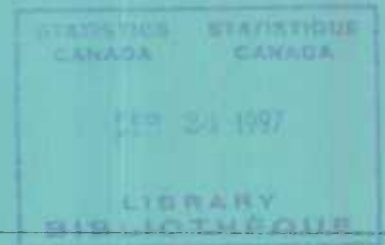




Statistics Canada – Item 16F0003XPE
National Accounts and Environment Division
System of National Accounts

1994 Waste Management Industry Survey: Business Sector

Interim Report



1994 Waste Management Industry Survey: Business Sector

Statistics Canada – Item 16F0003XPE

December, 1996

Ottawa

How to Obtain More Information

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Symbols

The following standard symbols are used in Statistics Canada publications:

- .. figures not available
- ... figures not appropriate or not applicable
- nil or zero
- amount too small to be expressed
- x confidential to meet secrecy requirements of the *Statistics Act*

Preface

This report presents the results of the *1994 Waste Management Industry Survey: Business Sector*. This survey gathered information on the financial characteristics and waste management activities undertaken by private sector companies that provided waste management services in 1994.

These services included the collection and transportation of waste and of materials destined for recycling, the operation of non-hazardous waste disposal facilities, the operation of transfer stations and the treatment and disposal of wastes deemed to be hazardous.

This is the second time the business sector of the waste management services industry has been surveyed; a pilot survey was undertaken in 1989. The intervening years have seen changes in both the industry and the survey-taking process itself.

Much of the information on amounts of materials handled is being collected from the waste management industry for the first time. The resulting numbers presented in this report should be used with caution.

The *1994 Waste Management Industry Survey: Business Sector* is one component of several at Statistics Canada that, taken together, will contribute a more complete set of information about waste and waste management than has been available to date.

Acknowledgments

The contributions of the respondents and industry groups were critical to the successful completion of the survey and are gratefully acknowledged.

This report was prepared in the Environmental Statistics sub-division of the National Accounts and Environment Division, Claude Simard, Director and Cynthia Baumgarten, Assistant Director. Data collection for the survey was conducted by the National Accounts and Environment Division, in conjunction with the Energy Section of Industry Division of which George Andrusiak is Director.

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1 The Waste Management Industry

1.1 Introduction

Waste statistics have an important role in the environmental statistics program of Statistics Canada. One of the program's objectives is to develop a complete set of statistics on waste management. This would include coverage of all waste management activities, including physical and monetary flows, undertaken in all sectors of the economy.

An important element of this work is the *Waste Management Industry Survey: Business Sector*. The *1994 Waste Management Industry Survey: Business Sector* gathered information on the revenues, expenditures and number of employees of private sector companies that provided waste management services in 1994. Also collected was information on the types of services these companies provided and the amounts of materials that they handled in their waste management activities.

The services that waste management companies provide include the collection and transportation of waste and of materials destined for recycling, the operation of non-hazardous waste disposal facilities, the operation of transfer stations and the treatment and disposal of wastes deemed to be hazardous. Typically these services are provided on a contract basis to clients, however payment per service is also common.

In 1994, revenues of the waste management industry totalled \$1,904 million. Operating expenses amounted to \$1,658 million while capital expenditures were \$219 million.

The largest companies, (as determined by the number of employees), earned the bulk of industry revenues. The largest 39 companies, out of 249 surveyed, reported 76 percent of the revenue total.

Waste management companies reported 12,339 full time employees in 1994. The majority, (74 percent), were employed in the largest 39 companies (those with more than 65 employees).

The companies in the survey reported collecting and transporting 3.1 million tonnes of household waste for disposal and 5.6 million tonnes of industrial, commercial and institutional waste for disposal in 1994.

The waste management industry also has a component operated by governments using government employees. Some waste collection programs and many disposal facilities are operated in this way. Statistics Canada has conducted a survey of government waste management practices for 1994 titled the *Local Government Waste Man-*

agement Survey. When released, the results will complement the information from the *1994 Waste Management Industry Survey: Business Sector* by providing a relatively complete picture of waste management services in Canada.

Also, the *1994 Waste Management Industry Survey: Business Sector* did not include the activities of wholesale trade companies whose principal source of revenue is the resale of recycled or previously used materials. This group includes scrap metal dealers as well as many other recyclers. Information on this industry is collected through the *Survey of Wholesale Trade*. For 1994, the wholesale trade of previously used materials generated total revenues of \$2,490 million.

Finally, wastes may be managed directly by the generator. For example, wastes created by a pulp and paper mill or a smelter may be managed by the company on site or in other company run-facilities without the assistance of separate service providers. To date, Statistics Canada has not attempted to measure the amounts of wastes managed by the generator. Some information in this regard may be available where particular wastes are subject to reporting requirements as part of specific provincial or federal regulatory programs.

While Statistics Canada does not collect the amounts of waste managed directly by the generating business, the agency does collect information on expenditures that businesses incur to manage these wastes through the *Survey of Environmental Protection Expenditures* (Statistics Canada, 1996).

Households may manage some waste materials themselves. Many households, for example, now have backyard composters that handle at least a portion of home and garden organic wastes. Statistics Canada collected information on the number of households with composting in the *1994 Household Environment Survey*, (Statistics Canada, 1995b).

1.2 Developing information on waste management

Waste management activities take many different forms and involve many different participants. This presents challenges when trying to prepare an integrated picture of activities, including the total materials managed.

One common thread is that all the materials handled are unwanted by their producer. The unwanted materials may be by-products of some sort of production process - fly ash from a furnace for example. Alternatively they might be products, the inherent value of which has been consumed from the perspective of the current holder - for example, a newspaper that has been read or a package that has been opened and emptied of its contents.

Concepts and definitions in the waste management area are still evolving. The most common source of difficulty is in classifying waste. Strategies to compile waste statistics reflect the specific needs of statistical and analytical projects: by type (municipal solid waste, hazardous waste, sewage); by generator (residential, industrial); by generating activity (construction and demolition) as well as by material. The differences in the terminology that the various respondents use can, however, create many operational difficulties when surveys are in the field. In conducting the *1994 Waste Management Industry Survey: Business Sector*, valuable suggestions were made on how to refine the classification and this has been taken into account in developing the 1995 edition of the questionnaire.

The 1994 Waste Management Industry Survey: Business Sector asked companies to report information for their waste management activities by province. All companies with 5 or more employees or operating revenues of \$500,000 or more were included.

Waste management activities have an important economic role, in addition to their environmental one. While still a comparatively small and specialized service sector, the waste management industry is an important employer and important purchaser of goods and services in many areas. The industry is also a very dynamic one. Major changes in company operations, ownership, acquisitions and area of coverage have occurred in the past ten years for example.

1.3 Definitions

Waste

All materials not wanted by their generator. Wastes include all materials that are intended for recycling, treatment or disposal that are removed without, or with only nominal, remuneration to the waste generator.

Waste for disposal

All materials not wanted by their generator and which are discarded for management at waste disposal facilities.

Materials for recycling or reuse

Materials managed for processing into new products or cleaned and treated for reuse by other than the generator.

Hazardous waste

Includes all materials designated as hazardous, due to its nature or quantity, and requiring special handling techniques as specified by the Transportation of Dangerous Goods Regulations (1985), The Canadian Environmental Protection Act (1988), The Basel Convention (1989) and the Export and Import of Hazardous Waste Regulations (1992).

Municipal waste

Includes solid waste produced by the household and the industrial, commercial and institutional sectors. Construction and demolition waste and hazardous waste from these sectors is not included.

Construction and demolition waste

Includes waste materials from the construction and demolition of roads, bridges and buildings such as asphalt, concrete, rubble, wood, gypsum, metal and paper.

Disposal facility

A facility at which waste is landfilled, incinerated or otherwise treated for final disposal.

Transfer station

A facility at which wastes transported by vehicles involved in collection are transferred to other vehicles that will transport the wastes to the point of final disposal, recycling or reuse. Waste is often compacted at transfer stations to facilitate transfer to the disposal site.

Preparing materials for recycling or reuse

Includes sorting, cleaning and reducing volume of the materials.

Tipping fee

A sum paid to the owner or operator of a disposal facility or a transfer station in return for accepting the material at the facility.

2 Survey Results

2.1 Financial summary

Table 2.1 presents a summary of financial statistics for the waste management industry (business sector) for 1994.

Revenues of the waste management industry (business sector) totalled \$1,904 million in 1994 (Table 2.1). Operating expenditures in the year amounted to \$1,658 million and capital expenditures were \$219 million.

Companies operating in Ontario reported \$868 million in revenues, 46 percent of the national revenues for the business sector of the waste management industry. Quebec reported an additional 27 percent of the business sector of the industry's national revenue total. Alberta had the third highest revenue level, closely followed by British Columbia.

Per company revenues averaged \$7.6 million for all companies. Quebec reported the highest per company revenues at \$12.6 million per company while those in Ontario averaged \$7.5 million and those in B.C. had per company revenues of \$7.3 million.

The concentration of waste management activity among a limited number of large companies is also evident from the data presented in Table 2.1. The largest 39 companies (from the 249 surveyed) reported 76 percent of the revenue

total. The 127 companies with 5 to 14 employees make up 51 percent of the number of companies but account for only about 7 percent of the revenues of the industry. Medium size companies, those with 15 to 65 employees, report 17 percent of the industry revenue while constituting 33 percent of the companies.

Profits were 13 percent of revenues in the industry on a national basis. Profit margin varied directly with the size of companies. Larger companies reported slightly higher profit margins (14 percent) compared to medium-sized (11 percent) and smaller companies (6 percent)

2.2 Waste management activities

Table 2.2 presents the number of companies involved in each of the waste management activities covered in the survey. Collection and transportation of wastes for disposal and materials for recycling or reuse was the predominant activity in the industry. Eighty-five percent of waste management companies reported collection and transportation activities. Preparing materials for recycling or reuse and hazardous waste management were other activities reported frequently.

About one-half of the companies surveyed reported carrying out more than one waste management activity. Seventeen percent of companies reported three or more activities.

The number of different activities that companies carry out bears some relation to the size of the company. Among small companies, (5 to 14 employees), 61 percent reported

Table 2.1
Financial Statistics

Province/territory	Companies ¹ number	Operating revenue	Operating expenses	Capital expenditures	Profit margin
		thousand dollars			percent
Newfoundland	5	6 837	6 041	972	11.6
Prince Edward Island	x	x	x	x	x
Nova Scotia	16	25 010	24 133	6 683	3.5
New Brunswick	11	32 040	33 035	x	-3.1
Quebec	41	517 244	445 567	44 235	13.9
Ontario	116	867 572	735 935	76 531	15.2
Manitoba	8	35 410	27 965	2 212	21.0
Saskatchewan	11	22 854	15 264	5 297	33.2
Alberta	33	202 226	183 301	46 879	9.4
British Columbia	26	190 400	183 176	29 746	3.8
Yukon and Northwest Territories	x	x	x	x	x
Employment size group					
5 to 14 employees	127	126 727	118 699	19 799	6.3
15 to 65 employees	83	335 896	299 668	32 113	10.8
More than 65 employees	39	1 441 585	1 239 756	166 768	14.0
Canada	249	1 904 208	1 658 123	218 680	12.9

Note:

Figures may not add due to rounding.

1. As companies may operate in more than one province, the national count will not equal the sum of the provincial count of companies.

Source:

Statistics Canada, National Accounts and Environment Division.

Table 2.2
Number of Companies by Waste Management Activities Reported¹

Province/territory	Companies ²	Activities reported					Number of activities reported		
		Collection and transport	Preparing materials for recycling/reuse	Operating a transfer station	Operating a disposal facility	Managing hazardous waste	One	Two	Three or more
Newfoundland	5	5	2	1	2	2	1	2	
Prince Edward Island	x	x	x	x	x	x	x	x	
Nova Scotia	16	13	2	1	2	5	3	2	
New Brunswick	11	8	3	1	3	0	4	0	
Quebec	41	35	16	5	6	11	12	9	
Ontario	116	104	51	24	17	17	42	25	
Manitoba	8	8	4	1	1	2	4	2	
Saskatchewan	11	10	1	0	3	1	4	0	
Alberta	33	25	7	4	6	15	6	8	
British Columbia	26	22	10	3	5	7	11	4	
Yukon and Northwest Territories	x	x	x	x	x	x	x	x	
Employment size group									
5 to 14 employees	127	106	34	11	21	23	33	16	
15 to 65 employees	83	73	31	11	10	20	32	14	
More than 65 employees	39	33	21	11	9	12	15	13	
Canada	249	212	86	33	40	55	126	43	

Notes:
 1. This table presents the number of companies reporting each of the indicated waste management activities. It also presents the number of activities reported by each company.
 2. As companies may operate in more than one province, the national count will not equal the sum of the provincial count of companies.

Source:

Statistics Canada, National Accounts and Environment Division.

Table 2.3
Revenue from Waste Management Activities

Province/territory	Collection and transport	Preparing recyclables	Operation of non-hazardous waste disposal facility	Hazardous waste management	Other revenue	Total revenue						
							thousand dollars					
							Newfoundland	5 552	x	x	x	750	6 837
Prince Edward Island	x	x	x	x	x	x						
Nova Scotia	18 011	x	x	x	1 169	25 010						
New Brunswick	22 270	x	x	x	1 491	32 040						
Quebec	266 313	33 036	79 854	111 614	26 427	517 244						
Ontario	497 390	100 128	81 750	127 227	61 077	867 572						
Manitoba	27 372	2 611	x	x	1 613	35 410						
Saskatchewan	7 768	4 618	x	x	x	22 854						
Alberta	110 718	8 810	21 303	50 871	10 524	202 226						
British Columbia	125 298	21 424	6 834	22 122	12 722	190 400						
Yukon and Northwest Territories	x	x	x	x	x	x						
Employment size group												
5 to 14 employees	74 656	10 645	12 808	9 228	19 389	126 727						
15 to 65 employees	183 917	46 857	28 821	45 752	30 549	335 896						
More than 65 employees	825 254	117 553	160 644	263 060	75 074	1 441 585						
Canada	1 083 827	175 056	202 274	318 039	125 012	1 904 208						

Note:
 Figures may not add due to rounding.

Source:

Statistics Canada, National Accounts and Environment Division.

conducting only one operation while only 13 percent reported three or more activities. In contrast, 33 percent of large companies, (more than 65 employees), reported three or more activities and only 28 percent indicated conducting just one activity. Seventeen percent of medium-sized companies, (15 to 65 employees), reported three or more activities while 45 percent said they conducted only one.

2.3 Revenues

Details on waste management revenues by type of activity are presented in Table 2.3. Collection and transportation activities were by far the largest source of revenues for the business sector of the waste management industry with 57 percent of total revenues coming from this source. The second ranking activity, in terms of revenue generated, was hazardous waste management. This activity accounted for about 17 percent of revenues. The operation of non-hazardous waste management facilities accounted for another 11 percent of total revenues.

When examining the company size groups, one finds that the proportions of total revenue derived from collection and transportation activity for each of the groups and the overall figure was about the same. However for hazardous waste management, 18 percent of large company revenue was derived from this source compared to only 7 percent for small companies.

An examination of the distribution of revenue within the hazardous waste management category further reveals that

only 3 percent of the total came from small firms while 14 percent was reported by medium size companies and 83 percent came from large firm activities. Recall from Section 2.1 that this compares to the following distribution of revenues for all waste management activities: 7 percent from small companies, 17 percent from medium sized ones, and 76 percent from large companies. The limited participation of small firms in hazardous waste management may reflect the large capital investments required for the management of certain types of hazardous wastes.

Table 2.4 presents details of the source of revenues for companies reporting collection and transportation activity. The majority of revenues for collection and transportation came from institutional, commercial and industrial clients. Sixty-two percent come from this source while 18 percent of revenues came from governments and 16 percent from households.

Small companies, those with between 5 and 14 employees, derived a larger portion of their collection and transportation revenues from institutional, commercial and industrial clients than medium and large sized companies. Seventy-three percent of the collection and transportation revenues of small companies came from institutional, commercial and industrial sources while the figure was 68 percent for companies with between 15 and 65 employees and 60 percent for companies with more than 65 employees.

On the other hand, large companies received a greater portion of their revenues from households smaller companies, indicating the dominance of large companies in the provision of services to apartments and condominiums.

Table 2.4
Source of Revenues for Companies Reporting Waste Collection and Transportation Activity

Province/territory	Governments	Households	Institutional, commercial and industrial	Other	Total	Collection and transportation revenue
			percent			thousand dollars
Newfoundland	21	15	63	1	100	5 552
Prince Edward Island	x	x	x	x	100	x
Nova Scotia	27	8	61	4	100	18 011
New Brunswick	8	6	83	3	100	22 270
Quebec	20	17	62	1	100	266 313
Ontario	17	15	62	6	100	497 390
Manitoba	x	x	x	x	100	27 372
Saskatchewan	x	x	x	x	100	7 768
Alberta	18	32	48	3	100	110 718
British Columbia	16	6	74	3	100	125 298
Yukon and Northwest Territories	x	x	x	x	100	x
Employment size group						
5 to 14 employees	15	10	73	1	100	74 656
15 to 65 employees	18	10	68	4	100	183 917
More than 65 employees	18	18	60	5	100	325 254
Canada	16	16	62	4	100	1 083 827

Note:
Figures may not add due to rounding.

Source:
Statistics Canada, National Accounts and Environment Division.

2.4 Expenses

The operating expenses of the companies surveyed are shown in Table 2.5. At the national level, wages and salaries were the largest category of expenses (24 percent), closely followed by tipping fees paid to waste disposal facilities (23 percent). The other expenses category that includes lease and rental payments for property such as waste disposal sites and transfer stations was the third largest category at 17 percent of the total.

For the largest companies, (those with more than 65 employees), tipping fees were the largest expense (24 percent) while wages and salaries were a close second (23 percent).

Small companies devoted a slightly higher portion of their expenditures to wages and salaries (26 percent) than the national average. However the percentage of their expenditures that went to employer contributions to pensions, medical and unemployment insurance plans and related was 3 percent, lower than the figure of 5 percent for all companies in Canada.

On a provincial basis, tipping fees were also the first ranked expense for companies in Ontario, Manitoba and British Columbia. In both Ontario and Manitoba they made up 28 percent of total expenses while in B.C. the figure was 35 percent. In Alberta, the tipping fees category as a percentage of total expenditures was much lower than the national average at 13 percent. Tipping fees expenses in Quebec

and Newfoundland were also below the national average (15 and 17 percent of total expenses respectively).

2.5 Employment

Waste management companies reported 12,339 full time employees (Table 2.6). Forty-four percent were employed in Ontario while 26 percent of the total worked in Quebec. Alberta (12 percent) and British Columbia (10 percent) also had relatively substantial shares of total waste management employment.

Wages and salaries totalled 394.9 million dollars on a national level.

The large companies employed the bulk of employees and accounted for most of the wages and salaries. The largest 39 companies (with more than 65 employees) had 74 percent of the total number of full time workers and paid out 74 percent of the total national amount of wages and salaries. On the other hand, firms with 5 to 14 employees had only 7 percent of the full time employees and paid only 8 percent of total wages and salaries.

Table 2.5
Operating Expenses

Province/territory	Wages and salaries	Employer contributions	Fuel and electricity	Other materials	Maintenance and repairs	Depreciation	Tipping fees	Licences and permits	Other ¹	Total
thousand dollars										
Newfoundland	1 798	229	343	370	818	627	1 015	47	794	6 041
Prince Edward Island	x	x	x	x	x	x	x	x	x	x
Nova Scotia	6 675	1 036	647	3 166	2 286	2 197	5 703	85	2 337	24 133
New Brunswick	x	x	x	x	x	x	x	x	x	33 035
Quebec	98 280	22 156	14 824	50 327	31 587	42 238	66 127	1 548	118 481	445 567
Ontario	177 964	36 094	23 271	76 488	51 979	64 659	209 212	2 003	94 264	735 935
Manitoba	6 754	1 191	508	1 120	2 632	2 000	7 702	40	6 019	27 965
Saskatchewan	x	x	x	x	x	x	x	x	x	15 264
Alberta	48 404	8 322	6 270	30 887	9 978	31 262	24 187	512	23 479	183 301
British Columbia	41 849	7 853	4 002	12 733	12 391	13 578	63 781	446	26 545	183 178
Yukon and Northwest Territories	x	x	x	x	x	x	x	x	x	x
Employment size group										
5 to 14 employees	30 526	4 090	5 285	7 278	7 040	8 749	27 700	741	27 291	118 899
15 to 65 employees	73 659	12 127	10 545	35 961	17 528	25 136	58 189	1 321	65 201	299 668
More than 65 employees	290 670	63 696	35 712	137 196	91 911	127 737	301 774	2 850	188 209	1 239 756
Canada	394 855	79 913	51 542	180 435	116 480	181 622	387 663	4 913	280 700	1 658 123

Note:

Figures may not add due to rounding.

1. Other category includes leases, rentals, interest, overhead, freight, insurance.

Source:

Statistics Canada, National Accounts and Environment Division.

2.6 Number of companies by employment size

Of the 249 companies surveyed in 1994, 127 (51 percent) had between 5 and 14 employees, 83 (33 percent) employed between 15 and 65 persons and 39 (16 percent) had more than 65 employees (Table 2.7).

Ontario had the largest number of waste management companies (116), Quebec was second with 41 and Alberta (33) and B.C. (26) were third and fourth respectively in terms of numbers of companies.

The majority of the largest companies had a presence in Ontario. Twenty-one of the 39 large companies operated there. Large companies also were well represented in Quebec. Thirteen of the 39 companies in the top category operated in Quebec.

In addition, the proportions of large and medium-sized companies in Quebec was higher than the proportions nationally (large-sized companies in Quebec - 32 percent vs. 16 percent nationally) (medium-sized companies in Quebec - 42 percent vs. 33 percent nationally). In contrast, small companies made up 24 percent of the Quebec total com-

Table 2.6
Employment Statistics

Province/territory	Companies ¹	Full time	Part time	Wages and
		employees	employees	salaries
		number		thousand dollars
Newfoundland	5	60	x	1 798
Prince Edward Island	x	x	x	x
Nova Scotia	16	239	14	6 675
New Brunswick	11	247	16	x
Quebec	41	3 188	100	98 280
Ontario	116	5 373	358	177 964
Manitoba	8	216	x	6 754
Saskatchewan	11	358	80	x
Alberta	33	1 426	43	48 404
British Columbia	26	1 201	77	41 849
Yukon and Northwest Territories	x	x	x	x
Employment size group				
5 to 14 employees	127	812	178	30 526
15 to 65 employees	83	2 444	152	73 659
More than 65 employees	39	9 083	373	290 670
Canada	249	12 339	703	394 855

Note:

Figures may not add due to rounding.

1. As companies may operate in more than one province, the national count will not equal the sum of the provincial count of companies.

Source:

Statistics Canada, National Accounts and Environment Division.

Table 2.7
Number of Companies by Province and by Employment Size Group

Province/territory	Companies ¹	5 to 14	15 to 65	More than 65
		employees	employees	employees
		number of companies		
Newfoundland	5	4	1	0
Prince Edward Island	x	x	x	x
Nova Scotia	16	11	5	0
New Brunswick	11	7	4	0
Quebec	41	10	18	13
Ontario	116	55	40	21
Manitoba	8	4	3	1
Saskatchewan	11	8	2	1
Alberta	33	18	8	7
British Columbia	26	11	8	7
Yukon and Northwest Territories	x	x	x	x
Canada	249	127	83	39

Note:

1. As companies may operate in more than one province, the national count will not equal the sum of the provincial count of companies.

Source:

Statistics Canada, National Accounts and Environment Division.

pared to 51 percent nationally. The size distribution of Ontario companies was close to the national average.

2.7 Collection and transportation activity

Waste management companies reported collecting and transporting 9.21 million tonnes of non-hazardous waste destined for disposal in 1994 (Table 2.8). This included 3.08 million tonnes of household waste, 5.56 million tonnes of industrial, commercial and institutional waste and 0.57 million tonnes of construction and demolition waste.

The largest 39 companies reported collecting 69 percent of the household waste and 72 percent of the industrial, commercial and institutional (IC&I) waste handled by private waste management companies. The 127 companies with 5 to 14 employees reported collecting only 13 percent of the household waste and 9 percent of the IC&I waste.

Companies also reported collecting and transporting 1.92 million tonnes of materials destined for recycling or reuse (Table 2.9).

2.8 Disposal activity

Companies reported disposing of 5.93 million tonnes of non-hazardous waste in their facilities. Of this, 5.42 million tonnes was landfilled and 0.51 million tonnes was incinerated.

Quebec companies led those in other provinces in the amount landfilled. They disposed of 2.30 million tonnes in their landfills in 1994. Ontario companies were second at 1.62 million tonnes, while those in Alberta disposed of the third largest amount at 0.84 million tonnes.

2.9 Transfer stations

Thirty-three companies reported operating transfer stations in 1994. These facilities handled materials totalling 4.02 million tonnes. This included 2.61 million tonnes of municipal solid waste.

Table 2.8
Waste Collected and Transported for Disposal by Type

Province/territory	Non-hazardous			Hazardous
	Household	Industrial, commercial and institutional	Construction and demolition	
	thousand tonnes			
Newfoundland	x	x	x	x
Prince Edward Island	x	x	x	x
Nova Scotia	x	x	x	x
New Brunswick	29	x	x	x
Quebec	1 014	1 518	266	562
Ontario	1 348	2 375	224	149
Manitoba	x	x	x	11
Saskatchewan	x	69	x	x
Alberta	204	540	35	69
British Columbia	275	586	18	x
Yukon and Northwest Territories	x	x	x	x
Employment size group				
5 to 14 employees	407	519	127	398
15 to 65 employees	563	1 020	124	83
More than 65 employees	2 113	4 018	315	343
Canada	3 082	5 557	566	823

Note:
Figures may not add due to rounding.

Source:
Statistics Canada, National Accounts and Environment Division.

Table 2.9
Materials Collected and Transported for Recycling and/or for Reuse

Province/territory	Household	Industrial, commercial and institutional	Construction and demolition
		thousand tonnes	
Newfoundland	x	x	x
Prince Edward Island	x	x	x
Nova Scotia	x	x	x
New Brunswick	21	x	x
Quebec	101	153	3
Ontario	274	790	25
Manitoba	x	x	x
Saskatchewan	x	x	x
Alberta	32	138	1
British Columbia	87	155	1
Yukon and Northwest Territories	x	x	x
Employment size group			
5 to 14 employees	26	48	17
15 to 65 employees	97	362	5
More than 65 employees	432	924	7
Canada	555	1 334	29

Note:

Figures may not add due to rounding.

Source:

Statistics Canada, National Accounts and Environment Division.

2.10 Preparing materials for recycling or reuse

Eighty-six companies reported activities to prepare materials for recycling or reuse. The amount handled nationally totalled 1.79 million tonnes. This included 321 thousand tonnes of newsprint, 320 thousand tonnes of corrugated cardboard, 100 thousand tonnes of glass, 240 thousand tonnes of various metals, 83 thousand tonnes of wood and 24 thousand tonnes of plastic.

2.11 Hazardous waste management

Fifty-five companies reported involvement in hazardous waste treatment and disposal. They reported handling 936 thousand tonnes of materials. This included 493 thousand tonnes that were treated, 141 thousand tonnes that were incinerated, 171 thousand tonnes that were disposed of in secure landfills and 131 thousand tonnes dealt with by other methods.

3 Survey Design and Methodology

This section describes the design and methodology of the *1994 Waste Management Industry Survey: Business Sector*. It addresses the following areas: the survey universe, the procedures for data collection, editing, imputation and quality assurance.

3.1 Survey universe

In principle, the survey universe consists of all waste management service companies that have at least 5 employees or \$500,000 in operating revenues.

The mailing list for the *1994 Waste Management Industry Survey: Business Sector* was drawn from the Statistics Canada Business Register (BR) and various industry directories. Firms selected from the BR are a subset of the "other utilities" (industry class 4999), as defined by the Standard Industrial Classification (1980). The combined list was cross checked once more with other industry directories, to avoid double-surveying of units. This list produced an initial mailing of 949 survey units.

As there is not yet a well developed survey system for waste management, building the frame for the *1994 Waste Management Industry Survey: Business Sector* was limited by two unusual factors. First, as mentioned in the preceding paragraph, the waste management industry is currently treated as a subset of "other utilities". The second factor is the long period of time that had elapsed since the last survey in 1989; it simply was not practical to use the 1989 mailing list as the basis for the 1994 survey frame. In any survey cycle, the survey frame must be carefully maintained in order to have full accounting of births, deaths, and movement of firms. With this survey of waste management, not only was it a problem to have a dated list, but some very significant changes had taken place in the organization of the industry during the intervening years.

During the survey process many companies on the mailing list indicated that their major business rendered them out of scope for the survey. Many other companies had gone out of business or could not be located. After removing these companies, the survey was left with a population of 253 companies. This difference between the original mailing list and the final list can be attributed largely to the absence of both a formal definition of the waste management industry in the Standard Industrial Classification and a regular survey program. This survey was required, in effect, to assess the nature of each business as well as to collect information on waste management activities. In a conventional industry survey, there are far fewer units entering the mailing list in a given year and the discard rate from the mailing list, owing

to unknown or misinterpreted business activities, is much lower.

3.2 Data collection and processing

Data collection was based at the Energy Section, Industry Division, of Statistics Canada and took place during 1995 and early 1996. All questionnaires were on paper and were mailed to survey units. The respondents for these companies returned questionnaires by mail. Responses were obtained from a contact person who was identified as being responsible for, or having knowledge of, the waste management operations in that company. There is one survey unit for each province in which each waste management company operates. Follow-up after the due date on the questionnaire was carried out to remind late respondents to return their surveys.

Questionnaires were edited in two steps. First, validity edits were applied to ensure that responses to particular questions fell within a limited range of possible values. This type of editing was applied mostly to the questions on quantities. The second step, consistency edits, was applied when the responses on one part of a questionnaire were logically inconsistent with those given in other sections.

After the initial round of editing and data quality review, additional follow-up was carried out to address remaining missing data occurrences and the results of the consistency edits.

3.3 Data quality

Many factors affect the quality of data produced in a survey, particularly when there are large time gaps between cycles of the survey. Respondents, for example, may have made errors in interpreting questions, answers may have been incorrectly entered on the questionnaires, and errors may have been introduced in processing and tabulating data. Every effort was made to reduce the occurrence of such errors in the survey, including: a complete verification of keyed data, validity and consistency edits, closer follow-up with the larger sampled units, and consultation with selected government departments and industry associations.

In general, non-sampling errors – such as coverage, classification and consistency in working definitions – can be reduced if the survey is repeated at regular intervals and sufficiently frequently so that the mailing list is easy to maintain and the respondents are familiar with the definitions used and the type of information required.

Coverage and classification remain the most challenging problems. A coverage error occurs when a firm in the industry is overlooked. If the reason for not including the firm is that it has been incorrectly included in another industry, a classification error is introduced. Such errors have an im-

pact upon estimates of the number of firms. There is uncertainty in the industrial classification of the large number of small firms which, on the national scale, account for a comparatively small part of total industry activity. To some degree, these errors can be reduced by well designed questionnaires, by direct contact with respondents and with industry associations.

Although most companies were very cooperative in answering the survey, some could not provide all the data required in the form in which it was requested. This was especially true for smaller companies responding to questions about the weights of material collected. Many of these companies operate in areas where facilities do not have weigh scales. Therefore exact tonnages were not available; however many respondents were able to estimate the amounts they handled based on the numbers of trips and the number and size of vehicles operated. In cases where values were missing from survey cells after follow-up, information was imputed by applying a standard per employee ratio. The rates of imputations are shown in Table 3.1.

The tables presented in this report cover the data series that were determined to be of sufficient quality for publication at a disaggregated level. Data confidentiality considerations as well as imputation rates play a role in this assessment. It is expected that data quality and the amount of material released will increase with each iteration of the survey. As companies adjust internal accounting systems to track some of the information that the *Waste Management Industry Survey: Business Sector* requests and as the questionnaire is fine-tuned in response to user needs and respondent reactions, the overall quality of results is expected to increase.

Table 3.1
Imputation Rates for Selected Questions

Question and cell number	Imputation rate ¹ percent
Employment and financial characteristics	
Number of full-time employees (037)	-
Total operating revenue (049)	8
Wages and salaries (051)	24
Total operating expenses (060)	9
Capital expenditures (067)	17
Waste management activities	
Household waste collected for disposal (079)	27
Household materials collected for recycling/reuse (080)	27
IC&I waste collected for disposal (081)	33
IC&I materials collected for recycling/reuse (082)	35
C&D waste collected for disposal (085)	32
C&D materials collected for recycling/reuse (086)	32
Hazardous waste collected and transported (091)	15
Waste prepared for diversion (099)	26
Non-hazardous waste disposed (126)	6
Hazardous waste treated/disposed (140)	26

Note:

1. The proportion of the total value of the cell that is imputed.

Source:

Statistics Canada, National Accounts and Environment Division.

References

Cameron, M., 1995, "Household Waste Management in the '90s: Reduce, Reuse and Recycle", *Environmental Perspectives*, Statistics Canada Cat. 11-528, No. 2, Ottawa.

Gaston, C., 1993, "Waste Management Industry Survey", *Environmental Perspectives*, Statistics Canada Cat. No. 11-528, Ottawa.

Gaston, C. and A. Goodall, 1993, "Local Government Waste Management Practices Survey", *Environmental Perspectives*, Statistics Canada Cat. No. 11-528, Ottawa.

Mitchell, B., 1996, "Households and the Environment: Canada and Australia", *Environmental Perspectives*, Statistics Canada Cat. 11-528-XPE, No. 3, Ottawa.

RIS (Resource Integration Systems Ltd.), 1995, *An Assessment of the Physical, Economic and Energy Dimensions of Waste Management in Canada*. Report prepared for Environment Canada.

Santiago, M., 1993, "Materials Recovery and Recycling by the Industrial Sector", *Environmental Perspectives*, Statistics Canada Cat. No. 11-528, Ottawa.

Statistics Canada, 1996, *Environmental Protection Expenditures in the Business Sector, 1994*, Item 16F0006XNE, Ottawa.

Statistics Canada, 1995a, *Local Government Waste Management Survey, 1993: Interim Report*, Item 16F0002XNE, Ottawa.

Statistics Canada, 1995b, *Households and the Environment, 1994*, Cat. 11-526, Ottawa.

Statistics Canada, 1992, *Waste Management Survey, 1989: A Pilot Enquiry*, Item INDD.WMS.01, Ottawa.

A. Business Type (continued)

2. Did this company operate at more than one location in Canada in 1994?

⁰¹⁰ Yes — **Continue**

No — **Go to Question 4, Section B**

The questionnaire should be completed for this company's operations in this province only. Facilities owned by this company, but operated in other provinces, will be surveyed separately.

To which province/territory does this report apply?

⁰¹¹

If this company maintains the financial records for operations outside of the province indicated above, please file a separate report for each province. Call us collect at 613-951-5452 if you require additional forms.

3. List all of the facilities operated in the province indicated in question 2, above.

Facility name	Municipality	Postal code
⁰¹² 1.		
⁰¹³ 2.		
⁰¹⁴ 3.		
⁰¹⁵ 4.		
⁰¹⁶ 5.		
⁰¹⁷ 6.		
⁰¹⁸ 7.		
⁰¹⁹ 8.		
⁰²⁰ 9.		
⁰²¹ 10.		
⁰²² 11.		
⁰²³ 12.		
⁰²⁴ 13.		
⁰²⁵ 14.		
⁰²⁶ 15.		
⁰²⁷ 16.		
⁰²⁸ 17.		
⁰²⁹ 18.		
⁰³⁰ 19.		
⁰³¹ 20.		

If you require additional space, please attach sheets.

B. Reporting Period

4. Financial information should be reported for this company's most recent fiscal year ending at any time between 1 April 1994 and 31 March 1995.

Specify fiscal year start: ⁰³²
D M Y

end: ⁰³³
D M Y

C. Employment

5. Report the usual number of full-time (30 or more hours per week) and part-time (less than 30 hours per week) employees working for this company, according to their primary type of work.

Operations (drivers, waste collectors, mechanics, etc.)

Administration and management

Other, specify ▼

⁰⁴²

Number of employees
full-time part-time

⁰³⁴	⁰³⁵
⁰³⁵	⁰³⁹
⁰³⁶	⁰⁴⁰

Total employees (sum cells 034 to 036 and cells 038 to 040)

⁰³⁷ ⁰⁴¹

D. Operating Revenues

6. Indicate this company's 1994 revenue from the provision of each of the following services.

Revenue from waste management activities

Waste collection and transportation	043 \$	.00
Waste diversion (sorting, cleaning, and volume reduction)	044 \$	.00
Nonhazardous waste disposal (sanitary landfill or incineration)	045 \$	.00
Hazardous waste and sewage treatment, containment, landfill and incineration	046 \$	.00
Other, <i>specify</i> (e.g., consulting) ▼	047 \$	.00
<input type="text" value="050"/>		
Revenue from other activities (e.g., snow removal, sale of recovered materials, etc.)	048 \$	.00
Total revenues from all activities (sum cells 043 to 048)	049 \$	.00

E. Operating Expenses

7. Please report this company's 1994 operating expenses.

Wages and salaries	051 \$	.00
Employer contributions to pension, medical and unemployment insurance plans, etc.	052 \$	.00
Fuel and electricity	053 \$	.00
Other materials and supplies	054 \$	.00
Maintenance and repairs	055 \$	.00
Depreciation	056 \$	.00
Tipping fees paid for waste disposal	057 \$	.00
Operating licences and permits	058 \$	.00
Other, <i>specify</i> ▼	059 \$	.00
<input type="text" value="061"/>		
Total expenses (sum cells 051 to 059)	060 \$	.00

F. Capital Expenditures

8. Report this company's 1994 capital expenditures.

Include new assets purchased in Canada and all imported assets (new and used).

Vehicles	062 \$	.00
All other machinery and equipment	063 \$	.00
Construction of facilities (excluding residences)	064 \$	.00
Maintenance and repairs of new and used assets	065 \$	.00
Other, <i>specify</i> ▼	066 \$	.00
<input type="text" value="068"/>		
Total capital expenditures (sum cells 062 to 066)	067 \$	.00

Definitions

The following definitions apply to Sections G-J.

Municipal solid waste

Includes solid waste produced by the residential and industrial, commercial and institutional sectors.

Construction and demolition waste

Includes waste material from the construction and demolition of roads, bridges and buildings, such as asphalt, concrete, wood, rubble, paper, gypsum, metal, etc.

Hazardous waste

Includes all material designated as hazardous, due to its nature or quantity, and requiring special handling techniques as specified by the Transportation of Dangerous Goods Regulations (1985), The Canadian Environmental Protection Act (1988), The Basel Convention (1989), or the Export and Import of Hazardous Waste Regulations (1992).

G. Collection and Transportation

9. Did this company collect and transport waste in 1994?

Yes — **Continue**

No — **Go to Question 16, Section H**

10. Report the percentage of this company's revenue from waste collection and transportation activities earned through contracts with the following in 1994.

Municipal/regional governments
 Households (including contracts to serve apartments and condominiums)
 Other institutions, commercial and industrial clients
 Other clients, specify ▼

070	%
071	%
072	%
073	%

074

Total (sum of cells 070 to 073)

100	%
-----	---

11. Please indicate the following quantities of waste transported by this company in 1994.

Canadian waste transported to another country for disposal or recycling
 Canadian waste transported across a provincial boundary for disposal or recycling
 Foreign waste transported into Canada for disposal or recycling

075	tonnes
076	tonnes
077	tonnes

12. What quantity of municipal solid waste (nonhazardous) did this company collect and transport in 1994 from the following sources?

If this company did **not** collect and transport municipal waste in 1994, check — **Go to Question 13**

Households

Waste for disposal (intended for incineration or sanitary landfill)
 Waste for diversion (intended for recycling or reuse)

079	tonnes
080	tonnes

Industrial, Commercial and Institutional (ICI)

Waste for disposal (intended for incineration or sanitary landfill)
 Waste for diversion (intended for recycling or reuse)

081	tonnes
082	tonnes

Total municipal solid waste collected and transported (sum cells 079 to 082)

083	tonnes
-----	--------

13. What quantity of construction and demolition (C&D) waste (nonhazardous) did this company collect and transport in 1994?

If this company did **not** collect and transport C&D waste in 1994, check — **Go to Question 14**

Waste for disposal (intended for incineration or sanitary landfill)
 Waste for diversion (intended for recycling or reuse)

085	tonnes
086	tonnes

Total C&D waste collected and transported (sum cells 085 to 086)

087	tonnes
-----	--------

14. What quantity of hazardous waste did this company collect and transport from the following sources in 1994?

If this company did **not** collect and transport hazardous waste in 1994, check — **Go to Question 15**

Industrial, commercial and institutional
 Other sources, including households

089	tonnes
090	tonnes

Total hazardous waste collected and transported (sum cells 089 to 090)

091	tonnes
-----	--------

15. What quantity of sewage or sewage sludge did this company collect and transport from the following sources in 1994?

If this company did **not** collect and transport sewage and sewage sludge in 1994, check — **Go to Question 16**

Industrial, commercial and institutional
 Other sources, including households

093	tonnes
094	tonnes

Total sewage and sewage sludge collected and transported (sum cells 093 to 094)

095	tonnes
-----	--------

H. Waste Diversion (excluding hazardous)

16. Did this company prepare waste for recycling or reuse in 1994 by sorting, cleaning or reducing volume?

Yes — Continue

No — Go to Question 19, Section I

17. How many tonnes of the following types of waste were prepared for recycling or reuse by this company in 1994?

Municipal solid waste	097	tonnes
Construction and demolition waste	098	tonnes
Total waste prepared for recycling or reuse (sum cells 097 to 098)	099	tonnes

18. What quantity of the following materials did this company prepare for recycling or reuse by sorting, cleaning, or reducing volume in 1994?

If this company did not prepare waste for recycling in 1994, check — Go to Question 19

Newsprint	101	tonnes
Fine paper	102	tonnes
Corrugated cardboard	103	tonnes
Glass	104	tonnes
Ferrous metals	105	tonnes
Aluminum	106	tonnes
Other nonferrous metals	107	tonnes
Wood	108	tonnes
Plastic	109	tonnes
Other, specify ▼	110	tonnes
<input type="text"/>		
Total waste prepared for recycling or reuse (sum cells 101 to 110)	111	tonnes

I. Waste Transfer (excluding hazardous)

19. Did this company operate a waste transfer station in 1994?

Yes — Continue

No — Go to Question 21, Section J

20. How many tonnes of the following types of waste were processed by this transfer facility in 1994?

Municipal solid waste	114	tonnes
Construction and demolition waste	115	tonnes
Other, specify ▼	116	tonnes
<input type="text"/>		
Total waste processed (sum cells 114 to 116)	117	tonnes

J. Waste Disposal (excluding hazardous waste)

21. Did this company provide disposal services for nonhazardous waste (sanitary landfill, incineration, or sewage containment) in 1994?

Yes — Continue

No — Go to Question 23, Section K

22. What quantity of waste did this company dispose of by the following methods in 1994?

Sanitary landfill

Municipal solid waste	120	tonnes
Construction and demolition waste	121	tonnes
Sewage or sewage sludge	122	tonnes

Incineration

Municipal solid waste	123	tonnes
Construction and demolition waste	124	tonnes
Sewage or sewage sludge	125	tonnes
Total waste disposed (sum cells 120 to 125)	126	tonnes



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K. Hazardous Waste Treatment and Disposal

23. Did this company treat, incinerate, landfill or otherwise contain hazardous waste in 1994?

Yes — **Continue**

No — **Go to Question 25, Section L**

What quantity of hazardous waste did this company treat or dispose of by the following methods in 1994?

Treatment	128	tonnes
Incineration	129	tonnes
Secure landfill	130	tonnes
Other, specify ▼	131	tonnes
<div style="border: 1px solid black; padding: 2px; width: 100px;">133</div>		
Total hazardous waste treated or disposed (sum cells 128 to 131)	132	tonnes

24. What quantity of the following types of hazardous waste did this company treat or dispose of in 1994?

Organic solvents, solutions and still bottoms	133	tonnes
Oils and greases, oily mixtures and residues	134	tonnes
Heavy metal solutions and residuals	135	tonnes
Inorganic sludges, solutions and residues	136	tonnes
Pesticide and herbicide wastes	137	tonnes
PCB wastes	138	tonnes
Other (miscellaneous chemicals, paint, biomedical waste)	139	tonnes
Total hazardous waste processed or disposed (should equal sum in Q. 23)	140	tonnes

L. Certification

25. I certify that the information contained in this report is correct and complete to the best of my knowledge.

Signature	141	142 Date: / /95
Name of person completing this report	143	
Title of person completing this report	144	
Telephone number	145 ()	
Fax	146 ()	

M. Comments

Thank you for your cooperation
Please return this questionnaire in the envelope provided

If you have any questions, please contact us.
Telephone (call collect): (613) 951-5452
Fax: (613) 951-3522

