



# EnviroStats



Spring 2008

Vol. 2, no. 1

## In this issue:

	<u>Page</u>
<b>Disposal of household special wastes:</b> Households across the country regularly produce special wastes ranging from dead batteries to old paint containers. This study focuses on four special wastes for which information was collected in the 2006 Households and the Environment Survey—leftover or expired medication, dead batteries, old computer and communication equipment and leftover paint. Despite the environmental, health and safety risks posed by improper disposal of household special waste, many of these items end up on the curb.	3
<b>Is composting organic waste spreading?:</b> Diverting organic waste is one way of reducing the amount of waste being sent to landfills. Materials such as food waste and leaf and yard trimmings are often composted at home using compost bins or they are collected curbside and processed at centralized composting facilities. The study examines composting in Canada using data from the Waste Management Industry Survey and the Households and the Environment Survey. It finds that while diversion of all waste materials is on the rise, the Canadian compost pile is growing particularly rapidly.	8
<b>Agricultural water use in Canada:</b> Water is an essential input for crop and animal production. This article, based on the study "Estimation of Water Use in Canadian Agriculture in 2001," maps agricultural water use across the country.	13
<b>Environment and sustainable development indicators:</b> The data found in these tables will be updated each quarter, to ensure that readers have access to the most recent environmental statistics available.	17
<b>Updates:</b> Read about recent and upcoming releases, and new activities in the areas of environmental and sustainable development statistics.	21

<b>Latest indicators</b>	
Population 2006 to 2007 Percentage change	1.0%
Gross domestic product December 2007 Percentage change	-0.7%
Greenhouse gas emissions 2004 to 2005 Percentage change	-0.1%
Particulate matter (PM <sub>2.5</sub> ) 2000 to 2005	No significant trend
Ground-level ozone 1990 to 2005 Median percent change per year	0.8%



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The following standard symbols are used in Statistics Canada publications:

.	not available for any reference period
..	not available for a specific reference period
...	not applicable
0	true zero or a value rounded to zero
0 <sup>S</sup>	value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
P	preliminary
r	revised
x	suppressed to meet the confidentiality requirements of the <i>Statistics Act</i>
E	use with caution
F	too unreliable to be published

## Disposal of household special wastes

John Marshall, Environment Accounts and Statistics Division

Modern waste disposal facilities reduce the impact of household wastes on the environment. For example, decomposing organic matter produces methane and leachate in landfills, but methane flaring and leachate capture and treatment lessen these impacts. However, many smaller and older landfills operate without the benefit of high-tech pollution control systems. Some common household materials can pose a threat to groundwater quality, especially in these older landfills. These “special waste” materials require more attention and care to ensure safe disposal or recycling, where possible.

Many programs across Canada provide safe disposal alternatives for household special wastes. However, results from the 2006 Households and the Environment Survey indicate that many households are not fully aware of these options. The programs may not be fully used and many special waste materials can end up on the curb.

### How do households deal with their special wastes?

Households across the country regularly produce special wastes ranging from dead batteries to old paint containers. This study focuses on four special wastes for which information was collected in the 2006 [Households and the Environment Survey](#)—leftover or expired medication, dead batteries, old computer and communications equipment and leftover paint. If these materials were present in the home in 2005, respondents were asked about what they had done with the waste.<sup>1</sup>

### Leftover or expired medications

Sales of prescription and non-prescription drugs (including over-the-counter medication, vitamins and supplements) increased from \$11.8 billion in 1998 to \$21.8 billion dollars in 2006.<sup>2</sup> The aging

population, pharmacological and medical advances, as well as price increases have all been cited as contributing factors for this boom in the value of drug sales.<sup>3</sup>

People do not always finish the full prescribed course of medications, which results in leftover products. Over-the-counter medicines are often kept in the medicine cabinet until expiry dates have passed. Throwing these leftover pharmaceuticals in the trash or flushing them down the drain—uncontrolled methods of disposal—can pose a risk to the environment.

The presence of small amounts of these substances in water is emerging as an important national and international issue. Although the concentrations are low, adverse effects on humans and animals may be possible. Recent research has indicated these products can cause hormonal disruption in many aquatic species. Concerns also exist about the human health effects of medication in drinking water sources.<sup>4</sup>

Several provincial and industry-led programs encourage the safe disposal of unwanted pharmaceuticals, including for example, the ENVIRx Pharmaceutical Stewardship Program in Alberta.<sup>5</sup> In addition to these stewardship initiatives, most special waste depots accept leftover pharmaceuticals and ensure that they are disposed of safely.

(NAICS), computed annual total (dollars), CANSIM (database), [http://cansim2.statcan.ca/cgi-win/cnsmcgi.exe?Lang=E&CANSIMFile=CII/CII\\_1\\_E.htm&RootDir=CII/](http://cansim2.statcan.ca/cgi-win/cnsmcgi.exe?Lang=E&CANSIMFile=CII/CII_1_E.htm&RootDir=CII/) (accessed December 21, 2007).

1. Special wastes are not limited to those discussed in this article, but can include, among other materials, used hypodermic needles, unwanted pesticides or empty propane tanks.

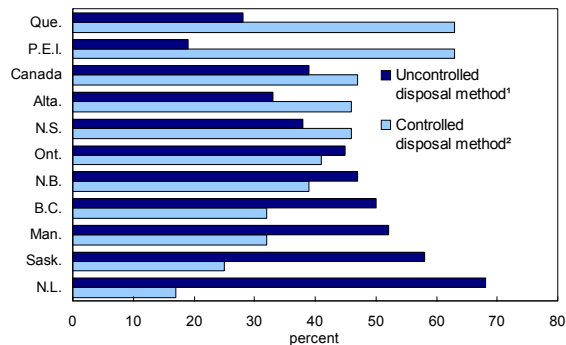
2. Statistics Canada, *Table 080-0018 - Retail commodity survey based on the North American Industry Classification System*

3. Guillaume Dubé, 2006, “Competing for the Retail Drug Market,” *Analysis in Brief*, Statistics Canada catalogue no. 11-621-M, no. 048, [www.statcan.ca/english/research/11-621-MIE/11-621-MIE2006048.pdf](http://www.statcan.ca/english/research/11-621-MIE/11-621-MIE2006048.pdf) (accessed October 1, 2007).

4. Health Canada, 2007, *Proper Use and Disposal of Medication*, [www.hc-sc.gc.ca/iyh-vsv/med/disposal-defaire\\_e.html](http://www.hc-sc.gc.ca/iyh-vsv/med/disposal-defaire_e.html) (accessed September 13, 2007).

5. National Association of Pharmacy Regulatory Authorities, 2002, *Recycling and Disposal of Dispensed Drugs*, [www.napra.ca/docs/0/97/194/184.asp](http://www.napra.ca/docs/0/97/194/184.asp) (accessed September 14, 2007).

**Chart 1**  
**Treatment of leftover or expired medication, 2005**



1. Uncontrolled disposal methods include disposal in regular garbage, disposal down the drain, sewer, toilet or sink or burial.
2. Controlled disposal methods include taking the medication to a pharmacy, depot or drop-off centre.

**Notes:**

As a percentage of the 24% of all households who reported having leftover or expired medications to dispose of in 2005. Totals do not add to 100%. Respondents may also have indicated they used other methods of disposal or that they still had them and/or didn't know what to do with them.

**Source:**

Environment Accounts and Statistics Division, Households and the Environment Survey, 2006.

### Households in Quebec and Prince Edward Island are most careful with disposal of old medications

Nearly a quarter of all households in Canada had leftover or expired drugs in 2005. Almost half of these households returned the products to a pharmacy, depot or drop-off centre, which provided more controlled methods of disposal.

Another 39% of households placed this waste with their regular garbage, flushed it down the drain or buried it. The remaining households still had it at home at the time of the survey and may not have known what to do with it.

Households in different parts of the country dealt with unwanted pharmaceuticals in a wide range of ways (Chart 1).

Households in Newfoundland and Labrador were the most likely to discard these wastes with regular garbage, flush them down the sink or toilet or bury them. More than two-thirds of households with unwanted medications in the province used these uncontrolled methods of disposal.

Almost two-thirds of households in Quebec and in Prince Edward Island returned the products to a pharmacy, drop-off centre or depot, which provide more controlled methods of disposal.

Reasons for these provincial differences are unclear. For example, Alberta and British Columbia both have province-wide programs to collect unused and expired medications at participating pharmacies.<sup>6</sup> Yet Albertans were more likely than British Columbians to report disposal of their medications using a controlled disposal method.

### Dead batteries

Batteries power toys, watches, cellular phones, music players and other common household and personal items. In 2004, an estimated 450 million consumer batteries were sold in Canada and approximately 348 million were discarded.<sup>7</sup>

While placing a small number of normal alkaline batteries in the trash is not particularly harmful, some batteries including lead-acid, lithium, nickel-cadmium, silver oxide and mercury batteries do pose a higher threat. These batteries can contain heavy metals, many of which are toxic substances scheduled under the *Canadian Environmental Protection Act, 1999*.<sup>8</sup> Disposal of large numbers of batteries can also pose a safety risk, since the batteries can react and overheat.

Municipal household hazardous waste (HHW) programs provide drop-off options for some consumer batteries. Other household batteries are managed through voluntary programs by organizations such as the Rechargeable Battery Recycling Corporation. These programs facilitate and carry out recycling of the metals contained in household batteries. Many provinces are considering legislation covering recycling and

6. Environment Canada, 2007, *Extended Producer Responsibility & Stewardship: Pharmaceuticals*, [www.ec.gc.ca/epr/default.asp?lang=En&n=76B4AF73-1](http://www.ec.gc.ca/epr/default.asp?lang=En&n=76B4AF73-1) (accessed October 2, 2007).

7. Environment Canada, 2007, *Canadian Consumer Battery Baseline Study Final Report*, [www.ec.gc.ca/nopp/docs/rpt/battery/en/toc.cfm](http://www.ec.gc.ca/nopp/docs/rpt/battery/en/toc.cfm) (accessed September 11, 2007).

8. Environment Canada, 1999, *Canadian Environmental Protection Act*, [www.ec.gc.ca/CEPARRegistry/the\\_act/default.cfm](http://www.ec.gc.ca/CEPARRegistry/the_act/default.cfm) (accessed October 17, 2007).



disposal methods for the batteries contained in laptop computers and other electronic equipment.<sup>9</sup>

### Batteries end up in the trash—except in Prince Edward Island

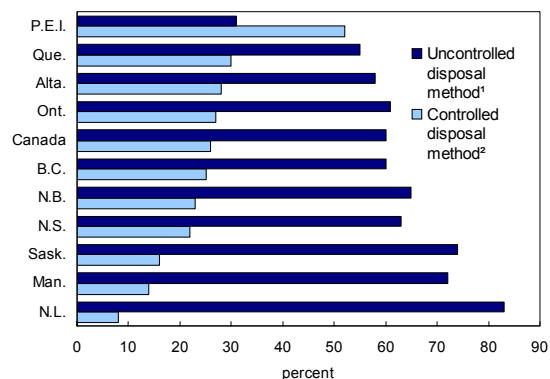
According to the Households and the Environment Survey, 60% of households put dead batteries in the trash in 2005 (Chart 2). These batteries eventually end up in landfills or incinerators. Just over a quarter of households with unwanted batteries used drop-off centers or depots. The remaining households still had them at home.

Proper disposal of batteries is most common in Prince Edward Island—the only province where controlled disposal methods outstrip disposal through the regular waste stream. Just over half of households in the province returned dead batteries to a depot. Even in Nova Scotia, a province with a comprehensive waste management plan, less than a quarter of households with unwanted batteries used a special waste depot or a battery supplier such as a retail outlet.

### Computers and communication devices

Computers, cellular phones and personal digital assistants (PDAs) have become almost ubiquitous in Canada. Sales of computer hardware and software went from \$3.0 billion in 1998 to over

**Chart 2**  
Treatment of dead batteries, 2005



1. Uncontrolled disposal methods include disposal in regular garbage.
2. Controlled disposal methods include returning the dead batteries to a supplier, depot or drop-off centre.

**Notes:**

As a percentage of the 47% of all households who reported having dead batteries to dispose of in 2005. Totals do not add to 100% since not all households discarded their dead batteries. Respondents may also have indicated they used other methods of disposal or that they still had them and/or didn't know what to do with them.

**Source:**

Environment Accounts and Statistics Division, Households and the Environment Survey, 2006.

\$4.2 billion in 2006.<sup>10</sup> Cell phone ownership rose from 22% of households in 1997 to 64% in 2005.<sup>11</sup>

According to Environment Canada, information technology (IT) and telecom products contain hazardous and toxic substances ranging from lead, mercury and beryllium in computer monitors to arsenic, cadmium and lead in mobile phones.<sup>12</sup>

A study commissioned by Environment Canada estimated that 81,000 tonnes of IT and telecom equipment were recycled and disposed of in 2002. Computers and monitors accounted for 70% of this total. The study projected that recycling and disposal of IT waste would increase to 91,000 tonnes in 2010.<sup>13</sup>

10. Statistics Canada, *Table 080-0018*, CANSIM (database).  
 11. Statistics Canada, *Table 203-0020 - Survey of household spending (SHS), household equipment at December 31, by province, territory and selected metropolitan areas, annual*, CANSIM (database), [http://cansim2.statcan.ca/cgi-win/cnsmcgl.exe?Lang=E&CANSIMFile=CII/CII\\_1\\_E.htm&RootDir=CII/](http://cansim2.statcan.ca/cgi-win/cnsmcgl.exe?Lang=E&CANSIMFile=CII/CII_1_E.htm&RootDir=CII/) (accessed December 21, 2007).  
 12. RIS International Ltd., 2003, *Information Technology (IT) and Telecommunication (Telecom) Waste in Canada – 2003 Update Report to Environment Canada*, Toronto.  
 13. RIS International, Ltd., 2003.

9. Environment Canada, 2007, *Canadian Consumer Battery Baseline Study Final Report*.

**Table 1**  
**Treatment of unwanted computers or communication devices, by province, 2005**

	Newfoundland and Labrador	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Canada
	%										
Households with unwanted computers or communication devices <sup>1</sup>	12	13	16	15	15	19	16	18	23	21	<b>18</b>
Donated or gave away, returned to a depot, drop-off centre or the supplier <sup>2</sup>	37	F	46	41	40	48	41	33	57	48	<b>47</b>
Put into the garbage <sup>2</sup>	F	F	23	F	16	18	19	14	7 <sup>E</sup>	14	<b>16</b>
Still have it / did not know what to do with it <sup>2</sup>	40	F	28	36	41	31	39	48	34	37	<b>35</b>
Other <sup>2,3</sup>	F	F	F	F	5 <sup>E</sup>	6	F	F	F	F	<b>5</b>

1. As a percentage of all households.

2. As a percentage of all households who reported having unwanted computers or communication devices in 2005. Respondents could indicate all that applied, therefore totals may exceed 100%.

3. Used a non-specified disposal method.

**Source:** Environment Accounts and Statistics Division, Households and the Environment Survey, 2006.

Most special waste depots will now accept IT materials. For example, product stewardship programs such as the Electronics Recycling Program in Alberta, which requires electronics suppliers to charge an environmental fee on the sale of designated electronic products, are being put into place. Consumers are asked to bring old equipment to collection points throughout the province for processing and recycling.<sup>14</sup>

### Over a third of households store unused or obsolete computers and communication devices

Computers and other IT/telecom devices constantly change to keep pace with technological advances. As a result, these items are frequently replaced. When such equipment is replaced, older items are often put in storage. Over a third of households still had old IT waste in the home at the time of the survey. These consumers may not want to put these items with their normal trash, but

may not be aware of safe methods of dealing with this waste.

Almost half of households with IT waste gave it away, used drop-off depots or returned it to a supplier, while 16% of households put it in the trash and 5% used other methods of disposal (Table 1). Donating used equipment, taking it back, or using a depot was most common in Alberta (57%).

### Paint—a clear picture

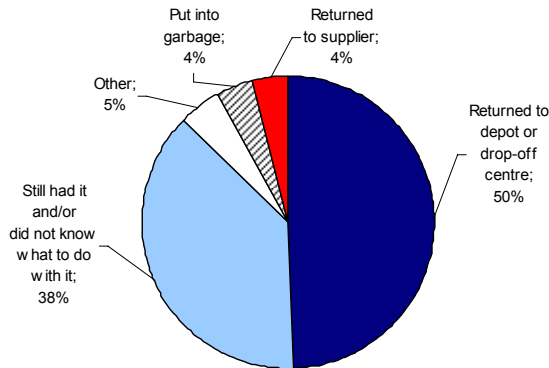
Households in Canada seem to be getting the picture about the controlled disposal of one special waste—old paint.

Paints are accepted at nearly all special waste depots. Paint stewardship programs such as the Québec Paint Recovery Program<sup>15</sup> and Saskatchewan's Post-Consumer Paint Stewardship

14. Environment Canada, 2007, *Extended Producer Responsibility and Stewardship: Electronics Recycling Programme*, [www.ec.gc.ca/epr/default.asp?lang=En&n=CBBDD979-1](http://www.ec.gc.ca/epr/default.asp?lang=En&n=CBBDD979-1) (accessed September 13, 2007).

15. Environment Canada, 2007, *Extended Producer Responsibility and Stewardship: Québec Paint Recovery Program*, [www.ec.gc.ca/epr/default.asp?lang=En&n=B3D7C11A-1](http://www.ec.gc.ca/epr/default.asp?lang=En&n=B3D7C11A-1) (accessed September 7, 2007).

**Chart 3**  
**Leftover paint disposal, 2005**



**Note:**

As a percentage of the 29% of all households who reported having leftover paint in 2005.

**Source:**

Environment Accounts and Statistics Division, Households and the Environment Survey, 2006.

Program<sup>16</sup> have also been established in many provinces. These programs collect leftover paint and containers for recycling and disposal and are funded through fees paid at the point of purchase. Latex paint cans are also accepted for regular municipal disposal or recycling in many jurisdictions if the paint has hardened on the bottom of the can.

In 2005, 29% of households had leftover paint they wanted to be rid of. More than half of these households used special waste depots or returned it to the supplier for disposal (Chart 3).

Nevertheless, a significant portion (38%) reported that they still had old paint at home, possibly because they did not know what to do with it. Only a small proportion of households put it in the trash or used some other method of disposal. There were very few differences provincially.

## Conclusion

Improper disposal of special waste items can pose environmental, health and safety risks. Although collection programs exist in many parts of the country to safely dispose of and recycle special wastes, a large number of households may not know how to access these programs, given that many dispose of these wastes through the normal waste stream or through the sanitary sewage system.

16. Environment Canada, 2007, *Extended Producer Responsibility and Stewardship. Post-Consumer Paint Stewardship Programme*, [www.ec.gc.ca/epr/default.asp?lang=En&n=2483AE39-1](http://www.ec.gc.ca/epr/default.asp?lang=En&n=2483AE39-1) (accessed September 27, 2007).

## Is composting organic waste spreading?

Amanda Elliott, Environment Accounts and Statistics Division

When asked what they do for the environment, many people say they recycle, reducing the amount of garbage they put in the trash. Composting organic wastes is another way of reducing the amount of waste being sent to landfill.

Traditionally, households composted in the backyard, but the use of municipal compost collection systems is growing. In the last few years a number of programs for curbside collection of food wastes have been initiated in large cities such as Edmonton, Toronto, Hamilton and Ottawa.

The diversion of organic waste has become a growing trend. From 2000 to 2004, the amount of organic waste composted by the waste management industry increased by 70% to 1.7 million tonnes. Close to two thirds of these organic wastes were generated by the residential sector.<sup>1</sup>

Although the majority of households that compost do so in their backyard, access to curbside collection of organic wastes plays an important role in people's participation in composting.



### What you should know about this study

This study uses data from the 2000 to 2004 [Waste Management Industry Surveys](#) and from the 2006 [Households and the Environment Survey](#).

The Waste Management Industry Survey collects information on solid waste management in Canada. It does not include data on waste managed by the waste generator on-site (for example, backyard composting or waste management at disposal facilities owned and operated by the waste generator).

Waste materials may be disposed of permanently in a landfill or incinerator or can be diverted. For the purposes of the survey, the management of waste can be thought of as an equation:

$$\text{Waste generation}^1 = \text{waste disposal}^2 + \text{waste diversion}^3$$

1. Does not include waste managed on-site by the waste generator.
2. Includes landfilling and incineration.
3. Includes recycling and composting.

The 2006 Households and the Environment Survey asked respondents if they composted kitchen and/or yard wastes. Respondents could include back-yard composting, participation in curbside pick-up programs, or drop-off at a collection centre or depot.

### What is waste?

Waste is unwanted material for which the generator has no further use. Waste is generated by residential and non-residential (industrial, commercial, institutional, construction and demolition) sources.

### The recipe for compost

Composting involves the transformation and decomposition of certain organic wastes into a soil-like product called humus. Materials such as food waste, leaf and yard trimmings, paper, wood and manure are the best inputs for compost production. When transformed, compost can be added to soil to improve texture, water retention and fertility. Composting is a naturally-occurring process that diverts materials from landfills and produces a material that is beneficial for the environment.

## How much is composted?

While diversion of all materials is on the rise, the Canadian compost pile is getting larger. According to the Waste Management Industry Survey, diversion of organic materials increased 70% in four years, from 980 thousand tonnes in 2000 to 1.7 million tonnes in 2004 (Table 1). These materials

1. Households are diverting even more of their organic wastes to backyard composters; however, there are no estimates available for the quantity of this material.



**Table 1**  
**Organic waste diversion, 2000 to 2004**

	Total diversion	Organic waste diversion	Proportion of organics in total diversion
	tonnes	tonnes	%
2000	6,138,536	979,787	16
2002	6,641,547	1,310,790	20
2004	7,864,647	1,669,145	21

**Note:**

Covers only those companies and local waste management organizations that reported they prepared non-hazardous material for recycling. Does not include materials managed on-site, or those materials transported by the generator directly to secondary processors such as pulp and paper mills while bypassing entirely any firm or local government involved in waste management activities.

**Source:**

Environment Accounts and Statistics Division, Waste Management Industry Survey: Business and Government Sectors, 2000, 2002 and 2004.

are composted at centralized facilities by the waste management industry.<sup>2</sup>

The average Canadian sent 51 kilograms of organic waste for composting in 2004, compared to 32 kilograms in 2000.

Organics also make up an increasing share of total materials diverted. In 2000, organics made up 16% of all materials diverted from disposal. By 2004, approximately 21% of these materials were composted.

The gain in organics diversion across Canada is attributable to the introduction of new composting programs and the expansion of existing organics collection (leaf and yard waste) programs to accept food wastes.

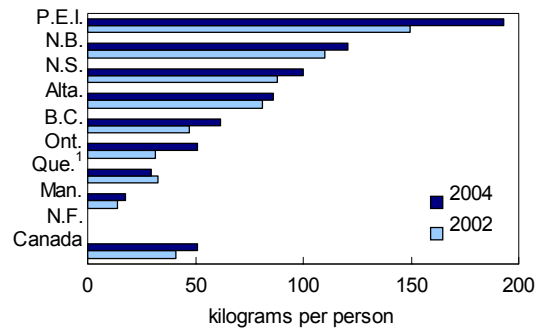
On a regional basis, the Maritime Provinces did the best at diverting organics (Table 2). Prince Edward Island, New Brunswick and Nova Scotia topped the list with the highest per capita diversion of organic materials (Chart 1). Regulations and well-established composting programs in Prince Edward Island and Nova Scotia may help to explain the popularity of composting in the east.<sup>3,4</sup>

2. Does not include materials composted on-site by the waste generator (for example, backyard composting).

3. Island Waste Management Corporation, 2008, *Island Waste Management Corporation*, [www.iwmc.pe.ca/ccf.htm](http://www.iwmc.pe.ca/ccf.htm) (accessed January 10, 2008).

4. Nova Scotia Environment and Labour, 1996, *Regulations Respecting Solid Waste-Resource Management*, [www.gov.ns.ca/enla/waste/regulations.asp](http://www.gov.ns.ca/enla/waste/regulations.asp) (accessed January 2, 2008).

**Chart 1**  
**Maritime provinces divert the most organic waste per capita, 2002 and 2004**



1. Data are derived from a survey administered by RECYC-QUÉBEC.

**Notes:**

Data for Saskatchewan and Yukon, Northwest Territories and Nunavut do not appear due to confidentiality reasons.

Covers only those companies and local waste management organizations that reported they prepared non-hazardous material for recycling. Does not include materials managed on-site, or those materials transported by the generator directly to secondary processors such as pulp and paper mills while bypassing entirely any firm or local government involved in waste management activities.

**Source:**

Environment Accounts and Statistics Division, Waste Management Industry Survey: Business and Government Sectors, 2002 and 2004.

Over 1.1 million tonnes (65%) of organic waste composted by the waste management industry comes from Canadian households. The remainder comes from non-residential sources.<sup>5</sup>

### Composting by households

Composting is slowly becoming a more popular activity for Canadian households. According to the Households and the Environment Survey, 27% of Canadian households composted in 2006, compared to 23% in 1994.<sup>6</sup>

The large majority of these households were backyard composters who used a compost bin or pile or who dug organic wastes down into their garden (Table 3).

Only 30% of households composting kitchen waste and 38% of households composting yard waste used a curbside collection system.

5. Statistics Canada, 2007, *Waste Management Industry Survey: Business and Government Sectors 2004*, Catalogue no. 16F0023X, Ottawa.

6. Statistics Canada, 2007, *Households and the Environment, 2006*, Catalogue no. 11-526-X, Ottawa.

**Table 2**  
**Organic waste diversion by province, 2002 and 2004**

	Organics diversion		Percentage change	Organics diversion as a share of total diversion	
	2002	2004	2002 to 2004	2002	2004
	tonnes			%	
Newfoundland and Labrador	0	0	0	0	0
Prince Edward Island	20,664	26,671	29	67	59
Nova Scotia	82,341	93,458	14	43	42
New Brunswick	82,725	90,585	10	63	63
Quebec <sup>1</sup>	246,000	225,000	-9	14	11
Ontario	393,328	644,586	64	17	22
Manitoba	16,261	20,995	29	8	9
Saskatchewan	x	x	x	x	x
Alberta	261,069	290,959	11	38	38
British Columbia	198,996	265,514	33	16	21
Yukon, Northwest Territories and Nunavut	x	x	x	x	x
<b>Canada</b>	<b>1,310,790</b>	<b>1,669,145</b>	<b>27</b>	<b>20</b>	<b>21</b>

1. Data are derived from a survey administered by RECYC-QUÉBEC.

**Note:**

Covers only those companies and local waste management organizations that reported they prepared non-hazardous material for recycling. Does not include materials managed on-site, or those materials transported by the generator directly to secondary processors such as pulp and paper mills while bypassing entirely any firm or local government involved in waste management activities.

**Source:**

Environment Accounts and Statistics Division, Waste Management Industry Survey: Business and Government Sectors, 2002 and 2004.

Prince Edward Island, which has a mandatory province-wide source-separated waste program and Nova Scotia which has a provincial landfill ban on organic waste, had the highest proportion of households that reported having either kitchen and/or yard waste picked up at the curb.

**Curbside collection means more composting**

Where households have the option of getting their kitchen and yard waste hauled away at the curb, a higher percentage compost.

Prince Edward Island, Nova Scotia, Ontario and New Brunswick (Table 3) have the highest participation rates in composting and they also have the highest percentages of households that have both yard and kitchen waste collected at the curb.

More than 4 out of 5 households that compost kitchen waste do so for more than six months of the year (Table 4).

Access to curbside collection for organic materials may also influence whether a household composts for part of the year or year-round. Participation in year-round composting tends to be higher in

provinces that have greater access to curbside collection.

Households in Alberta, Saskatchewan, Manitoba, Quebec and Newfoundland and Labrador, which are more likely to use a compost bin or pile, compost less year-round than the Canadian average. This likely reflects the lack of compost collection programs.

Although backyard composting can be done year-round, the process slows in cold weather. This, coupled with the walk to the backyard bin, may deter winter composting.

Households in British Columbia are the exception to the rule. Households in this province have less access to curbside organics collection programs, but more than three quarters of households that compost do so year round. The moderate climate in coastal areas of the province is a likely explanation.

**Is composting environmentally friendly?**

Municipal waste collection was established in the early 1900's to manage waste which was considered a public health nuisance. Rotting garbage creates odours and attracts insects and other pests that can

**Table 3**  
**Household participation in backyard composting and curbside organics collection, 2006**

	Total households composting <sup>1</sup>	Kitchen waste composting <sup>2</sup>	Bin, pile or garden <sup>3</sup>	Collected curbside <sup>3</sup>	Yard waste composting <sup>4</sup>	Bin, pile or garden <sup>5</sup>	Collected curbside <sup>5</sup>
	%						
Newfoundland and Labrador	21	88	90	F	75	92	F
Prince Edward Island	91	95	24	89	61	30	78
Nova Scotia	69	95	41	73	71	48	63
New Brunswick	32	87	53	55	70	62	44
Quebec	13	76	85	11 <sup>E</sup>	84	74	26
Ontario	34	85	67	36	81	55	50
Manitoba	23	76	93	F	77	83	F
Saskatchewan	27	79	94	F	76	84	14 <sup>E</sup>
Alberta	22	71	90	7 <sup>E</sup>	84	72	22
British Columbia	30	76	94	6	87	79	20
<b>Canada</b>	<b>27</b>	<b>82</b>	<b>73</b>	<b>30</b>	<b>81</b>	<b>64</b>	<b>38</b>

1. Includes all households

2. As a percentage of the households composting.

3. As a percentage of the households composting kitchen waste.

4. As a percentage of the households composting. Only includes households that were not apartment building dwellers and that had a lawn or garden.

5. As a percentage of the households composting yard waste.

**Source:**

Environment Accounts and Statistics Division, Households and the Environment Survey, 2006.

spread disease. In Canada, burying garbage in landfills has been the primary way of dealing with this problem.

However, landfilling organic materials produces leachate and methane, both of which have impacts on the environment.

When organics are exposed to water in landfills, the liquid trickles down through the pile, picking up contaminants along the way. Groundwater contamination by leachate can be a problem with landfills that do not have a sufficient clay layer or an engineered liner.<sup>7</sup> Burying organics in landfills also creates an environment where they decay without oxygen, thereby producing methane, a greenhouse gas.

Methane and leachate production can also occur at composting facilities unless compost piles are properly managed. The right combination of organics (paper, food wastes and leaf and yard

7. Lafèche waste disposal facility Environmental Assessment application. Available on Ontario Ministry of the Environment website at: [www.ene.gov.on.ca/envision/env\\_req/ea/english/ToRs/lafleche\\_tor.htm](http://www.ene.gov.on.ca/envision/env_req/ea/english/ToRs/lafleche_tor.htm) (accessed January 2, 2008).

**Table 4**  
**Duration of household composting, 2006**

	Months of composting kitchen wastes per year		
	6 or fewer	7 to 9	10 to 12
	%		
Newfoundland and Labrador	23	11	66
Prince Edward Island	F	0	98
Nova Scotia	F	2	95
New Brunswick	16 <sup>E</sup>	6	77
Quebec	29	15	52
Ontario	14	10	75
Manitoba	31	15	53
Saskatchewan	23	16	58
Alberta	26	12	60
British Columbia	13	5	80
<b>Canada</b>	<b>16</b>	<b>9</b>	<b>73</b>

**Notes:**

Only includes households who compost kitchen waste. Some respondents specified "Do not know." This proportion is not included here so the row totals may not add to 100%.

**Source:**

Environment Accounts and Statistics Division, Households and the Environment Survey, 2006.

wastes) and frequent turning and aeration of the piles ensures that problems are minimized or avoided. According to the waste management branch in the City of Edmonton, the only by-products of their compost piles are carbon dioxide and water vapour.<sup>8</sup>

### **Conclusion**

In some areas of Canada, diminishing landfill capacity is an issue. At the same time more and more garbage is produced each year. Some of the landfill capacity issues have been addressed by shipping waste to other regions of the country and to the United States; however, waste exports to the U.S. are not a long-term solution.<sup>9</sup> One way of reducing the amount of waste going to landfill is to compost organic wastes.

Some estimates show that up to half of the residential waste stream contains organic material.<sup>10</sup> In 2004, 1.1 million tonnes of residential organic waste was composted by the waste management industry, accounting for 8% of total residential waste. Reducing the amount of organics disposed in landfills not only minimizes the associated environmental impacts, but producing compost literally adds something to the environment. As alternatives to disposal in landfills become central to waste management, organics diversion, or composting, will become a growing part of the waste management equation.

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8. City of Edmonton, Waste Management Branch, 2003, *Wastefacts: Edmonton Composting Facility*, [www.edmonton.ca](http://www.edmonton.ca) (accessed January 8, 2008).
  9. City of Toronto, Solid Waste Management, 2007, *Facts about Toronto's trash*, [www.toronto.ca/garbage/facts.htm](http://www.toronto.ca/garbage/facts.htm) (accessed November 13, 2007).
  10. P. van der Werf and M. Cant, 2006, "The State of Composting Across Canada – Part 1," *Solid Waste & Recycling Magazine*, October/November 2006.

## Agricultural water use in Canada

François Soulard and Caroline Fric, Environment Accounts and Statistics Division, and Martin S. Beaulieu, Agriculture Division

Water is an essential input for crop and livestock production. While farming activities in some areas of the country rely solely on the water provided naturally by precipitation, other areas are heavily dependent on irrigation. This may be due to climatic factors and crop requirements, or to the desire to increase crop yields. Also, farmers from all over the country need to provide drinking water for their livestock. The latest national estimate, dating back to 1996, indicated that the agricultural sector accounted for 9% of all water used in Canada.<sup>1</sup>

Irrigation is used at specific times in the growing season to supplement precipitation or to supply water in a closed environment like a greenhouse. Water is sprayed on some crops for frost protection. It can also be used for harvesting, for example, by flooding a cranberry field. Other crop production water uses include spraying liquid pesticides and other products to protect crops, cleaning equipment and facilities, washing produce and on-farm processing (for example, canning produce).

Water is also used in livestock production for livestock watering, cleaning facilities, and washing and sanitizing equipment such as milk pipelines, parlours, buckets and tanks.

In 2001, Canadian agricultural water use was estimated at 4.8 billion cubic metres.<sup>2</sup> The geographic distribution of water use varied greatly from one region to another and was concentrated in relatively few of the 477 sub-sub drainage areas that contained farms.

Drainage areas with the largest amounts of water used for agriculture were located in southern Alberta and Saskatchewan, where irrigation was intensively practiced (Map 1 and Map 2). However, from a provincial perspective, more water was used

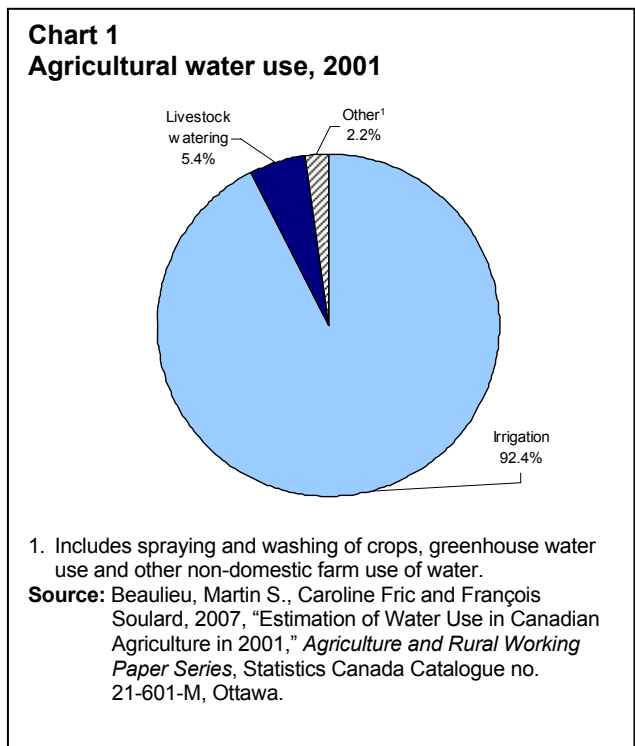
for agriculture in British Columbia than in Saskatchewan.

Together the three westernmost provinces accounted for 92% of total national agricultural water use. Most of the agricultural water in these provinces was used for irrigating crops (96%) and the remainder was mainly used for watering livestock (3%).

Irrigation was less common in other areas of the country. In Newfoundland and Labrador, Manitoba and Prince Edward Island, water used for watering livestock accounted for more than 42% of total farm water use. It accounted for about one-third of total farm water use in the remaining four provinces.

Nationally, irrigation represented 92% of agricultural water use in 2001, while livestock watering accounted for 5% (Chart 1).

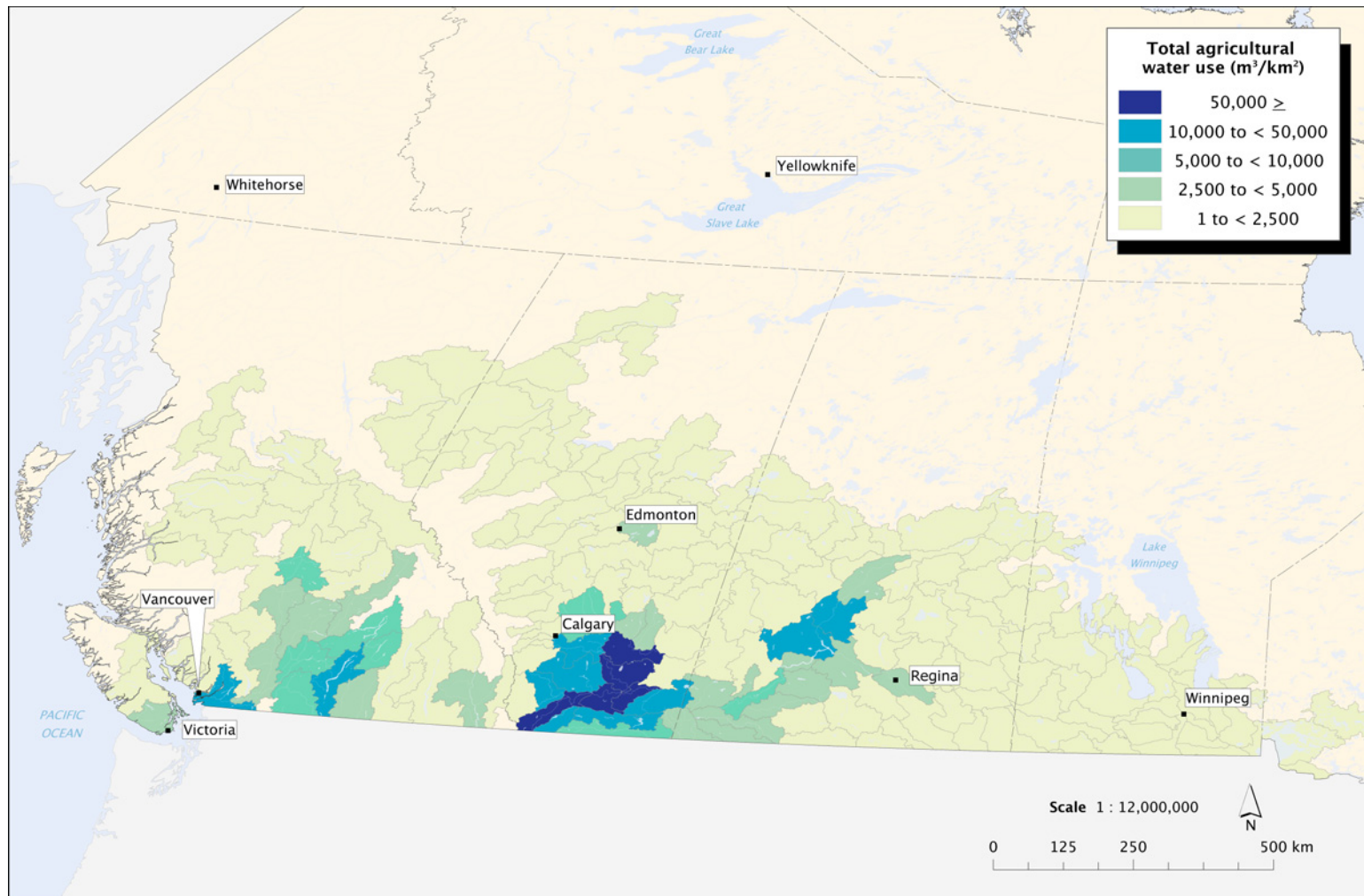
These estimates were produced through the use of various models and data sources, combined to



1. Statistics Canada, 2003, *Human Activity and the Environment : Annual Statistics*, Catalogue no.16-201-X, Ottawa.  
 2. Martin S. Beaulieu, Caroline Fric and François Soulard, 2007, "Estimation of Water Use in Canadian Agriculture in 2001," *Agriculture and Rural Working Paper Series*, Statistics Canada Catalogue no. 21-601-M, Ottawa.

provide as much uniformity and conformity as possible. However, recognizing these limitations, Statistics Canada and its partners have developed the 2007 Agricultural Water Use Survey. The survey will provide new information on irrigation practices and technologies, quantities of water applied, yields of irrigated crops, water sources, barriers to water use, water quality and water management practices across the country. Statistics Canada interviewers contacted about 2,000 farms across Canada in February 2008. Preliminary results are expected to be available this summer.

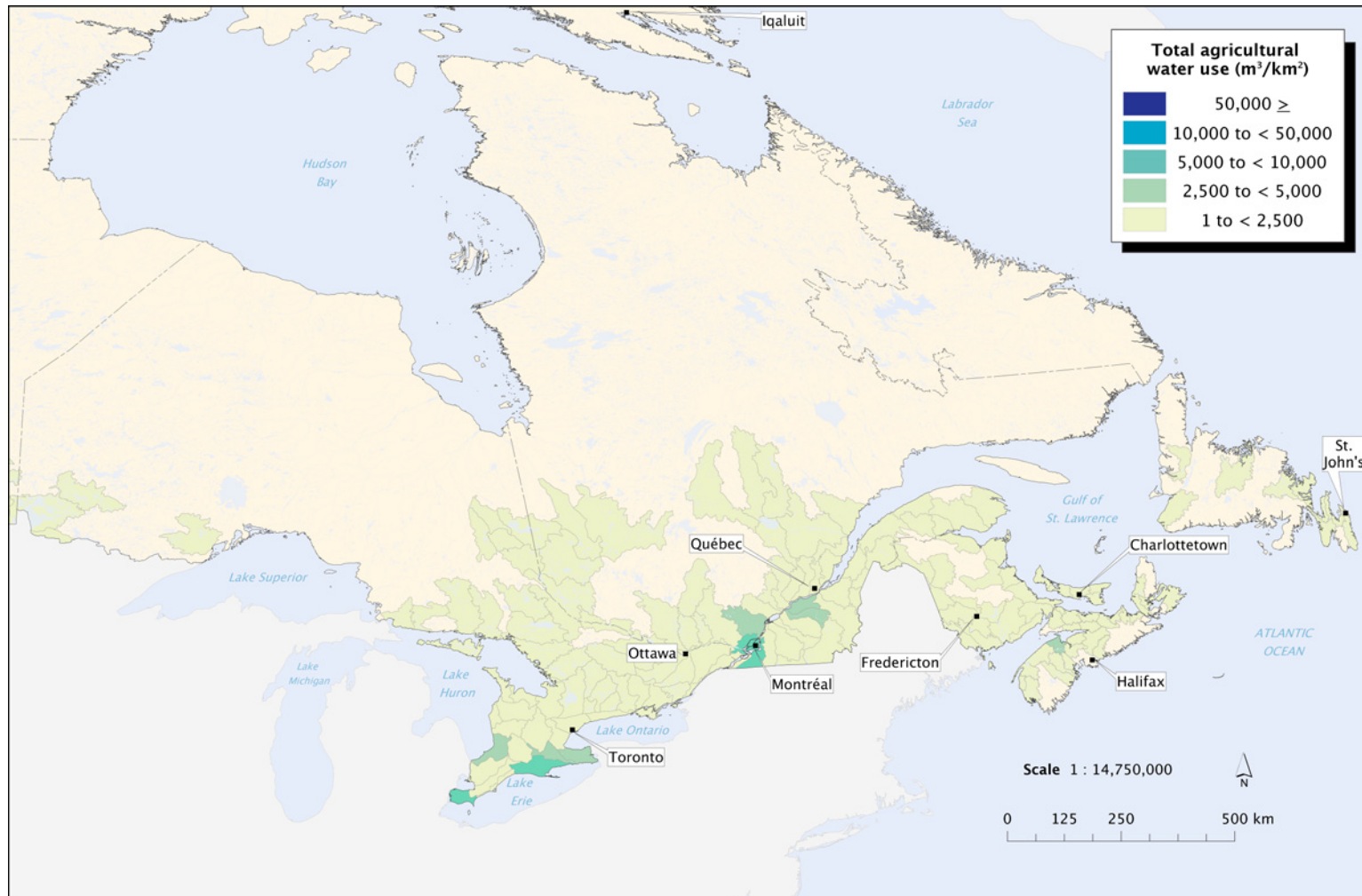
**Map 1**  
**Agricultural water use, by sub-sub drainage area – Western Canada, 2001**



**Note:** Data normalized by sub-sub drainage area.

**Source:** Beaulieu, Martin S., Caroline Fric and François Soulard, 2007, "Estimation of Water Use in Canadian Agriculture in 2001," *Agriculture and Rural Working Paper Series*, Statistics Canada Catalogue no. 21-601-M, Ottawa.  
 Statistics Canada, Environment Accounts and Statistics Division.

**Map 2**  
**Agricultural water use, by sub-sub drainage area – Eastern Canada, 2001**



**Note:** Data normalized by sub-sub drainage area.

**Source:** Beaulieu, Martin S., Caroline Fric and François Soulard, 2007, "Estimation of Water Use in Canadian Agriculture in 2001," *Agriculture and Rural Working Paper Series*, Statistics Canada Catalogue no. 21-601-M, Ottawa.  
 Statistics Canada, Environment Accounts and Statistics Division.



## Environment and sustainable development indicators

**Table 1**  
**Population indicators**

	2001	2002	2003	2004	2005	2006
Population (number) <sup>1</sup>	31,021,251	31,372,587	31,676,077	31,995,199	32,312,077	32,649,482
Percentage change	1.1	1.1	1.0	1.0	1.0	1.0
Aged 65 and over (percent of total)	12.6	12.7	12.8	13.0	13.1	13.2
Urban (percent of total)	79.7	..	..	..	..	80.2
Density (per square kilometre)	3.4	3.5	3.5	3.5	3.6	3.6

1. Population data is based on the Estimates of Population program, except for data on urban population, which is based on the Census of Population.

**Sources:** Statistics Canada, n.d. (no date), CANSIM Table 051-0001.

Statistics Canada, 2007, *Population and Dwelling Count Highlight Tables*, 2006 Census of Population, [www12.statcan.ca/english/census06/data/popdwell/Tables.cfm](http://www12.statcan.ca/english/census06/data/popdwell/Tables.cfm) (accessed February 22, 2008).

Statistics Canada, 2002, *Tables - Population and Dwelling Counts*, 2001 Census of Population, [www12.statcan.ca/english/census01/products/standard/popdwell/Tables.cfm](http://www12.statcan.ca/english/census01/products/standard/popdwell/Tables.cfm) (accessed February 22, 2008).

**Table 2**  
**Economy indicators**

	2001	2002	2003	2004	2005	2006
Gross Domestic Product (million chained 2002 dollars)	1,120,146	1,152,905	1,174,592	1,210,656	1,247,780	1,282,204
Percentage change	1.8	2.9	1.9	3.1	3.1	2.8
Per capita (chained 2002 dollars)	36,109	36,749	37,081	37,839	38,617	39,272
Consumer Price Index (2002 = 100)	97.8	100.0	102.8	104.7	107.0	109.1
Unemployment rate (percent)	7.2	7.7	7.6	7.2	6.8	6.3

**Sources:** Statistics Canada, n.d. (no date), CANSIM Tables 380-0017, 051-0001, 326-0021 and 282-0002.

**Table 3**  
**Social indicators**

	2001	2002	2003	2004	2005	2006
Average household spending (current dollars)						
Water and sewage	195	190	209	209	217	..
Electricity	973	1,019	1,056	1,065	1,099	..
Food	6,415	6,692	6,787	6,910	7,135	..
Gasoline and other motor fuels	1,539	1,729	1,713	1,893	2,075	..
Personal expenditure on consumer goods and services (million chained 2002 dollars)	632,781	655,722	675,443	698,138	724,942	755,204
Residential waste						
Production per capita (kilograms)	..	390	..	418	..	..
Disposal (tonnes)	..	9,447,531	..	9,792,787	..	..
Disposal per capita (kilograms)	..	301	..	306	..	..
Diversion (tonnes)	..	2,789,669	..	3,582,301	..	..
Diversion per capita (kilograms)	..	89	..	112	..	..
Diversion rate (percent of waste production)	..	23	..	27	..	..
Distance driven by light vehicles <sup>1</sup> (million kilometres)	283,380	290,320	286,803	285,164	289,717	296,871
Asthma (percent of population age 12 and over)	..	..	8.4	..	8.3	..

1. Distance driven for vehicles weighing less than 4.5 tonnes, excluding the territories.

**Sources:** Statistics Canada, n.d. (no date), CANSIM Tables 203-0003, 203-0002, 203-0007, 405-0063 and 105-0400.

Statistics Canada, *Waste Management Industry Survey: Business and Government Sectors*, Statistics Canada Catalogue no. 16F0023X, Ottawa.

**Table 4**  
**Energy indicators**

	2001	2002	2003	2004	2005	2006
Primary energy availability (terajoules)	10,950,393	11,163,501	11,478,526	11,527,500	11,307,113	11,216,025
Primary and secondary energy (terajoules)						
Export	9,305,984	9,491,341	9,444,883	9,810,695	9,641,137	9,786,984
Residential consumption	1,239,970	1,286,677	1,338,166	1,313,015	1,296,644	1,250,283
Established reserve, closing stock <sup>1</sup>						
Crude bitumen (million cubic metres)	1,830	1,840	1,720	1,660	1,620	3,340
Crude oil (million cubic metres)	644.7	606.1	590.0	603.8	752.3	712.6
Natural gas (billion cubic metres)	1,547.8	1,529.6	1,469.5	1,497.5	1,553.7	1,577.7
Recoverable reserves, closing stock <sup>1</sup>						
Coal (million tonnes)	4,555.3	4,485.3	4,406.4	4,666.3	4,468.8	4,399.3
Uranium (tonnes)	452,000	439,000	429,000	444,000	431,000	423,000
Total electricity generation (megawatt hours)	565,757,322	578,728,900	564,218,465	571,291,905	597,248,219	585,097,531
Hydro (percent of total)	58.0	59.8	59.0	58.7	60.0	60.0
Nuclear (percent of total)	12.8	12.3	12.5	14.9	14.5	15.8
Generation from fossil fuel and other fuel combustion (percent of total)	29.2	27.9	28.5	26.4	25.4	24.2
Research and development expenditures						
Private sector R&D in alternative energy (million constant 1997 dollars)	228	196	204	..	..	..

1. The size of the reserve at year-end.

**Sources:** Statistics Canada, n.d. (no date), CANSIM Tables 128-0002, 128-0009, 153-0012, 153-0013, 153-0014, 153-0017, 153-0018, 153-0019 and 127-0001.  
 Chiru, Radu, 2006, "Research and Development for New Energy Technologies in the Private Sector," *Analysis in Brief*, Statistics Canada Catalogue no. 11-621-M, Ottawa.

**Table 5**  
**Environment and natural resources indicators**

	2001	2002	2003	2004	2005	2006
Greenhouse gas (GHG) emissions (megatonnes of carbon dioxide equivalent)	714	720	745	747	747	..
GHG emissions by final demand (megatonnes of carbon dioxide equivalent)						
Exports	282	268	267	..	..	..
Personal consumption	198	206	217	..	..	..
Annual temperature departures, <sup>1</sup> Canada (degrees Celsius)	1.7	0.6	1.1	0.1	1.7	2.4
Value of selected natural resources (million current dollars)						
Land	926,150	1,013,754	1,095,419	1,226,497	1,352,999	1,493,300
Timber	300,445	303,278	297,474	302,358	281,125	263,192
Subsoil resource stocks	396,760	375,276	465,083	558,023	817,416	818,926
Average farm pesticide expenditures (current dollars)	6,312	6,228	7,232	7,602	7,792	7,863 <sup>p</sup>
Air quality <sup>2</sup>						
Ozone (population weighted, parts per billion)	40	40	39	35	38	..
PM <sub>2.5</sub> (population weighted, micrograms per cubic metre)	9	10	9	9	9	..

1. Annual departures from the 1951 to 1980 temperature normals.

2. Ground level ozone and fine particulate matter (PM<sub>2.5</sub>) are two key components of smog that have been linked to health impacts ranging from minor respiratory problems to hospitalizations and premature death. Exposure studies indicate that adverse health effects can occur even with low concentrations of these pollutants in the air. Annual data are revised, based on the latest release of the *Canadian Environmental Sustainability Indicators* report.

**Sources:** Statistics Canada, n.d. (no date), CANSIM Tables 378-0005, and 002-0044.

Environment Canada, 2007, *Canada's 2005 Greenhouse Gas Inventory: A Summary of Trends*, [www.ec.gc.ca/pdb/ghg/inventory\\_e.cfm](http://www.ec.gc.ca/pdb/ghg/inventory_e.cfm) (accessed June 20, 2007).

Environment Canada, 2006, *Climate Trends and Variations Bulletin*, [www.msc-smc.ec.gc.ca/ccrm/bulletin/annual06/national\\_e.cfm](http://www.msc-smc.ec.gc.ca/ccrm/bulletin/annual06/national_e.cfm) (accessed June 20, 2007).

Environment Canada, Statistics Canada and Health Canada, 2007, *Canadian Environmental Sustainability Indicators*, Statistics Canada Catalogue no. 16-251-X, Ottawa.

Statistics Canada, Environment Accounts and Statistics Division, Material and Energy Flow Accounts.

## Updates

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### New releases

#### ***Environment Accounts and Statistics Product Catalogue***

Environment Accounts and Statistics Division is Statistics Canada's focal point for the collection, analysis and dissemination of environmental information. This reference guide briefly describes the division's programs, as well as all publications and electronic products offered on a quarterly, annual, biennial and occasional basis.

Released March 19, 2008 (Statistics Canada Catalogue no. [16-257-X](#))

#### ***Industrial Water Use, 2005***

This report incorporates the statistical tables from the preliminary release made in July 2007. The Industrial Water Survey was sent to thermal-electric power generating plants (including nuclear electric power generators), coal mines, metal mines, non-metallic mineral mines (excluding sand, gravel, clay and ceramic and refractory mines and quarries) and manufacturers. The information collected included the sources of water used, what purposes industry used the water for, whether or not water was re-circulated or re-used, where the water was discharged and what treatments were used for water brought into the establishment and discharged from the establishment. Also, water acquisition costs and operating and maintenance expenses related to water intake and discharge were collected.

Released March 12, 2008 (Statistics Canada Catalogue no. [16-401-X](#))

#### ***Dependence on cars in urban neighbourhoods***

This article, published in *Canadian Social Trends*, focuses on the relationship between the types of neighbourhoods in which people live and the use of cars for daily travel. The article examines the following questions: How much do residents of peripheral areas and low-density (suburban) neighbourhoods depend on cars in their daily lives compared with residents of more "urban" neighbourhoods? To what extent can residents of central neighbourhoods go about their day-to-day

business without necessarily using a car? In which metropolitan areas is exclusive use of the automobile most common?

Released January 22, 2008 (Statistics Canada Catalogue no. [11-008-X](#))

### Upcoming releases

#### ***Canadian Environmental Sustainability Indicators: Data Sources and Methods***

These reports present details on the data sources and methods underlying the indicators for air quality, greenhouse gas emissions and freshwater quality reported in *Canadian Environmental Sustainability Indicators* ([16-251-X](#)).

Air quality indicators: Release – spring 2008 (Statistics Canada Catalogue no. [16-254-X](#))

Greenhouse gas emissions indicator: Release – spring 2008 (Statistics Canada Catalogue no. [16-255-X](#))

Freshwater quality indicator: Release – spring 2008 (Statistics Canada Catalogue no. [16-256-X](#))

#### ***Human Activity and the Environment: Annual Statistics 2007 and 2008***

This is Statistics Canada's annual flagship publication for environmental statistics. With emphasis on human activity and its relationship to natural systems—air, water, soil, plants and animals—*Human Activity and the Environment* presents a compendium of maps, tables and charts. This information is punctuated with simple analysis and interpretation, which together provide statistical insight into Canada's environment. The feature article in this issue is "Climate change in Canada." The article provides the latest greenhouse gas emission data, an overview of impacts on the environment and concludes with adaptation and mitigation activities underway by governments, businesses and citizens.

To be released April 22, 2008 (Statistics Canada Catalogue no. [16-201-X](#))

## New developments

### *Quarterly Energy and Greenhouse Gas Estimate Project*

Cindy Lecavalier

Statistics Canada currently produces annual estimates of energy consumption and greenhouse gas (GHG) emissions with dimensions that are consistent with the Input and Output framework of the System of National Accounts. The release of these annual estimates is about three years behind the reference year.

A new project of quarterly estimates of both energy use and GHG emissions is now underway to improve the timeliness and frequency of these

estimates. It looks at current economic changes from an environmental perspective by integrating the most current data from sub-annual surveys, such as the Monthly Survey of Manufacturing, and sub-annual surveys that feed into the *Report on Energy Supply and Demand*.

These quarterly accounts will provide Canadians with a leading indicator of energy use and GHG emissions based on the most current economic data available. The estimates will follow the release and revision cycle of the quarterly national accounts, and will be revised as more detailed estimates from Environment Canada and Statistics Canada become available. The initial results of this project are expected to be released in 2009.



**Rural and Small Town Canada**  
ANALYSIS BULLETIN

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The graphic features a green background with a map of Canada. It includes icons for a computer keyboard, a mouse, a person working on a computer, and a person working in a field. The text is in a serif font, with the main title in a larger, bold font.