	951,580	226,674	0	89,434	1,276,650	
Northwestern	616,600	0	0	0	616,600	
Subtotal	41,402,992	3,621,089	0	5,213,908	50,341,273	
% of Subtotal	82.2	7.2	0.0	10.4	100.0	
Total for All Canada	63,590,706	5,128,134	4,812,379	8,936,491	82,596,460	
% of Total	77.0	6.2	5.8	10.8	100.0	
TRI-US Facilities						
Eastern	2,719,976	250,510	0	10,345	2,980,831	
Great Lakes	56,744,998	3,437,355	2,534,581	12,848,656	75,565,590	
Plains	110,132	0	0	0	110,132	
Western	2,166,095	549,177	0	2,000	2,717,272	
Northwestern	416,739	434,471	0	1	851,211	
Subtotal	62,157,940	4,671,513	2,534,581	12,861,002	82,225,036	
% of Subtotal	75.6	5.7	3.1	15.6	100.0	
Total for All US	499,678,471	73,614,363	70,427,564	136,901,554	780,621,952	
% of Total	64.0	9.4	9.0	17.5	100.0	
Totals for US and Canadian Facilities						
Eastern	10,716,251	3,312,382	0	3,039,279	17,087,394	
Great Lakes	88,134,383	3,755,198	2,534,581	14,928,226	109,422,040	
Plains	559,284	14,700	0	15,970	595,142	
Western	3,117,675	775,851	0	91,434	3,993,922	
Northwestern	1,033,339	434,471	0	1	1,467,811	
Subtotal	103,560,932	8,292,602	2,534,581	18,074,910	132,566,309	
% of Subtotal	78.1	6.3	1.9	13.6	100.0	
Total for All Canada and US	563,269,177	78,742,497	75,239,943	145,838,045	863,218,412	
% of Total	65.3	9.1	8.7	16.9	100.0	

Table 8-9		Transfers for Border Regions			
M	1996				
Border Region	Treatment/ Destruction (kg)	Sewage/ POTW (kg)	Disposal/ Containment (kg)	Total Transfers (kg)	
NPRI-Canadian Facilities					
Eastern	6,494,085	286,391	3,329,881	10,110,352	
Great Lakes	5,457,875	4,599,472	17,218,607	27,275,947	
Plains	222,765	1,100	68,707	292,572	
Western	23,013	16,134	482,794	521,941	
Northwestern	0	0	0	0	
Subtotal	12,197,738	4,903,097	21,099,989	38,200,812	
% of Subtotal	31.9	12.8	55.2	100.0	
Total for All Canada	13,571,799	4,943,234	23,017,654	41,532,687	
% of Total	32.7	11.9	55.4	100.0	
TRI-US Facilities					
Eastern	192,423	49,253	378,591	620,267	
Great Lakes	16,974,576	14,885,460	34,486,928	66,346,964	
Plains	1,111	10,361	339	11,811	
Western	47,287	10,255	20,592	78,134	
Northwestern	0	0	0	0	
Subtotal	17,215,397	14,955,329	34,886,450	67,057,176	
% of Subtotal	25.7	22.3	52.0	100.0	
Total for All US	110,901,271	86,130,663	124,047,657	321,079,591	
% of Total	34.5	26.8	38.6	100.0	
Totals for US and Canadian Facilities					
Eastern	6,686,508	335,644	3,708,472	10,730,619	
Great Lakes	22,432,451	19,484,932	51,705,535	93,622,911	
Plains	223,876	11,461	69,046	304,383	
Western	70,300	26,389	503,386	600,075	
Northwestern	0	0	0	0	
Subtotal	29,413,135	19,858,426	55,986,439	105,257,988	
% of Subtotal	27.9	18.9	53.2	100.0	
Total for All Canada and US	124,473,070	91,073,897	147,065,311	362,612,278	
% of Total	34.3	25.1	40.6	100.0	

Table 8-10

M 1996

NPRI and TRI Releases and Transfers of Top Chemicals in Border Regions

CAS Number	Chemical	NPRI			CAS Number	Chemical	TRI		
		Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)			Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)
Eastern									
—	Zinc (and its compounds)	2,188,119	3,843,734	6,031,853	67-56-1	Methanol	1,062,478	12,439	1,074,917
67-56-1	Methanol	3,403,231	1,767,348	5,170,579	7647-01-0	Hydrochloric acid	755,346	0	755,346
	Subtotal	5,591,350	5,611,082	11,202,432		Subtotal	1,817,824	12,439	1,830,263
	% of Total	39.6	55.5	46.3		% of Total	61.0	2.0	50.8
	Total for Region	14,106,563	10,110,352	24,216,915		Total for Region	2,980,831	620,267	3,601,098
Great Lakes									
—	Zinc (and its compounds)	1,047,084	8,407,146	9,454,230	—	Zinc (and its compounds)	9,308,667	16,828,169	26,136,836
1330-20-7	Xylene (mixed isomers)	4,716,569	1,677,585	6,394,154	67-56-1	Methanol	8,229,181	9,846,878	18,076,059
	Subtotal	5,763,653	10,084,731	15,848,384		Subtotal	17,537,848	26,675,047	44,212,895
	% of Total	17.0	37.0	25.9		% of Total	23.2	40.2	31.2
	Total for Region	33,856,450	27,275,947	61,132,397		Total for Region	75,565,590	66,346,964	141,912,554
Plains									
108-88-3	Toluene	178,774	94,877	273,651	100-42-5	Styrene	78,859	340	79,199
1330-20-7	Xylene (mixed isomers)	105,473	89,453	194,926	108-88-3	Toluene	14,584	0	14,584
	Subtotal	284,247	184,330	468,577		Subtotal	93,443	340	93,783
	% of Total	58.6	63.0	60.3		% of Total	84.8	2.9	76.9
	Total for Region	485,010	292,572	777,582		Total for Region	110,132	11,811	121,943
Western									
67-56-1	Methanol	589,676	0	589,676	67-56-1	Methanol	464,567	344	464,911
—	Lead (and its compounds)	10,738	209,662	220,400	—	Nitric acid and nitrate compounds	348,007	18,142	366,149
	Subtotal	600,414	209,662	810,076		Subtotal	812,574	18,486	831,060
	% of Total	47.0	40.2	45.0		% of Total	29.9	23.7	29.7
	Total for Region	1,276,650	521,941	1,798,591		Total for Region	2,717,272	78,134	2,795,406
Northwestern									
67-56-1	Methanol	241,000	0	241,000	67-56-1	Methanol	513,156	0	513,156
7782-50-5	Chlorine	218,000	0	218,000	7647-01-0	Hydrochloric acid	258,503	0	258,503
	Subtotal	459,000	0	459,000		Subtotal	771,659	0	771,659
	% of Total	74.4	0.0	74.4		% of Total	90.7	—	90.7
	Total for Region	616,600	521,941	616,600		Total for Region	851,211	0	851,211
Total for Border Area									
—	Zinc (and its compounds)	3,242,673	12,292,868	15,535,541	—	Zinc (and its compounds)	9,336,488	17,195,870	26,532,358
67-56-1	Methanol	7,112,977	2,250,433	9,363,410	67-56-1	Methanol	10,269,382	9,859,661	20,129,043
	Subtotal	10,355,650	14,543,301	24,898,951		Subtotal	19,605,870	27,055,531	46,661,401
	% of Total	20.6	38.1	28.1		% of Total	23.8	40.3	31.3
	Total	50,341,273	38,200,812	88,542,085		Total	82,225,036	67,057,176	149,282,212

Table 8-11		NPRI and TRI Top Industry Sector Releases and Transfers for Border Regions								
M 1996		NPRI			TRI					
US SIC Code	Industry	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	US SIC Code	Industry	Total Releases (kg)	Total Transfers (kg)	Total Releases and Transfers (kg)	
Eastern					Eastern					
33	Primary Metals	3,042,910	4,834,982	7,877,892	26	Paper	2,162,571	461,696	2,624,267	
26	Paper	4,433,711	1,741,773	6,175,484	32	Stone/Clay/Glass	546,918	0	546,918	
	Subtotal	7,476,621	6,576,755	14,053,376		Subtotal	2,709,489	461,696	3,171,185	
	% of Total	53.0	65.0	58.0		% of Total	90.9	74.4	88.1	
	Total for Region	14,106,563	10,110,352	24,216,915		Total for Region	2,980,831	620,267	3,601,098	
Great Lakes					Great Lakes					
33	Primary Metals	8,579,621	14,816,041	23,395,662	33	Primary Metals	19,124,958	24,925,979	44,050,937	
28	Chemicals	6,416,737	8,920,850	15,337,587	28	Chemicals	9,303,071	16,514,255	25,817,326	
	Subtotal	14,996,358	23,736,891	38,733,249		Subtotal	28,428,029	41,440,234	69,868,263	
	% of Total	44.3	87.0	63.4		% of Total	37.6	62.5	49.2	
	Total for Region	33,856,450	27,275,947	61,132,397		Total for Region	75,565,590	66,346,964	141,912,554	
Plains					Plains					
28	Chemicals	66,004	239,471	305,475	37	Transportation	59,731	1,450	61,181	
25	Furniture	176,054	179	176,233	39	Miscellaneous	41,918	0	41,918	
	Subtotal	242,058	239,650	481,708		Subtotal	101,649	1,450	103,099	
	% of Total	49.9	81.9	61.9		% of Total	92.3	12.3	84.5	
	Total for Region	485,010	292,572	777,582		Total for Region	110,132	11,811	121,943	
Western					Western					
26	Paper	892,738	11,540	904,278	26	Paper	991,049	117	991,166	
33	Primary Metals	136,718	309,575	446,293	37	Transportation	419,159	55,440	474,599	
	Subtotal	1,029,456	321,115	1,350,571		Subtotal	1,410,208	55,557	1,465,765	
	% of Total	80.6	61.5	75.1		% of Total	51.9	71.1	52.4	
	Total for Region	1,276,650	521,941	1,798,591		Total for Region	2,717,272	78,134	2,795,406	
Northwestern					Northwestern					
26	Paper	616,600	0	616,600	26	Paper	851,211	0	851,211	
	Total for Border Area					Total for Border Area				
33	Primary Metals	11,775,049	19,974,448	31,749,497	33	Primary Metals	19,452,210	24,934,575	44,386,785	
28	Chemicals	8,827,149	11,189,527	20,016,676	28	Chemicals	9,328,828	16,541,557	25,870,385	
	Subtotal	20,602,198	31,163,975	51,766,173		Subtotal	28,781,038	41,476,132	70,257,170	
	% of Total	40.9	81.6	58.5		% of Total	35.0	61.9	47.1	
	Total	50,341,273	38,200,812	88,542,085		Total	82,225,036	67,057,176	149,282,212	