Catalogue no. 88-202-X

Industrial Research and Development: Intentions

2011

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Statistics Canada
Investment, Science and Technology Division

Industrial Research and Development: Intentions

2011

Published by authority of the Minister responsible for Statistics Canada

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April 2012

Catalogue no. 88-202-X

ISSN 1495-706X

Frequency: Annual

Ottawa

Cette publication est également disponible en français.

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User information

Symbols

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^s	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 *Statistics Act*
^{E}	use with caution
F	too unreliable to be published
*	significantly different from reference category ($p < 0.05$)

Table of contents

Highlights 5

Analysis 6

Related products 11

Statistical tables

1 Industrial research and development expenditures in current and 2002 constant dollars 14
2 International comparison of business enterprise expenditures on research and development as a percentage of gross domestic product, by selected OECD countries 15
3 Business expenditures on research and development compared to gross domestic expenditures on research and development and gross domestic product 16
4 Concentration of total intramural research and development expenditures by top performing company 17

5 Total intramural research and development expenditures 18
- 5-1 by industry 18
- 5-2 by province 19
- 5-3 by province and by type of expenditures, 2009p 19
- 5-4 by industry, by region, 2009p 20
- 5-5 by country of control 21
- 5-6 of Canadian-controlled companies compared to all intramural research and development expenditures, by industry 22
- 5-7 by expenditures size 23
- 5-8 by sources of funds 23
- 5-9 by sources of funds and by industry, 2009p 24
- 5-10 by sources of funds and by country of control of performer, 2009p 25
- 5-11 by performing company revenue size 25
- 5-12 by performing company employment size 25

6 Current intramural research and development expenditures 26
- 6-1 by industry 26
- 6-2 by industry and by type of expenditures, 2009p 27
- 6-3 by province 28
- 6-4 as a percentage of performing company revenues, by company revenue size 28
- 6-5 as a percentage performing company revenues, by country of control 28
- 6-6 as a percentage of performing company revenues, by industry and by country of control, 2009p 29

Table of contents – continued

7 Capital intramural research and development expenditures, by industry 30

8 Personnel engaged in research and development 31
- 8-1 by industry group and by region, 2009p 31
- 8-2 by province and by occupational category, 2009p 31
- 8-3 by industry and by occupational category, 2009p 32
- 8-4 by occupational category 33

9 Professional personnel engaged in research and development, by degree level 33

10 Total extramural payments for research and development, by industry 34
- 10-1 and by year 34
- 10-2 and by location of recipient, 2009p 35

11 Foreign receipts and payments for technological services by research and development and other 36

12 Expenditures made and payments received for intellectual property and other technology related services, 2009 36

13 Energy research and development expenditures, by area of technology and by source of funds, 2009p 37

14 Research and development performers 38
- 14-1 by industry and by country of control, 2008 38
- 14-2 by province, 2004 to 2008 39
- 14-3 as a percentage of enterprises with one or more employees, 2004 to 2008 40
- 14-4 by the North American industry classification system (NAICS) 2007, in 2008 41

15 Enterprises with one or more employee, by industry, with percentage change from 2004 to 2008 and percentage distribution, 2008 56

Data quality, concepts and methodology

Survey methodology 57

Appendix

I North American industry classification system 2007 by Industry group 67

Highlights

Spending on industrial research and development 2010 (intentions)

- Businesses in Canada anticipated spending just over $15.6 billion on industrial research and development (R&D) in 2011, a 5.0% increase from 2010. In 2007 industrial R&D spending peaked at $16.8 billion, with a previous peak in 2001 of $14.3 billion (table 1).

- Between 2010 and 2011, industrial R&D spending in the manufacturing sector is anticipated to increase by 8.0% from $7.1 billion in 2010 to $7.7 billion in 2011. For the services sector, an increase of 3.1% is anticipated, from $6.6 billion in 2010 to $6.8 billion in 2011 (table 5-1).

- The established pattern of financing for industrial R&D continued in 2009, the most recent year for which data are available. R&D performers still finance the majority (79%) of their own industrial R&D. Industrial R&D performers received (13%) of their funding from foreign sources. Funds from the federal government accounted for 2% while the remainder came from other Canadian sources (table 5-8).

- In 2011, about one-half of all industrial R&D performance was concentrated in the top 100 firms ranked by intramural R&D spending, down from around two thirds in the mid-1980s. In contrast, about one-half of the industrial R&D was performed by the top 25 firms in the mid-1980s; this concentration dropped to about 30% by 2006 where it has remained. This indicates that industrial R&D performance has dispersed across a greater number of performers over the past three decades. The drop-off in concentration in the top 100 R&D performing firms coincides with the decline of the information and communication technology industries (table 4).

- R&D activities provided employment to 149,923 full-time equivalent (FTE) positions in 2009, the most recent year for which the R&D employment data are available. Professionals such as scientists, engineers and senior R&D administrators comprised 58% (or 86,964 FTE) of these highly qualified personnel (table 8-2).

- Expenditures made for intellectual property in 2009 amounted to $435 million, of which patents represented 31% at $133 million. Payments received for intellectual property in 2009 amounted to $741 million and patents accounted for almost three quarters of the inflow of funds (table 12).

- In 2009, Canadian firms performing R&D dedicated $1.3 billion to energy R&D with a particular emphasis on fossil fuels ($928 million). Within the fossil fuels, the leading expenditures on energy R&D were related to oil sands and heavy crude oil technologies for surface and sub-surface production and separation of bitumen and tailings management at $478 million with crude oils and natural gas exploration, production and storage following, at $388 million (table 13).

Note: Data for 2009 on employment in R&D activities, sources of funds for R&D, industrial R&D spending distributed by provinces, extramural R&D payments and technology payments and receipts are also available. Spending intentions for 2010 and 2011 are preliminary indications of the direction of R&D investments. Also available are data for 2009 from the Energy Research and Development Expenditures by Area of Technology survey.

Analysis

Industrial R&D spending intentions

Businesses in Canada anticipated spending just over $15.6 billion on industrial research and development (R&D) in 2011, a 5.0% increase from 2010. In 2007 industrial R&D spending peaked at $16.8 billion, with a previous peak in 2001 of $14.3 billion (table 1).

Following the 2001 peak, the decline in industrial R&D spending was centred in the manufacturing sector. A period of recovery in industrial R&D spending, emanating primarily from the services sector, occurred between 2003 to a peak in 2007. The more recent decline occurred, to varying extents and over three years, across almost all industrial sectors. This has resulted in a longer road to recovery. It appears that businesses may be weighing the advantages of investing in R&D against other business strategies in a difficult global economy (table 5-1 and CANSIM 358-0024).

Over the past decade, the concentration of R&D spending has shifted somewhat from the largest firms, measured by employment and revenue size, towards small and mid-sized firms. This trend is also noticeable in the concentration of R&D spending in the top 100 R&D performing firms. In 2011, about one-half of all industrial R&D performance was concentrated in the top 100 firms, down from around two-thirds in the early 2000s (table 4).

In 2009, expenditures made for intellectual property amounted to $435 million, of which patents represented 31% at $133 million. Payments received for intellectual property in 2009 stood at $741 million, with patents accounting for almost three quarters of the inflow of funds (table 12).

Industrial distribution of R&D spending

Businesses performing R&D are classified based on the North America Industry Classification System (see text box: Industrial shifts in R&D data) into 46 industrial groupings intended to provide a detailed representation of the Canadian industrial distribution of R&D spending.

Between 2010 and 2011, industrial R&D spending in the manufacturing sector is anticipated to increase by 8.0% from $7.1 billion in 2010 to $7.7 billion in 2011. For the services sector, an increase of 3.1% is anticipated, from $6.6 billion in 2010 to $6.8 billion in 2011 (table 5-1).

Historically, industrial R&D has been centred in the manufacturing sector, whose share in recent years peaked in 2000 at 68% ($8.5 billion) of total industrial R&D ($12.4 billion). Its share dropped steadily through to 2008, when it accounted for 47% ($7.6 billion). Since 2008, its share has remained fairly stable at just under 50% (table 5-1 and CANSIM 358-0024).

Within the manufacturing sector the two leading industrial groupings performing over a billion dollars of R&D are: aerospace products and parts ($1.4 billion) and communications equipment ($1.4 billion) (table 5-1).

Meanwhile, the share of industrial R&D spending in the services sector has been increasing. The services sector accounted for 28% of total industrial R&D performed by Canadian industry from 1998 through 2000. Beginning in 2001 and continuing through the decade, however, a shift towards the services sector occurred, as its share of R&D spending increased, while industrial R&D spending decreased in the manufacturing sector. By 2008, the services sector accounted for 45% ($7.4 billion) of total industrial R&D ($16.4 billion), almost equal to the share of the manufacturing sector (table 5-1 and CANSIM 358-0024).

Of the six industrial groupings that spent more than $1 billion on R&D, the following four are driving the shift towards the services sector: scientific research and development services ($1.7 billion); wholesale trade ($1.3 billion); information and cultural industries ($1.2 billion); and computer system design and related services ($1.1 billion).

In 2011, these four services sector industrial groupings continue to represent one-third (34%) of total intramural industrial R&D performance (table 5-1).

The share of industrial R&D of the other sectors of Canadian industry (consisting of agriculture, forestry, fishing, mining, oil and gas extraction, utilities and construction) has increased slowly and steadily from less than 4% in 2001 to almost 9% in 2009 and 8% in 2010 and 2011 (table 5-1 and CANSIM 358-0024).

Industrial shifts in R&D data

Research and Development in Canadian Industry (RDCI) surveys enterprises. An enterprise is defined as a business unit that directs and controls the allocation of resources relating to its operations, and for which consolidated financial and balance sheet accounts are maintained.[1] The activity with the most economic weight or importance determines the NAICS code that Statistics Canada assigns to the enterprise.

The economic importance of activities undertaken by enterprises can vary from year to year due to changes in market conditions, for instance, in the relative importance of wholesaling, manufacturing and scientific research and development services undertaken by the enterprise. Industries illustrating movements between NAICS codes due to changes in the influence of activities include pharmaceuticals. From year to year, the most important economic activity of these enterprises can move among pharmaceutical and pharmacy supplies wholesaler-distributors (NAICS 414510), pharmaceutical and medicine manufacturing (NAICS 325410) and scientific research and development services in the physical, engineering and life sciences (NAICS 541710). Enterprises can shift between natural resources and manufacturing industries.

Those enterprises with economic activities related to fossil fuels, specifically oil and gas and their refined products also often show movement between NAICS codes. For example, enterprises performing R&D can move between oil and gas extraction (NAICS 2111) and petroleum and coal product manufacturing (NAICS 3241).

Sources of funds for industrial R&D spending in 2009

Funds for performing industrial R&D come from a variety of sources: from within the firm; from the federal government; from foreign sources (which includes intra-corporate transfer by multi-national corporations); and from other Canadian sources which include funds from related companies, contracted R&D performed for other firms, provincial and territorial governments, higher education institutions, and private non-profit organizations.

The established pattern of financing for industrial R&D continued in 2009, the most recent year for which data are available. R&D performers still finance the majority (79%) of their own industrial R&D. Industrial R&D performers received (13%) of their funding from foreign sources. Funds from the federal government accounted for 2% while the remainder came from other Canadian sources (table 5-8).

Distribution of industrial R&D expenditures by province,[2] 2009

Similar to the sources of funds for industrial R&D spending data, the most recent year for which industrial R&D expenditures by province data are available is 2009.

R&D spending in Ontario amounted to $7.0 billion in 2009, falling 10.0% from the previous year. Most of this decline was due to declining spending by the services sector (-16.3%). In Ontario, industrial R&D performance was dominated by the manufacturing sector (58%), while the services sector comprised most of the remaining share (40%) (table 5-4 and CANSIM 358-0161).

In 2009, R&D spending in Quebec fell 4.5% to $4.6 billion, due to a decline in the services sector. In Quebec, manufacturing R&D represented one-half (49%) and services 46% of industrial R&D spending. This represents a small shift from 2005, when manufacturing accounted for 54% and services 42% (table 5-4 and CANSIM 358-0161).

1. *http://www.statcan.gc.ca/concepts/definitions/ent-eng.htm*
2. British Columbia includes Nunavut, the Yukon and the Northwest Territories.

In 2009, R&D spending in British Columbia decreased by 8.6%, following a 1.0% increase in 2008. In British Columbia, the majority (55%) of industrial R&D spending occurred in the services sector. In the mining and oil and gas extraction sector, industrial R&D spending has increased significantly from $21 million in 2005 to $303 million in 2009 (table 5-4 and CANSIM 358-0161).

In Alberta, R&D spending decreased by 9.5% in 2009. Industrial R&D performance in Alberta was fairly evenly distributed across the mining, oil and gas extraction sector (35%), the manufacturing sector (32%), and the services sector (31%) (table 5-4 and CANSIM 358-0161).

Industrial R&D concentration by firm size measures

In 2011, about one-half of all industrial R&D performance was concentrated in the top 100 firms ranked by intramural R&D spending, down from around two thirds in the mid-1980s. In contrast, about one-half of the industrial R&D was performed by the top 25 firms in the mid-1980s; this concentration dropped to about 30% by 2006 where it has remained. This indicates that industrial R&D performance has dispersed across a greater number of performers over the past three decades. The drop-off in concentration in the top 100 R&D performing firms coincides with the decline of the information and communication technology industries (table 4).

When viewed by employment size groups, industrial R&D expenditures were concentrated in large firms (2,000 or more employees). Three-tenths of all industrial R&D spending occurred in firms of this size in 2009, the most recently available reference year for these data (table 5-12).

In 2009, small firms (1 to 49 employees) accounted for one-fifth of total industrial investment in R&D performance. These proportions have changed considerably in the past decade. In 1999, for example, small firms accounted for only about one-tenth of total industrial investment in R&D performance, while the largest firms accounted for over four-tenths (43%) (table 5-12).

When examined by revenue size groups, industrial R&D spending remained concentrated in the largest revenue size group (revenues of $400 million or greater), accounting for just over two-fifths of all industrial R&D performance in 2009. On the other end of the scale, small firms (revenues of less than $1 million) accounted for less than one-tenth of industrial R&D spending. Mid-sized firms performing R&D, with revenues between $1 million and $49.9 million in 2009, comprised almost one-third of total industrial R&D spending. Firms with revenues between $50 million and $399.9 million comprised about one-fifth (table 5-11).

Industrial R&D personnel in 2009

R&D activities provided employment to 149,923 full-time equivalent (FTE) positions in 2009, the most recent year for which the R&D employment data are available. Professionals such as scientists, engineers and senior R&D administrators comprised 58% (or 86,964 FTE) of these highly qualified personnel (table 8-2).

Skilled technicians and technologists, certified by provincial, national or professional scientific or engineering associations or educational bodies, comprised a further 32% or 47,358 FTE dedicated to R&D activities (table 8-3).

The final category of R&D personnel by occupation includes administrative support staff such as accountants and office workers engaged in the administrative support of R&D projects and machinists and electricians involved in the construction of prototypes.

Professional personnel engaged in R&D

In 2009, 6,460 FTEs with doctorates (PhDs) performed R&D activities, while 13,567 FTEs held masters degrees. The largest number of FTEs performing R&D activities had bachelor's degrees (54,131 FTEs), while 8,461 FTEs had college diplomas (table 9).

Industrial R&D personnel estimates

There are two sources of data for the industrial R&D personnel estimates: questionnaire estimates for firms covered by the Research and Development in Canadian Industry (RDCI) survey; and administrative data taken from final approved Scientific Research and Experimental Development (SR&ED) tax incentive program claims. Where data are available from both sources, respondent data from the questionnaire are used.

Users are advised that there are differences in the data collected from the two sources of industrial R&D personnel data. The two most important differences are outlined below.

First, the SR&ED tax incentive program claims for R&D personnel are not revised through the review cycle of the claims. Therefore, the final approved claims, which may have had projects denied, will contain the estimated number of R&D personnel from the original claim. Statistics Canada performs data coherence exercises on the supplied SR&ED R&D personnel data using relationships between wages and salaries to estimated number of R&D personnel, reviewing other current costs combined with wages and salaries to estimated number of R&D personnel and relationship of number of R&D personnel to total employment of the claimant.

Second, the SR&ED tax incentive program claims do not collect R&D personnel by level of education. Therefore, for the total universe data are imputed based upon response to the RDCI survey. The data quality for imputation of industrial R&D personnel by level of education for all industries is acceptable. Users are cautioned that industrial R&D personnel data by level of education, by industrial detail, and/or by provincial distribution are subject to suppression for quality reasons.

Canadian technological balance of payments

Intellectual property is a form of creative endeavour that can be protected through a patent, trademark, copyright, industrial design or integrated circuit topography.

Expenditures made for intellectual property in 2009 amounted to $435 million, of which patents represented 31% at $133 million. Payments received for intellectual property in 2009 amounted to $741 million and patents accounted for almost three quarters of the inflow of funds (table 12).

Also, expenditures can be made and payments received for informal technology such as technical assistance, industrial processes and know-how intended to support the application of the results of previously performed R&D. These expenditures are often for knowledge which has not been codified.

In 2009, $245 million was spent seeking technical services and informal knowledge to support the implementation of the results of R&D. Meanwhile, firms received $203 million to provide informal technological support for outcomes of previously performed R&D (table 12).

Canadian technological balance of payments

For Canadian technological balance of payments (TBP), the estimates are taken only from firms that respond to the Research and Development in Canadian Industry survey. The statistics are not taken from balance of payments surveys and are not available from Scientific Research and Experimental Development tax incentive program data.

In 2009, the RDCI questionnaire introduced new questions related to expenditures and payments for technology. These data are only available from survey responses and do not include imputation for administrative data files. The additional questions ask for details on payments and receipts for patents, trademarks, copyrights, industrial design and integrated circuit topography designs, and other (technical assistance, industrial processes and know-how, etc.).

Intellectual property rights related to previously performed R&D are included in these technology expenditures and payments. These statistics are not intended to represent all trade in intellectual property rights or informal technology assistance services. For instance, the Research and Development in Canadian Industry survey may not include all firms dedicated to the licensing, buying or selling of patents or firms deriving some of their revenues from these activities which have never previously performed or funded R&D.

Energy research and development

In 2009, Canadian firms performing R&D dedicated $1.3 billion to energy R&D with a particular emphasis on fossil fuels ($928 million). Within the fossil fuels, the leading expenditures on energy R&D were related to oil sands and heavy crude oil technologies for surface and sub-surface production and separation of bitumen and tailings management at $478 million with crude oils and natural gas exploration, production and storage following, at $388 million (table 13).

At $91 million, expenditures on renewable energy resources R&D such as solar, wind, bio-energy, hydro and other renewable energy including ocean and geothermal energy, were about one-tenth of the R&D effort directed towards fossil fuels. However, this area of energy R&D technology was the second most important Canadian energy R&D activity. In 2009, R&D spending on renewable energy resources was concentrated primarily in hydro ($33 million) and bio-energy ($31 million) (table 13).

At $81 million, expenditures related to electric power were the third most important Canadian energy R&D activity in 2009 (this area of technology includes retrofitting, life extensions and upgrading of power plants, super-conductivity, air and thermal pollution reduction or avoidance; combined heat and power in industry and buildings; and electricity transmission, distribution and storage such as solid state power electronics and load management and control systems) (table 13).

Energy R&D expenditures for hydrogen and fuel cells were $60 million in 2009 with hydrogen receiving the majority ($44 million) and fuel cells the remaining $15 million (table 13).

Two energy R&D expenditure groups, energy efficiency and other technologies, both reported expenditures on energy R&D of $68 million each in 2009. Energy efficiency R&D spending occurred mainly in transportation ($28 million) and industry ($27 million). Other energy R&D technologies are mostly dedicated to carbon capture, transportation and storage of energy related to fossil fuels, electric power and industrial end-use applications, as well as energy system analysis (table 13).

Counts of R&D performers

The number of industrial R&D performers in Canada continues to increase annually, reaching 24,203 firms in 2008 (2.5% of all enterprises with one or more employees), the most recent year for which these statistics are available. In 1997, when this time series began, there were 9,648 industrial R&D performers. The industries with the highest propensity to perform R&D within the manufacturing sector continued to be communications equipment, pharmaceutical and medicine, and navigational, measuring, medical and control instruments, where one in two firms is an active R&D performer (tables 14-1 and 14-3).

Firms select business strategies to position themselves advantageously relative to their competitors. The 151% increase in industrial R&D performers between 1997 and 2008 indicates that the adoption of R&D performance as a business strategy is spreading. Concerning R&D strategies, firms may choose to perform some or all R&D activities, contract-out some or all R&D activities, or purchase or licence the results of R&D from others (firms, non-profit organizations and government laboratories), merge or acquire firms for their R&D, know-how and/or intellectual property, or depend upon other strategies not related to R&D to remain competitive.

R&D performers can undertake their R&D in multiple locations and therefore can be counted in more than one province. For 2008, the count of R&D performers including those making R&D expenditures in more than one province was 25,735. Based on location of the R&D performance, the majority of R&D performers are located in the two central provinces: Ontario with 10,348 (40%) and Quebec with 8,984 (35%). There were 1,037 (4%) R&D performers in the Atlantic Provinces; 500 (2%) in Manitoba; 343 (1%) in Saskatchewan; 1,700 (7%) in Alberta; and 2,823 (11%) in British Columbia and the Territories (table 14-2).

Related products

Selected publications from Statistics Canada

88-001-X	Science Statistics
88-204-X	Federal Scientific Activities
88-221-X	Gross Domestic Expenditures on Research and Development in Canada (GERD), and the Provinces
88-522-X	Science and Technology Activities and Impacts: A Framework for a Statistical Information
88F0006-X	BSSTSD, Working Papers

Selected CANSIM tables from Statistics Canada

358-0001	Gross domestic expenditures on research and development, by science type and by funder and performer sector, annual
358-0024	Business enterprise research and development (BERD) characteristics, by industry group based on the North American Industry Classification System (NAICS), annual
358-0142	Federal Science Expenditures and Personnel
358-0161	Business enterprise research and development (BERD) characteristics, by industry group based on the North American Industry Classification System (NAICS), provinces and Territories, annual

Selected surveys from Statistics Canada

4201	Research and Development in Canadian Industry
4205	Energy Research and Development Expenditures by Area of Technology

Selected summary tables from Statistics Canada

- *Domestic spending on research and development (GERD), funding sector, by province*
- *Domestic spending on research and development (GERD), performing sector, by province*
- *Domestic spending on research and development (GERD)*
- *Research and development performed by the business enterprise sector*

Statistical tables

Table 1
Industrial research and development expenditures in current and 2002 constant dollars

	Current dollars			Gross domestic product implicit price index (2002)	2002 constant dollars		
	Current intramural expenditures	Capital expenditures	**Total intramural expenditures**		Current intramural expenditures	Capital expenditures	**Total intramural expenditures**
	millions of dollars			index = 2002	millions of dollars		
2011 p	14,766 A	881 B	**15,646** A	126.6	11,664 A	696 B	**12,359** A
2010 p	14,011 A	884 A	**14,895** A	122.6	11,428 A	721 A	**12,149** A
2009 p	14,275 A	835 A	**15,110** A	119.1	11,986 A	701 A	**12,687** A
2008 r	15,363 A	1,046 A	**16,409** A	121.4	12,655 A	862 A	**13,516** A
2007 r	15,651	1,105	**16,756**	116.6	13,423	948	**14,370**
2006	15,318	1,155	**16,474**	113.0	13,556	1,022	**14,579**
2005	14,572	1,067	**15,638**	110.1	13,235	969	**14,203**
2004	14,095	1,049	**15,144**	106.6	13,222	984	**14,206**
2003	13,110	985	**14,094**	103.3	12,691	954	**13,644**
2002	12,492	1,052	**13,545**	100.0	12,492	1,052	**13,545**
2001	12,767	1,499	**14,266**	98.9	12,909	1,516	**14,425**
2000	11,201	1,194	**12,395**	97.8	11,453	1,221	**12,674**
1999	9,360	1,039	**10,399**	93.9	9,968	1,106	**11,075**
1998	8,727	955	**9,682**	92.3	9,455	1,035	**10,490**
1997	7,874	865	**8,739**	92.8	8,485	932	**9,417**
1996	7,159	838	**7,997**	91.6	7,816	915	**8,730**
1995	7,286	705	**7,991**	90.2	8,078	782	**8,859**
1994	6,938	629	**7,567**	88.2	7,866	713	**8,579**
1993	5,878	546	**6,424**	87.2	6,741	626	**7,367**
1992	5,286	457	**5,742**	85.9	6,154	532	**6,685**
1991	4,812	543	**5,355**	84.8	5,675	640	**6,315**
1990	4,541	628	**5,169**	82.4	5,511	762	**6,273**
1989	4,155	624	**4,779**	79.8	5,207	782	**5,989**
1988	3,980	643	**4,623**	76.4	5,209	842	**6,051**
1987	3,691	649	**4,340**	73.1	5,049	888	**5,937**

Note(s): Components may not add to totals due to rounding.
Source(s): CANSIM tables 358-0024 and 380-0056.

Table 2
International comparison of business enterprise expenditures on research and development as a percentage of gross domestic product, by selected OECD countries

	2009 p	2008 p	2007 r	2006 r	1995
	percent				
Israel	3.42	3.78	3.88	3.50	1.51
Finland	2.83	2.76	2.51	2.48	1.43
Sweden	2.55	2.74	2.47	2.75	2.43
Japan	2.53	2.70	2.68	2.63	1.90
Korea	..	2.53	1.45	2.32	1.70
Switzerland	..	2.20	..	..	..
United States	..	2.02	1.92	1.86	1.76
Denmark	2.02	2.01	1.80	1.66	1.04
Austria	1.94	1.88	1.78	1.73	..
Germany	1.88	1.86	1.77	1.77	1.45
Iceland	..	1.44	1.46	1.59	0.49
France	1.37	1.32	1.31	1.32	1.39
Australia	..	1.35	1.26	1.16	0.82
Belgium	1.32	1.32	1.32	1.29	1.19
Luxembourg	..	1.22	1.32	1.43	..
Slovenia	1.20	1.07	0.87	0.94	0.71
United Kingdom	1.12	1.10	1.11	1.08	1.24
Ireland	1.17	0.94	0.85	0.83	0.88
Canada	**1.00**	**0.99**	**1.09**	**1.14**	**0.99**
Norway	0.91	0.86	0.85	0.82	0.96
Netherlands	0.86	0.88	0.96	1.01	1.03
Spain	0.72	0.74	0.71	0.67	0.38
Italy	0.65	0.65	0.61	0.55	0.52
OECD total	**..**	**1.62**	**1.58**	**1.55**	**1.37**

Note(s): Countries are presented in descending order of business expenditures on research and development as a percentage of the gross domestic product (GDP) based on their information for the most recent year reported on the table.
Source(s): OECD, Main Science and Technology Indicators. Volume 2011/1.

Table 3
Business expenditures on research and development compared to gross domestic expenditures on research and development and gross domestic product

	Business expenditures on research and development	Gross domestic expenditures on research and development	Gross domestic product	Business expenditures on research and development / Gross domestic expenditures on research and development	Business expenditures on research and development / Gross domestic product
	millions of dollars			percent	
2011 p	15,646 A	29,931	1,718,685	52.27	0.91
2010 p	14,895 A	29,340	1,624,608	50.77	0.92
2009 p	15,110 A	29,430	1,528,985	51.34	0.99
2008 r	16,409 A	30,517	1,603,418	53.77	1.02
2007 r	16,756	30,032	1,529,589	55.79	1.10
2006 r	16,474	29,079	1,450,405	56.65	1.14
2005	15,638	28,022	1,373,845	55.81	1.14
2004	15,144	26,679	1,290,906	56.76	1.17
2003	14,094	24,690	1,213,175	57.08	1.16
2002	13,545	23,536	1,152,905	57.55	1.17
2001	14,266	23,133	1,108,048	61.67	1.29
2000	12,395	20,556	1,076,577	60.30	1.15
1999	10,399	17,638	982,441	58.96	1.06
1998	9,682	16,088	914,973	60.18	1.06
1997	8,739	14,635	882,733	59.71	0.99
1996	7,997	13,817	836,864	57.88	0.96
1995	7,991	13,754	810,426	58.10	0.99
1994	7,567	13,341	770,873	56.72	0.98
1993	6,424	12,184	727,184	52.72	0.88
1992	5,742	11,338	700,480	50.64	0.82
1991	5,355	10,767	685,367	49.74	0.78
1990	5,169	10,260	679,921	50.38	0.76
1989	4,779	9,517	657,728	50.22	0.73
1988	4,623	9,045	613,094	51.11	0.75
1987	4,340	7,950	558,949	54.59	0.78

Source(s): CANSIM tables 358-0001 and 380-0017.

Table 4
Concentration of total intramural research and development expenditures by top performing company

	Top 25	Top 50	Top 75	Top 100	**Total intramural expenditures**
	percent				millions of dollars
2011 p	31	39	45	49	**15,646** A
2010 p	31	40	45	49	**14,895** A
2009 p	31	40	46	50	**15,110** A
2008 r	29	38	44	49	**16,409** A
2007 r	29	38	44	48	**16,756**
2006	31	42	48	51	**16,474**
2005	32	42	49	52	**15,638**
2004	33	43	49	53	**15,144**
2003 r	34	44	50	54	**14,094**
2002	34	44	50	54	**13,545**
2001	41	49	55	59	**14,266**
2000	46	54	60	64	**12,395**
1999	44	54	59	63	**10,399**
1998	46	55	60	64	**9,682**
1997	44	53	59	63	**8,739**
1996	41	50	56	61	**7,997**
1995	39	48	54	58	**7,991**
1994	39	49	54	58	**7,567**
1993	43	54	60	64	**6,424**
1992	45	55	60	64	**5,742**
1991	47	57	63	67	**5,355**
1990	47	58	64	68	**5,169**
1989	48	59	64	68	**4,779**
1988	49	59	64	68	**4,623**
1987	49	58	64	67	**4,340**

Table 5-1
Total intramural research and development expenditures by industry

	2007 [r]	2008 [r]	2009 [p]	2010 [p]	2011 [p]
	millions of dollars				
Total	**16,756**	**16,409** [A]	**15,110** [A]	**14,895** [A]	**15,646** [A]
Agriculture, forestry, fishing and hunting	**179**	**130** [A]	**106** [A]	**101** [B]	**105** [C]
Agriculture	97	100 [A]	92 [A]	87 [B]	92 [C]
Forestry and logging	76	21 [A]	6 [A]	6 [D]	6 [D]
Fishing, hunting and trapping	6	8 [A]	8 [A]	8 [C]	8 [C]
Mining and oil and gas extraction	**781**	**946** [A]	**940** [A]	**859** [A]	**842** [A]
Oil and gas extraction	714	903 [A]	836 [A]	760 [A]	738 [A]
Mining	67	42 [A]	105 [A]	99 [A]	103 [A]
Utilities	**288**	**214** [A]	**173** [A]	**178** [A]	**171** [A]
Electric power	240	169 [A]	140 [A]	x	x
Other utilities	48	45 [A]	33 [A]	x	x
Construction	**97**	**116** [A]	**104** [A]	**104** [D]	**105** [C]
Manufacturing	**8,427**	**7,643** [A]	**7,360** [A]	**7,082** [A]	**7,650** [B]
Food	158	178 [A]	154 [A]	160 [A]	198 [D]
Beverage and tobacco	25	15 [A]	17 [A]	19 [A]	25 [D]
Textile	49	45 [A]	39 [A]	44 [B]	48 [E]
Wood products	112	213 [B]	91 [A]	97 [C]	95 [D]
Paper	283	145 [A]	64 [A]	59 [C]	56 [C]
Printing	46	50 [A]	53 [A]	52 [B]	57 [B]
Petroleum and coal products	225	217 [A]	323 [A]	270 [E]	270 [D]
Pharmaceutical and medicine	975	678 [A]	614 [A]	649 [A]	F
Other chemicals	187	253 [A]	288 [C]	252 [C]	F
Plastic products	143	136 [A]	125 [A]	130 [B]	140 [B]
Rubber products	89	35 [A]	30 [B]	30 [C]	32 [B]
Non-metallic mineral products	78	65 [A]	69 [A]	63 [B]	68 [B]
Primary metal (ferrous)	61	79 [A]	67 [A]	62 [D]	64 [C]
Primary metal (non-ferrous)	290	255 [A]	207 [A]	F	180 [D]
Fabricated metal products	258	256 [A]	227 [A]	228 [B]	265 [B]
Machinery	543	546 [A]	591 [B]	601 [B]	691 [C]
Computer and peripheral equipment	110	105 [A]	59 [A]	44 [C]	47 [C]
Communications equipment	1,487	1,468 [A]	1,504 [A]	1,138 [A]	1,381 [A]
Semiconductor and other electronic components	849	452 [A]	505 [A]	514 [A]	499 [A]
Navigational, measuring, medical and control instruments	402	416 [A]	416 [A]	403 [A]	364 [B]
Other computer and electronic products	24	22 [A]	20 [A]	21 [D]	22 [D]
Electrical equipment, appliance and components	261	161 [A]	148 [B]	148 [B]	152 [B]
Motor vehicle and parts	509	422 [A]	277 [A]	296 [B]	345 [E]
Aerospace products and parts	925	998 [A]	1,103 [A]	1,255 [A]	1,358 [B]
All other transportation equipment	70	161 [A]	148 [D]	121 [E]	132 [E]
Furniture and related products	42	47 [A]	39 [A]	38 [B]	45 [D]
Other manufacturing industries	225	222 [A]	182 [A]	210 [E]	218 [D]
Services	**6,984**	**7,361** [A]	**6,427** [A]	**6,570** [A]	**6,773** [B]
Wholesale trade	976	1,372 [A]	1,235 [B]	1,239 [A]	1,302 [B]
Retail trade	58	52 [A]	47 [A]	50 [D]	F
Transportation and warehousing	80	118 [A]	92 [A]	77 [D]	F
Information and cultural industries	1,476	1,371 [A]	1,120 [A]	1,133 [B]	1,207 [C]
Finance, insurance and real estate	436	408 [A]	340 [A]	349 [C]	303 [D]
Architectural, engineering and related services	494	426 [A]	377 [A]	415 [B]	454 [C]
Computer system design and related services	1,286	1,234 [A]	1,069 [A]	1,097 [A]	1,123 [C]
Management, scientific and technical consulting services	79	75 [A]	62 [A]	68 [B]	F
Scientific research and development services	1,295	1,651 [A]	1,634 [A]	1,695 [B]	1,713 [C]
Health care and social assistance	351	F	134 [A]	127 [A]	F
All other services	452	342 [A]	318 [A]	321 [B]	333 [E]

Note(s): Components may not add to totals due to rounding.

Table 5-2
Total intramural research and development expenditures by province

	2005	2006	2007 r	2008 r	2009 p
	millions de dollars				
Total	**15,638**	**16,474**	**16,756**	**16,409** A	**15,110** A
Atlantic Canada	292	323	329	328 A	299 A
Newfoundland and Labrador	86	101	89	88 A	81 A
Prince Edward Island	11	12	13	14 C	9 B
Nova Scotia	97	106	106	103 A	89 B
New Brunswick	99	104	122	122 B	119 A
Quebec	4,170	4,830	4,881	4,798 A	4,581 A
Ontario	8,204	8,153	8,065	7,746 A	6,971 A
Manitoba	200	188	207	180 A	204 A
Saskatchewan	153	174	194	140 B	129 A
Alberta	1,208	1,422	1,449	1,569 A	1,420 A
British Columbia [1]	1,412	1,384	1,632	1,649 A	1,507 A

1. Includes Yukon, Northwest Territories and Nunavut.
Note(s): Components may not add to totals due to rounding.

Table 5-3
Total intramural research and development expenditures by province and by type of expenditures, 2009p

	Current expenditures	Capital expenditures	Total expenditures
	millions of dollars		
Total	**14,275** A	**835** A	**15,110** A
Atlantic Canada	280 B	19 C	**299** A
Newfoundland and Labrador	75 B	7 A	**81** A
Prince Edward Island	x	x	**9** B
Nova Scotia	86 C	F	**89** B
New Brunswick	x	x	**119** A
Quebec	4,393 A	188 A	**4,581** A
Ontario	6,590 A	381 A	**6,971** A
Manitoba	175 C	29 D	**204** A
Saskatchewan	119 B	10 D	**129** A
Alberta	1,264 A	155 A	**1,420** A
British Columbia [1]	1,454 A	53 B	**1,507** A

1. Includes Yukon, Northwest Territories and Nunavut
Note(s): Components may not add to totals due to rounding.

Table 5-4
Total intramural research and development expenditures by industry, by region, 2009p

	Atlantic Canada	Quebec	Ontario	Manitoba	Saskat-chewan	Alberta	British Columbia [1]	Total
	millions of dollars							
Total	**299** A	**4,581** A	**6,971** A	**204** A	**129** A	**1,420** A	**1,507** A	**15,110** A
Agriculture, forestry, fishing, hunting	**x**	**37** A	**39** A	**x**	**5** A	**3** A	**11** A	**106** A
Agriculture	x	34 A	37 A	x	x	3 A	6 A	92 A
Forestry and logging	x	2 A	1 A	0 A	x	0 A	2 A	6 A
Fishing, hunting and trapping	3 A	0 A	1 A	0 A	0 A	0 A	4 A	8 A
Mining and oil and gas extraction	**40** A	**x**	**47** A	**x**	**15** A	**496** A	**303** A	**940** A
Oil and gas extraction	x	x	x	x	x	492 A	298 A	836 A
Mining	x	13 A	x	x	x	4 A	5 A	105 A
Utilities	**x**	**x**	**44** A	**1** A	**2** A	**13** A	x	**173** A
Electric power	x	x	x	x	x	x	x	140 A
Other utilities	x	10 A	x	x	x	x	x	33 A
Construction	**F**	**x**	**42** B	**x**	**F**	**17** C	**x**	104 A
Manufacturing	**142** A	**2,262** A	**4,022** A	**73** B	**59** B	**451** A	**351** A	**7,360** A
Food	10 A	64 A	60 A	2 A	6 A	3 A	9 A	154 A
Beverage and tobacco	x	2 A	8 A	x	0 A	x	x	17 A
Textile	1 A	19 A	17 A	x	x	0 A	1 A	39 A
Wood products	x	52 A	14 A	3 A	x	11 A	11 A	91 A
Paper	11 A	31 A	17 A	x	x	x	x	64 A
Printing	F	27 A	22 A	1 C	0 A	0 E	3 B	53 A
Petroleum and coal products	x	5 A	2 A	0 A	x	271 A	x	323 A
Pharmaceutical and medicine	10 A	144 A	397 A	x	1 A	x	25 A	614 A
Other chemicals	F	67 E	158 C	F	13 E	43 D	F	288 C
Plastic products	1 A	31 A	80 A	5 A	0 A	4 A	4 A	125 A
Rubber products	x	9 D	18 C	x	x	x	x	30 B
Non-metallic mineral products	1 A	27 A	36 A	0 A	0 A	2 A	3 A	69 A
Primary metal (ferrous)	x	14 A	47 A	x	x	x	1 A	67 A
Primary metal (non-ferrous)	0 A	151 A	32 A	x	x	x	x	207 A
Fabricated metal products	6 C	73 A	122 A	4 B	3 B	8 B	10 B	227 A
Machinery	8 A	211 A	293 A	8 A	17 A	26 A	27 A	591 B
Computer and peripheral equipment	0 A	9 A	17 A	x	0 A	x	x	59 A
Communications equipment	21 A	82 A	1,348 A	x	x	x	41 A	1,504 A
Semiconductor and other electronic components	2 A	70 A	341 A	x	x	x	68 A	505 A
Navigational, measuring, medical and control instruments	6 B	91 A	270 A	1 C	1 C	18 A	28 A	416 A
Other computer and electronic products	x	6 A	11 A	x	0 A	x	3 A	20 A
Electrical equipment, appliance and components	1 E	29 A	80 A	2 B	2 C	2 E	32 A	148 B
Motor vehicle and parts	1 A	17 A	248 A	2 A	1 A	3 A	4 A	277 A
Aerospace products and parts	3 A	821 A	275 A	0 A	0 A	3 A	2 A	1,103 A
All other transportation equipment	2 A	110 A	34 A	x	0 A	x	3 A	148 D
Furniture and related products	x	17 A	20 A	0 A	x	1 A	1 A	39 A
Other manufacturing industries	x	82 A	58 A	2 A	1 A	x	14 A	182 A
Services	**104** A	**2,127** A	**2,777** A	**109** A	**47** A	**439** A	**823** A	**6,427** A
Wholesale trade	10 C	327 A	718 A	29 A	8 C	74 A	68 A	1,235 B
Retail trade	1 A	17 A	20 A	x	x	2 A	7 A	47 A
Transportation and warehousing	x	12 A	14 A	x	x	55 A	5 A	92 A
Information and cultural industries	27 A	283 A	539 A	x	x	69 A	152 A	1,120 A
Finance, insurance, and real estate	3 A	116 A	186 A	6 A	1 A	10 A	18 A	340 A
Architectural, engineering and related services	6 D	82 A	172 A	2 D	5 B	48 A	62 A	377 A
Computer system design and related services	22 A	350 A	467 A	11 A	5 A	73 A	142 A	1,069 A
Management, scientific and technical consulting	1 A	11 A	31 A	1 A	0 B	5 A	13 A	62 A
Scientific research and development services	19 A	781 A	422 A	8 A	17 A	67 A	319 A	1,634 A
Health care and social assistance	x	58 A	61 A	x	x	1 A	10 A	134 A
All other services	14 A	92 A	147 A	x	x	34 A	27 A	318 A

1. Includes Yukon, Northwest Territories and Nunavut.
Note(s): Components may not add to totals due to rounding.

Table 5-5
Total intramural research and development expenditures by country of control

	2005	2006	2007 r	2008 r	2009 p
	millions of dollars				
Total	**15,638**	**16,474**	**16,756**	**16,409** A	**15,110** A
Canada	10,498	11,280	11,100	10,447 A	10,182 A
United States	3,365	3,214	3,397	3,724 A	2,541 A
Other foreign	1,775	1,980	2,260	2,238 A	2,387 A

Note(s): Components may not add to totals due to rounding.

Table 5-6
Total intramural research and development expenditures of Canadian-controlled companies compared to all intramural research and development expenditures, by industry

	2005	2006	2007 r	2008 r	2009 p
	percent				
Total	**67**	**68**	**66**	**64**	**67**
Agriculture, forestry, fishing and hunting	**x**	**69**	**76**	**x**	**x**
Agriculture	66	61	x	x	x
Forestry and logging	100	100	x	x	100
Fishing, hunting and trapping	x	100	x	x	x
Mining and oil and gas extraction	**55**	**62**	**62**	**59**	**40**
Oil and gas extraction	52	64	64	59	43
Mining	81	43	43	53	18
Utilities	**x**	**x**	**x**	**99**	**99**
Electric power	x	x	x	x	x
Other utilities	x	x	99	x	x
Construction	**x**	**x**	**x**	**x**	**x**
Manufacturing	**64**	**65**	**63**	**62**	**65**
Food	84	82	77	72	81
Beverage and tobacco	57	45	31	58	x
Textile	72	73	76	74	73
Wood products	x	73	72	87	76
Paper	89	94	86	46	38
Printing	92	94	96	95	96
Petroleum and coal products	x	42	45	x	x
Pharmaceutical and medicine	34	37	38	52	51
Other chemicals	56	55	55	56	54
Plastic products	87	85	86	83	82
Rubber products	51	37	x	48	40
Non-metallic mineral products	62	41	42	58	45
Primary metal (ferrous)	x	x	18	15	23
Primary metal (non-ferrous)	88	92	19	16	15
Fabricated metal products	95	96	90	85	92
Machinery	85	84	80	80	81
Computer and peripheral equipment	32	34	36	55	35
Communications equipment	88	88	90	87	88
Semiconductor and other electronic components	x	x	x	x	x
Navigational, measuring, medical and control instruments	68	65	70	52	40
Other computer and electronic products	x	x	x	x	x
Electrical equipment, appliance and components	64	69	78	63	62
Motor vehicle and parts	35	34	37	41	60
Aerospace products and parts	x	x	x	x	56
All other transportation equipment	x	x	x	x	x
Furniture and related products	x	x	x	x	x
Other manufacturing industries	x	94	93	93	72
Services	**71**	**72**	**69**	**64**	**73**
Wholesale trade	36	38	41	25	54
Retail trade	x	x	x	x	x
Transportation and warehousing	x	x	93	100	x
Information and cultural industries	82	74	71	69	82
Finance, insurance and real estate	97	93	92	71	89
Architectural, engineering and related services	x	64	65	93	84
Computer system design and related services	69	80	76	74	82
Management, scientific and technical consulting services	100	96	98	96	91
Scientific research and development services	75	78	74	70	62
Health care and social assistance	x	x	x	x	x
All other services	83	x	77	89	89

Note(s): Components may not add to totals due to rounding.

Table 5-7
Total intramural research and development expenditures by expenditures size[1]

	2005	2006	2007 r	2008 r	2009 p
	millions of dollars				
Total	**15,638**	**16,474**	**16,756**	**16,409** A	**15,110** A
Less than $50,000	170	186	207	222 D	199 E
$50,000 to $99,999	312	345	383	399 B	353 C
$100,000 to $199,999	526	561	623	669 C	588 B
$200,000 to $399,999	688	766	827	825 A	797 A
$400,000 to $999,999	1,037	1,117	1,174	1,258 A	1,178 A
$1,000,000 or greater	12,905	13,499	13,542	13,036 A	11,995 A

1. Research and development expenditures size is based on current intramural expenditures.
Note(s): Components may not add to totals due to rounding.

Table 5-8
Total intramural research and development expenditures by sources of funds

	Canadian business enterprises			Federal sources		Provincial sources	Other Canadian sources	Foreign sources	Total
	Performing companies	Related companies	Research and development contracts for other companies	Grants	Contracts				
	millions of dollars								
2009 p	11,940 A	522 A	150 A	276 A	35 A	145 A	15 B	2,027 A	**15,110** A
2008 r	13,051 A	740 A	161 A	268 A	30 A	88 A	44 A	2,026 A	**16,409** A
2007 r	13,013	520	145	216	37	97	65	2,663	**16,756**
2006	13,283	463	173	221	38	155	28	2,113	**16,474**
2005	12,342	401	131	289	34	90	25	2,327	**15,638**
2004	12,018	350	149	228	43	59	18	2,280	**15,144**
2003	11,102	379	153	256	44	70	17	2,073	**14,094**
2002	10,757	426	170	231	69	53	17	1,822	**13,545**
2001	10,438	301	177	345	112	51	14	2,828	**14,266**
2000	8,129	269	181	165	74	45	8	3,524	**12,395**
1999	6,967	201	213	241	68	57	8	2,642	**10,399**
1998	6,396	294	167	179	84	56	8	2,499	**9,682**
1997	6,124	268	156	253	103	77	8	1,750	**8,739**
1996	5,450	297	186	185	107	102	8	1,662	**7,997**
1995	5,383	286	259	259	152	87	10	1,555	**7,991**
1994	4,922	337	266	267	200	99	10	1,466	**7,567**
1993	4,073	347	242	266	250	105	7	1,134	**6,424**
1992	3,639	266	188	261	271	86	12	1,019	**5,742**
1991	3,388	275	162	204	212	114	11	988	**5,355**
1990	3,280	304	167	215	176	93	13	923	**5,169**
1989	2,981	325	164	239	177	69	6	819	**4,779**

Note(s): Components may not add to totals due to rounding.

Table 5-9
Total intramural research and development expenditures by sources of funds and by industry, 2009p

	Canadian performing companies	Federal government and other Canadian sources	Foreign sources	Total
	millions of dollars			
Total	**11,940** A	**1,143** A	**2,027** A	**15,110** A
Agriculture, forestry, fishing and hunting	**x**	**7** A	**x**	**106** A
Agriculture	64 A	x	x	92 A
Forestry and logging	x	x	0 A	6 A
Fishing, hunting and trapping	x	x	0 A	8 A
Mining and oil and gas extraction	**683** A	**227** A	**31** A	**940** A
Oil and gas extraction	x	x	x	836 A
Mining	x	x	x	105 A
Utilities	**x**	**x**	**x**	**173** A
Electric power	x	x	x	140 A
Other utilities	x	x	0 A	33 A
Construction	**95** A	**x**	**x**	**104** A
Manufacturing	**6,051** A	**381** A	**927** A	**7,360** A
Food	150 A	4 A	F	154 A
Beverage and tobacco	17 A	0 A	0 A	17 A
Textile	x	x	x	39 A
Wood products	89 A	x	x	91 A
Paper	x	x	x	64 A
Printing	x	x	0 A	53 A
Petroleum and coal products	x	x	0 A	323 A
Pharmaceutical and medicine	430 A	27 A	156 A	614 A
Other chemicals	181 A	78 B	30 C	288 C
Plastic products	123 A	2 A	0 A	125 A
Rubber products	x	x	0 A	30 B
Non-metallic mineral products	67 A	x	x	69 A
Primary metal (ferrous)	67 A	0 A	0 A	67 A
Primary metal (non-ferrous)	x	x	0 A	207 A
Fabricated metal products	221 A	x	x	227 A
Machinery	547 A	x	x	591 B
Computer and peripheral equipment	x	x	1 A	59 A
Communications equipment	1,378 A	x	x	1,504 A
Semiconductor and other electronic components	x	x	x	505 A
Navigational, measuring, medical and control instruments	245 A	27 A	144 A	416 A
Other computer and electronic products	x	x	x	20 A
Electrical equipment, appliance and components	109 A	x	x	148 B
Motor vehicle and parts	x A	x	x	277 A
Aerospace products and parts	884 A	139 A	80 A	1,103 A
All other transportation equipment	x	x	x	148 D
Furniture and related products	38 A	1 A	0 A	39 A
Other manufacturing industries	176 A	5 A	0 A	182 A
Services	**4,879** A	**512** A	**1,035** A	**6,427** A
Wholesale trade	906 A	5 B	324 A	1,235 B
Retail trade	x	x	0 A	47 A
Transportation and warehousing	x	x	x	92 A
Information and cultural industries	1,005 A	25 A	90 A	1,120 A
Finance, insurance and real estate	338 A	x	x	340 A
Architectural, engineering and related services	310 A	45 A	22 B	377 A
Computer system design and related services	927 A	46 A	96 A	1,069 A
Management, scientific and technical consulting services	55 A	6 A	1 A	62 A
Scientific research and development services	837 A	342 A	455 A	1,634 A
Health care and social assistance	86 A	25 A	23 A	134 A
All other services	283 A	15 A	20 A	318 A

Note(s): Components may not add to totals due to rounding.

Table 5-10
Total intramural research and development expenditures by sources of funds and by country of control of performer, 2009p

	Canadian performing companies	Federal government	Provincial government	Other Canadian sources	Foreign sources	Total
	millions of dollars					
Total	**11,940** A	**312** A	**145** A	**687** A	**2,027** A	**15,110** A
Canada	9,010 A	229 A	81 A	440 A	422 A	10,182 A
United States	1,530 A	59 A	x	x	700 A	2,541 A
Other foreign	1,400 A	24 A	x	x	904 A	2,387 A

Note(s): Components may not add to totals due to rounding.

Table 5-11
Total intramural research and development expenditures by performing company revenue size

	2005	2006	2007	2008	2009
	millions of dollars				
Total	**15,638**	**16,474**	**16,756**	**16,409** A	**15,110** A
Non-commercial firms	185	226	194	220 A	257 A
Less than $1,000,000	1,085	1,217	1,425	1,333 B	1,171 B
$1,000,000 to $9,999,999	2,420	2,466	2,639	2,705 A	2,501 A
$10,000,000 to $49,999,999	1,834	2,064	2,309	2,259 A	1,963 A
$50,000,000 to $99,999,999	1,019	1,018	1,101	884 A	893 A
$100,000,000 to $399,999,999	2,282	2,018	2,155	2,032 A	1,785 A
$400,000,000 or greater	6,813	7,465	6,933	6,977 A	6,540 A

Table 5-12
Total intramural research and development expenditures by performing company employment size

	2005	2006	2007 r	2008 r	2009 p
	millions of dollars				
Total	**15,638**	**16,474**	**16,756**	**16,409** A	**15,110** A
Non-commercial enterprise	185	226	194	220 A	257 A
1 to 49	2,747	2,923	3,080	3,397 A	3,140 A
50 to 99	1,304	1,256	1,410	1,311 A	1,178 B
100 to 199	1,261	1,213	1,338	1,215 A	1,125 A
200 to 499	1,337	1,453	1,869	1,617 A	1,558 A
500 to 999	1,486	1,522	1,484	1,567 A	1,417 A
1,000 to 1,999	1,843	2,134	2,003	1,591 A	1,691 A
Greater than 1,999	5,474	5,746	5,379	5,492 A	4,743 A

Note(s): Components may not add to totals due to rounding.

Table 6-1
Current intramural research and development expenditures by industry

	2007 r	2008 r	2009 p	2010 p	2011 p
	millions of dollars				
Total	**15,651**	**15,363** A	**14,275** A	**14,011** A	**14,766** A
Agriculture, forestry, fishing and hunting	**172**	**125** A	**101** A	**x**	**x**
Agriculture	91	96 A	89 A	85 B	89 D
Forestry and logging	75	21 A	6 A	6 D	x
Fishing, hunting and trapping	6	8 A	7 A	x	x
Mining and oil and gas extraction	**653**	**781** A	**834** A	**782** A	**768** B
Oil and gas extraction	592	742 A	x	x	x
Mining	61	38 A	x	x	x
Utilities	**196**	**182** A	**154** A	**x**	**x**
Electric power	x	x	x	142 A	133 A
Other utilities	x	x	x	x	x
Construction	**94**	**112** A	**102** A	**102** E	**104** C
Manufacturing	**8,022**	**7,199** A	**6,998** A	**6,660** A	**7,232** B
Food	150	169 A	146 A	156 A	193 D
Beverage and tobacco	25	15 A	17 A	18 A	25 D
Textile	47	43 A	38 A	43 B	47 D
Wood products	110	x	90 A	97 C	94 C
Paper	280	144 A	62 A	x	54 C
Printing	44	49 A	53 A	52 B	56 B
Petroleum and coal products	167	x	x	x	x
Pharmaceutical and medicine	929	641 A	574 A	621 A	F
Other chemicals	177	241 A	270 A	234 C	F
Plastic products	137	130 A	119 A	121 B	134 B
Rubber products	x	35 A	30 A	30 B	32 B
Non-metallic mineral products	77	61 A	68 A	62 B	67 B
Primary metal (ferrous)	59	78 A	66 A	61 D	63 C
Primary metal (non-ferrous)	264	222 A	205 A	F	178 D
Fabricated metal products	252	249 A	219 A	221 B	256 B
Machinery	531	530 A	581 A	590 B	681 B
Computer and peripheral equipment	106	101 A	58 A	43 C	46 C
Communications equipment	1,393	1,372 A	1,394 A	1,040 A	1,234 A
Semiconductor and other electronic components	815	432 A	492 A	498 A	487 A
Navigational, measuring, medical and control instruments	391	403 A	406 A	392 A	353 B
Other computer and electronic products	23	22 A	20 A	21 D	22 D
Electrical equipment, appliance and components	250	155 A	144 A	145 B	150 B
Motor vehicle and parts	489	411 A	264 A	269 B	316 E
Aerospace products and parts	904	x	x	x	x
All other transportation equipment	x	159 A	140 A	116 D	125 D
Furniture and related products	42	45 A	38 A	37 B	45 D
Other manufacturing industries	211	213 A	173 A	195 E	208 D
Services	**6,514**	**6,964** A	**6,086** A	**6,206** A	**6,403** B
Wholesale trade	910	1,304 A	1,173 A	1,165 A	1,232 B
Retail trade	56	51 A	47 A	49 D	F
Transportation and warehousing	78	111 A	90 A	75 E	82 E
Information and cultural industries	1,318	1,291 A	1,023 A	1,030 B	1,102 D
Finance, insurance and real estate	424	375 A	291 A	305 C	265 D
Architectural, engineering and related services	467	413 A	369 A	406 B	444 C
Computer system design and related services	1,242	1,200 A	1,043 A	1,067 A	1,093 C
Management, scientific and technical consulting services	76	71 A	60 A	64 B	F
Scientific research and development services	1,177	1,524 A	1,555 A	1,614 B	1,632 C
Health care and social assistance	339	300 A	128 A	123 A	F
All other services	427	324 A	308 A	309 B	321 E

Note(s): Components may not add to totals due to rounding.

Table 6-2
Current intramural research and development expenditures by industry and by type of expenditures, 2009p

	Wages and salaries	Other current costs	Total
	millions of dollars		
Total	**8,968** A	**5,307** A	**14,275** A
Agriculture, forestry, fishing and hunting	**64** A	**37** A	**101** A
Agriculture	55 A	34 A	89 A
Forestry and logging	5 A	1 A	6 A
Fishing, hunting and trapping	5 A	2 A	7 A
Mining and oil and gas extraction	**153** B	**681** A	**834** A
Oil and gas extraction	x	636 A	x
Mining	x	45 A	x
Utilities	**93** A	**61** A	**154** A
Electric power	78 A	x	x
Other utilities	15 A	x	x
Construction	**79** A	**23** B	**102** A
Manufacturing	**4,155** A	**2,844** A	**6,998** A
Food	101 A	46 A	146 A
Beverage and tobacco	12 A	4 A	17 A
Textile	27 A	11 A	38 A
Wood products	37 A	53 A	90 A
Paper	29 A	33 A	62 A
Printing	46 A	7 A	53 A
Petroleum and coal products	x	179 D	x
Pharmaceutical and medicine	277 A	297 A	574 A
Other chemicals	140 B	130 B	270 A
Plastic products	84 A	36 A	119 A
Rubber products	18 B	12 B	30 A
Non-metallic mineral products	47 A	21 A	68 A
Primary metal (ferrous)	20 A	46 A	66 A
Primary metal (non-ferrous)	55 A	150 A	205 A
Fabricated metal products	179 A	40 A	219 A
Machinery	421 A	160 A	581 A
Computer and peripheral equipment	36 A	23 A	58 A
Communications equipment	881 A	513 A	1,394 A
Semiconductor and other electronic components	375 A	117 A	492 A
Navigational, measuring, medical and control instruments	293 A	113 A	406 A
Other computer and electronic products	16 A	4 A	20 A
Electrical equipment, appliance and components	108 A	36 A	144 A
Motor vehicle and parts	188 A	76 A	264 A
Aerospace products and parts	x	630 A	x
All other transportation equipment	75 A	65 A	140 A
Furniture and related products	33 A	5 A	38 A
Other manufacturing industries	137 A	36 A	173 A
Services	**4,424** A	**1,662** A	**6,086** A
Wholesale trade	664 A	510 A	1,173 A
Retail trade	39 A	7 A	47 A
Transportation and warehousing	38 A	52 A	90 A
Information and cultural industries	847 A	177 A	1,023 A
Finance, insurance and real estate	221 E	F	291 A
Architectural, engineering and related services	312 A	57 A	369 A
Computer system design and related services	979 A	64 A	1,043 A
Management, scientific and technical consulting services	52 A	8 B	60 A
Scientific research and development services	945 A	609 A	1,555 A
Health care and social assistance	81 A	47 A	128 A
All other services	247 A	61 A	308 A

Note(s): Components may not add to totals due to rounding.

Table 6-3
Current intramural research and development expenditures by province

	2005	2006	2007 r	2008 r	2009 p
	millions of dollars				
Total	**14,572**	**15,318**	**15,651**	**15,363** A	**14,275** A
Atlantic Canada	232	284	301	294 B	280 B
Newfoundland and Labrador	x	x	x	x	75 B
Prince Edward Island	x	x	x	14 C	x
Nova Scotia	x	103	x	x	86 C
New Brunswick	x	102	119	117 A	x
Quebec	3,944	4,600	4,665	4,597 A	4,393 A
Ontario	7,772	7,678	7,572	7,306 A	6,590 A
Manitoba	194	181	199	169 C	175 C
Saskatchewan	125	127	180	130 D	119 B
Alberta	959	1,161	1,223	1,339 A	1,264 A
British Columbia 1	1,347	1,288	1,511	1,528 A	1,454 A

1. Includes Yukon, Northwest Territories and Nunavut.
Note(s): Components may not add to totals due to rounding.

Table 6-4
Current intramural research and development expenditures as a percentage of performing company revenues, by company revenue size

	2005	2006	2007 r	2008 r	2009 p
	percent				
Total	**1.7**	**1.7**	**1.7**	**1.7**	**1.7**
Less than $1,000,000	39.2	38.4	39.7	35.0	34.3
$1,000,000 to $9,999,999	7.6	7.0	6.9	6.7	6.9
$10,000,000 to $49,999,999	3.2	3.3	3.4	3.3	3.4
$50,000,000 to $99,999,999	2.9	2.7	2.8	2.4	2.6
$100,000,000 to $399,999,999	2.4	2.0	2.1	2.1	2.2
$400,000,000 or greater	0.9	1.0	0.9	1.0	1.0

Note(s): Revenue size is calculated for the year in which R&D expenditures occurred.

Table 6-5
Current intramural research and development expenditures as a percentage performing company revenues, by country of control

	2005	2006	2007 r	2008 r	2009 p
	percent				
Total	**1.7**	**1.7**	**1.7**	**1.7**	**1.7**
Canada	1.9	1.9	1.9	2.1	2.0
Foreign	**1.4**	**1.3**	**1.4**	**1.3**	**1.3**
United States	1.5	1.4	1.4	1.6	1.3
Other foreign	1.2	1.2	1.5	1.0	1.3

Table 6-6
Current intramural research and development expenditures as a percentage of performing company revenues, by industry and by country of control, 2009p

	Canada	Foreign	Total
	percent		
Total	**2.0**	**1.3**	**1.7**
Agriculture, forestry, fishing and hunting	**x**	**x**	**2.1**
Agriculture	x	x	2.2
Forestry and logging	1.6	0.0	1.6
Fishing, hunting and trapping	x	x	1.8
Mining and oil and gas extraction	**0.6**	**0.4**	**0.5**
Oil and gas extraction	x	0.4	x
Mining	x	0.5	x
Utilities	**0.5**	**0.2**	**0.5**
Electric power	x	x	x
Other utilities	x	x	x
Construction	**x**	**x**	**0.9**
Manufacturing	**3.0**	**1.5**	**2.2**
Food	0.5	0.1	0.3
Beverage and tobacco	x	x	0.8
Textile	2.1	1.8	2.0
Wood products	1.2	0.6	0.9
Paper	1.0	0.9	0.9
Printing	1.3	0.5	1.2
Petroleum and coal products	x	x	x
Pharmaceutical and medicine	4.2	4.6	4.4
Other chemicals	3.1	0.7	1.2
Plastic products	1.9	0.6	1.4
Rubber products	2.3	0.5	0.7
Non-metallic mineral products	1.2	0.7	0.9
Primary metal (ferrous)	1.4	0.5	0.5
Primary metal (non-ferrous)	0.4	1.5	1.1
Fabricated metal products	2.2	0.8	1.9
Machinery	3.8	2.6	3.5
Computer and peripheral equipment	8.5	8.5	8.5
Communications equipment	33.3	7.6	23.4
Semiconductor and other electronic components	x	x	5.8
Navigational, measuring, medical and control instruments	8.6	8.5	8.5
Other computer and electronic products	x	x	4.6
Electrical equipment, appliance and components	3.5	0.7	1.4
Motor vehicle and parts	1.1	0.4	0.6
Aerospace products and parts	5.1	x	x
All other transportation equipment	x	x	2.4
Furniture and related products	x	x	1.3
Other manufacturing industries	2.2	2.6	2.3
Services	**2.0**	**2.9**	**2.2**
Wholesale trade	2.2	1.6	1.9
Retail trade	x	x	0.6
Transportation and warehousing	x	x	0.3
Information and cultural industries	2.5	7.9	2.8
Finance, insurance and real estate	0.3	0.5	0.3
Architectural, engineering and related services	4.0	1.9	3.4
Computer system design and related services	10.8	7.3	9.9
Management, scientific and technical consulting services	9.2	1.1	5.6
Scientific research and development services	39.2	23.5	31.3
Health care and social assistance	x	x	11.0
All other services	2.0	1.8	2.0

Table 7
Capital intramural research and development expenditures, by industry

	2007 r	2008 r	2009 p	2010 p	2011 p
	millions of dollars				
Total	**1,105**	**1,046** A	**835** A	**884** A	**881** B
Agriculture, forestry, fishing and hunting	**7**	**4** B	**4** A	**x**	**x**
Agriculture	6	4 B	3 A	2 A	2 A
Forestry and logging	0 s	0 C	0 A	0 A	x
Fishing, hunting and trapping	1	F	1 A	x	x
Mining and oil and gas extraction	**129**	**165** B	**106** A	**77** B	**73** D
Oil and gas extraction	122	161 B	x	x	x
Mining	6	4 B	x	x	x
Utilities	**92**	**32** A	**19** A	**x**	**x**
Electric power	x	x	x	x	x
Other utilities	x	x	x	x	x
Construction	**3**	**4** D	**2** D	**2** B	**2** B
Manufacturing	**405**	**444** A	**361** A	**423** A	**418** B
Food	8	9 A	8 A	4 B	5 B
Beverage and tobacco	0 s	0 A	0 A	0 C	0 A
Textile	2	3 A	1 A	1 B	1 B
Wood products	2	x	1 C	1 A	1 A
Paper	3	F	2 A	x	2 C
Printing	2	1 B	1 B	1 A	1 A
Petroleum and coal products	58	x	x	x	x
Pharmaceutical and medicine	45	37 A	39 A	28 D	F
Other chemicals	10	12 C	18 D	18 E	19 E
Plastic products	6	6 A	6 D	10 D	6 D
Rubber products	x	0 B	F	F	0 D
Non-metallic mineral products	1	4 B	1 A	1 C	1 E
Primary metal (ferrous)	2	F	0 E	F	0 D
Primary metal (non-ferrous)	26	33 A	2 A	F	F
Fabricated metal products	6	7 D	8 B	7 B	9 A
Machinery	12	16 B	10 C	11 B	10 D
Computer and peripheral equipment	4	5 A	1 C	1 C	1 C
Communications equipment	94	96 A	110 A	98 B	146 A
Semiconductor and other electronic components	35	21 A	14 A	16 C	11 C
Navigational, measuring, medical and control instruments	12	14 A	10 A	11 B	11 D
Other computer and electronic products	1	F	0 A	F	F
Electrical equipment, appliance and components	11	7 C	3 B	2 D	2 C
Motor vehicle and parts	19	11 C	13 A	28 C	F
Aerospace products and parts	22	x	x	x	x
All other transportation equipment	x	2 A	8 A	F	F
Furniture and related products	0 s	2 E	0 S	0 A	0 B
Other manufacturing industries	14	F	8 A	15 D	10 E
Services	**470**	**397** A	**341** A	**364** A	**371** B
Wholesale trade	66	68 A	61 A	74 B	70 B
Retail trade	1	1 C	1 A	1 B	1 B
Transportation and warehousing	2	7 D	2 A	F	F
Information and cultural industries	158	80 A	97 A	103 A	105 A
Finance, insurance and real estate	12	33 D	49 D	44 B	38 C
Architectural, engineering and related services	28	13 C	8 B	9 C	11 D
Computer system design and related services	44	34 B	26 A	31 C	30 C
Management, scientific and technical consulting services	3	3 B	2 C	4 E	F
Scientific research and development services	118	127 A	79 A	81 B	81 B
Health care and social assistance	13	12 A	6 C	4 D	19 D
All other services	26	18 A	10 B	12 C	12 D

Note(s): Components may not add to totals due to rounding.

Table 8-1
Personnel engaged in research and development by industry group and by region, 2009p

	Atlantic Canada	Quebec	Ontario	Manitoba	Saskat-chewan	Alberta	British Columbia [1]	**Total**
	number							
Total	**3,328** B	**48,788** A	**68,470** A	**2,293** B	**1,353** B	**9,543** A	**16,148** A	**149,923** A
Agriculture, forestry, fishing and hunting	183 C	944 C	671 C	x	x	F	200 C	**2,070** B
Mining and oil and gas extraction	99 D	F	184 D	x	x	1,180 B	x	**1,825** B
Utilities	18 D	676 A	557 A	x	16 C	59 B	x	**1,377** A
Construction	F	840 C	655 B	27 E	F	249 D	95 D	**1,908** D
Manufacturing	1,628 C	21,663 A	35,076 A	825 C	554 D	2,449 C	3,912 B	**66,107** A
Services	1,374 B	24,505 A	31,327 A	1,312 A	727 B	5,570 A	11,821 A	**76,636** A

1. Includes Yukon, Northwest Territories and Nunavut.
Note(s): Components may not add to totals due to rounding. Personnel counts are reported as full-time equivalent.

Table 8-2
Personnel engaged in research and development by province and by occupational category, 2009p

	Professionals	Other personnel [2]	**Total**
	number		
Total	**86,964** A	**62,959** A	**149,923** A
Atlantic Canada	1,722 B	1,606 B	3,328 B
Newfoundland and Labrador	305 D	255 D	560 D
Prince Edward Island	74 E	122 D	196 D
Nova Scotia	768 C	693 B	1,461 C
New Brunswick	575 C	536 B	1,111 C
Quebec	25,439 A	23,349 A	48,788 A
Ontario	42,660 A	25,810 A	68,470 A
Manitoba	1,098 B	1,195 A	2,293 B
Saskatchewan	745 C	608 B	1,353 B
Alberta	5,696 A	3,847 A	9,543 A
British Columbia [1]	9,604 A	6,544 A	16,148 A

1. Includes Yukon, Northwest Territories and Nunavut.
2. Includes technicians and other.
Note(s): Components may not add to totals due to rounding. Personnel counts are reported as full-time equivalent.

Table 8-3
Personnel engaged in research and development by industry and by occupational category, 2009p

	Professionals	Technicians	Other	**Total**
	number			
Total	**86,964** A	**47,358** A	**15,601** A	**149,923** A
Agriculture, forestry, fishing and hunting	**627** C	**925** B	**518** C	**2,070** B
Agriculture	520 C	803 B	470 C	1,793 B
Forestry and logging	48 C	86 A	19 B	153 B
Fishing, hunting and trapping	59 C	36 E	29 E	124 C
Mining and oil and gas extraction	**949** B	**747** A	**129** C	**1,825** B
Oil and gas extraction	756 B	436 A	101 C	1,293 B
Mining	193 B	311 B	28 E	532 C
Utilities	**785** A	**361** E	**F**	**1,377** A
Electric power	590 A	F	F	994 A
Other utilities	195 A	123 A	65 A	383 A
Construction	**733** B	**857** B	**318** C	**1,908** D
Manufacturing	**37,244** A	**19,747** A	**9,116** A	**66,107** A
Food	1,029 A	1,048 A	475 A	2,552 B
Beverage and tobacco	76 D	96 D	62 D	234 C
Textile	196 A	240 A	128 A	564 B
Wood products	F	410 E	392 E	1,055 D
Paper	311 A	268 A	91 A	670 D
Printing	391 A	550 A	148 B	1,089 A
Petroleum and coal products	784 E	F	F	F
Pharmaceutical and medicine	2,072 A	1,032 A	1,251 A	4,355 A
Other chemicals	1,350 A	848 A	701 A	2,899 B
Plastic products	707 A	823 A	302 A	1,832 A
Rubber products	204 A	134 C	F	369 A
Non-metallic mineral products	386 A	428 A	129 C	943 A
Primary metal (ferrous)	132 A	119 B	46 C	297 D
Primary metal (non-ferrous)	394 A	268 A	104 B	766 B
Fabricated metal products	1,412 A	2,261 A	572 B	4,245 A
Machinery	4,076 A	3,167 A	970 A	8,213 A
Computer and peripheral equipment	488 A	125 B	67 D	680 A
Communications equipment	8,496 A	708 A	240 A	9,444 A
Semiconductor and other electronic components	3,697 A	555 A	222 A	4,474 A
Navigational, measuring, medical and control instruments	3,383 A	1,144 A	351 B	4,878 A
Other computer and electronic products	197 A	139 A	39 B	375 B
Electrical equipment, appliance and components	1,224 B	649 A	225 B	2,098 B
Motor vehicle and parts	1,191 A	1,039 A	391 A	2,621 B
Aerospace products and parts	2,590 A	1,224 A	1,132 A	4,946 A
All other transportation equipment	601 A	329 A	186 A	1,116 A
Furniture and related products	305 C	447 A	207 B	959 C
Other manufacturing industries	1,299 A	1,426 A	548 B	3,273 B
Services	**46,626** A	**24,721** A	**5,289** A	**76,636** A
Wholesale trade	6,275 A	2,926 A	1,171 B	10,372 B
Retail trade	374 B	488 A	141 C	1,003 B
Transportation and warehousing	354 B	293 C	150 D	797 A
Information and cultural industries	6,777 A	5,684 A	409 D	12,870 A
Finance, insurance and real estate	1,933 A	819 B	193 C	2,945 B
Architectural, engineering and related services	6,932 A	1,606 A	310 B	8,848 A
Computer system design and related services	11,294 A	5,369 A	1,069 B	17,732 A
Management, scientific and technical consulting services	659 A	394 A	74 D	1,127 B
Scientific research and development services	8,545 A	4,469 A	1,240 A	14,254 A
Health care and social assistance	657 A	515 A	142 A	1,314 A
All other services	2,826 A	2,158 A	390 B	5,374 A

Note(s): Components may not add to totals due to rounding. Personnel counts are reported as full-time equivalent.

Table 8-4
Personnel engaged in research and development by occupational category

	2005	2006	2007 r	2008 r	2009 p
	number				
Total	**142,025**	**151,726**	**167,692**	**169,982** D	**149,923** A
Professionals	84,408	88,226	94,761	96,606 A	86,964 A
Technicians	40,405	44,510	52,117	51,367 A	47,358 A
Other	17,212	18,990	20,814	22,009 A	15,601 A

Note(s): Components may not add to totals due to rounding. Personnel counts are reported as full-time equivalent.

Table 9
Professional personnel engaged in research and development, by degree level

	Bachelors	Masters	Doctorates	College	None	Total
	number					
2009 p	54,131 A	13,567 B	6,460 C	8,461 B	4,345 D	**86,964** A
2008 r	68,381 C	18,082 D	10,143 D	…	…	**96,606** A
2007 r	73,512	14,832	6,417	…	…	**94,761**
2006	68,510	13,999	5,717	…	…	**88,226**
2005	64,297	14,311	5,800	…	…	**84,408**
2004	61,471	14,101	5,777	…	…	**81,349**

Note(s): Data are estimated for all performing companies not surveyed directly, i.e. all data points taken from performers for whom data were obtained through the tax data (see Survey Methodology). Components may not add to totals due to rounding. Personnel counts are reported as full-time equivalent.

Table 10-1
Total extramural payments for research and development, by industry and by year

	2005	2006	2007 r	2008 r	2009 p
	millions of dollars				
Total	**4,025**	**4,201**	**4,424**	**3,789** A	**3,126** A
Agriculture, forestry, fishing and hunting	**13**	**16**	**26**	**16** D	**13** A
Agriculture	11	14	9	9 C	9 B
Forestry and logging	1	2	x	F	2 A
Fishing, hunting and trapping	1	1	x	2 B	2 A
Mining and oil and gas extraction	**55**	**80**	**54**	**67** A	**88** B
Oil and gas extraction	32	55	40	47 B	58 B
Mining	23	25	14	19 D	30 C
Utilities	**43**	**90**	**101**	**105** A	**104** A
Electric power	41	82	91	100 A	99 A
Other utilities	3	8	10	6 A	4 A
Construction	**15**	**13**	**13**	**14** D	**15** A
Manufacturing	**1,868**	**2,108**	**1,910**	**1,252** A	**921** B
Food	22	24	20	114 A	22 A
Beverage and tobacco	7	x	8	3 C	2 A
Textile	6	x	3	2 B	2 A
Wood products	32	27	21	21 A	19 A
Paper	32	29	19	16 C	16 A
Printing	x	2	x	x D	3 A
Petroleum and coal products	42	69	60	x D	7 A
Pharmaceutical and medicine	510	527	557	393 A	236 E
Other chemicals	40	55	70	61 B	102 A
Plastic products	12	13	11	12 C	14 B
Rubber products	x	x	10	F	3 A
Non-metallic mineral products	x	8	7	5 B	5 A
Primary metal (ferrous)	6	9	x	4 A	F
Primary metal (non-ferrous)	56	71	53	35 B	16 A
Fabricated metal products	23	23	21	23 A	22 A
Machinery	54	63	56	54 B	52 B
Computer and peripheral equipment	9	15	6	8 C	3 A
Communications equipment	142	212	127	162 A	143 C
Semiconductor and other electronic components	x	x	x	17 D	14 B
Navigational, measuring, medical and control instruments	34	46	45	48 D	31 C
Other computer and electronic products	x	2	x	x A	F
Electrical equipment, appliance and components	13	13	21	16 B	19 A
Motor vehicle and parts	496	459	372	100 B	77 A
Aerospace products and parts	15	103	97	59 A	68 A
All other transportation equipment	x	x	x	11 E	12 A
Furniture and related products	x	x	3	4 B	4 A
Other manufacturing industries	20	21	17	22 D	21 B
Services	**2,031**	**1,895**	**2,320**	**2,336** A	**1,986** A
Wholesale trade	217	258	301	580 A	601 A
Retail trade	29	16	17	18 B	9 A
Transportation and warehousing	19	36	63	46 A	40 B
Information and cultural industries	865	714	706	585 A	541 A
Finance, insurance and real estate	98	109	127	109 B	112 A
Architectural, engineering and related services	40	62	64	57 D	73 A
Computer system design and related services	128	150	175	F	137 A
Management, scientific and technical consulting services	17	18	19	14 D	16 A
Scientific research and development services	416	406	709	669 A	355 A
Health care and social assistance	114	71	72	43 B	39 A
All other services	86	54	66	72 A	62 A

Note(s): Extramural payments are expenditures made for R&D performed by other organizations in Canada and/or in other countries. Other organizations include parent or affiliated companies, other non-related companies, private non-profit organizations, universities, hospitals, industrial and provincial research organizations, and other organizations including governments and individuals. Extramural R&D payments include expenditures by companies that performed R&D and companies that only made payments for R&D to other organizations. Components may not add to totals due to rounding.

Table 10-2
Total extramural payments for research and development, by industry and by location of recipient, 2009p

	Canada	Foreign	Total
	millions of dollars		
Total	**2,609** A	**517** A	**3,126** A
Agriculture, forestry, fishing and hunting	**12** A	**1** E	**13** A
Agriculture	x	x	9 B
Forestry and logging	2 A	0 A	2 A
Fishing, hunting and trapping	x	x	2 A
Mining and oil and gas extraction	**x**	**x**	**88** B
Oil and gas extraction	x	x	58 B
Mining	30 A	F	30 C
Utilities	**x**	**x**	**104** A
Electric power	x	x	99 A
Other utilities	x	x	4 A
Construction	**x**	**x**	**15** A
Manufacturing	**x**	**x**	**921** B
Food	x	x	22 A
Beverage and tobacco	2 A	0 A	2 A
Textile	x	x	2 A
Wood products	x	x	19 A
Paper	16 A	0 A	16 A
Printing	3 A	0 A	3 A
Petroleum and coal products	7 A	0 A	7 A
Pharmaceutical and medicine	223 E	13 A	236 E
Other chemicals	x	x	102 A
Plastic products	x	x	14 B
Rubber products	3 A	0 A	3 A
Non-metallic mineral products	5 A	0 A	5 A
Primary metal (ferrous)	x	x	F
Primary metal (non-ferrous)	x	x	16 A
Fabricated metal products	x	x	22 A
Machinery	50 B	2 E	52 B
Computer and peripheral equipment	3 A	0 A	3 A
Communications equipment	x	x	143 C
Semiconductor and other electronic components	x	x	14 B
Navigational, measuring, medical and control instruments	28 C	F	31 C
Other computer and electronic products	x	x	F
Electrical equipment, appliance and components	x	x	19 A
Motor vehicle and parts	x	x	77 A
Aerospace products and parts	37 A	31 A	68 A
All other transportation equipment	x	x	12 A
Furniture and related products	x	x	4 A
Other manufacturing industries	20 B	F	21 B
Services	**1,627** A	**358** A	**1,986** A
Wholesale trade	x	x	601 A
Retail trade	x	x	9 A
Transportation and warehousing	x	x	40 B
Information and cultural industries	490 A	51 B	541 A
Finance, insurance and real estate	x	x	112 A
Architectural, engineering and related services	x	x	73 A
Computer system design and related services	x	x	137 A
Management, scientific and technical consulting services	x	x	16 A
Scientific research and development services	279 A	75 C	355 A
Health care and social assistance	x	x	39 A
All other services	x	x	62 A

Note(s): Extramural payments are expenditures made for R&D performed by other organizations in Canada and/or in other countries. Other organizations include parent or affiliated companies, other non-related companies, private non-profit organizations, universities, hospitals, industrial and provincial research organizations, and other organizations including governments and individuals. Extramural R&D payments include expenditures by companies that performed R&D and companies that only made payments for R&D to other organizations. Tax data include extramural payments for R&D in Canada only; extramural payments for R&D outside of Canada were imputed for these records (see Survey Methodology). Components may not add to totals due to rounding.

Table 11
Foreign receipts and payments for technological services by research and development and other

	Receipts		Total	Payments		Total	Balance		**Total**
	Research and development	Other		Research and development	Other		Research and development	Other	
	millions of dollars								
2009 p	2,027	649	**2,676**	517	316	**833**	1,510	332	**1,842**
2008 r	2,026	857	**2,884**	871	239	**1,109**	1,156	619	**1,774**
2007 r	2,663	709	**3,372**	1,302	339	**1,641**	1,361	370	**1,731**
2006	2,113	721	**2,834**	1,054	336	**1,390**	1,059	385	**1,444**
2005	2,327	754	**3,081**	1,146	317	**1,463**	1,181	438	**1,618**
2004	2,280	1,260	**3,539**	1,127	401	**1,528**	1,153	859	**2,012**
2003	2,073	1,509	**3,582**	1,149	443	**1,592**	925	1,066	**1,991**
2002	1,822	1,619	**3,441**	1,076	684	**1,759**	747	935	**1,682**
2001	2,828	1,426	**4,255**	1,283	364	**1,648**	1,545	1,062	**2,607**
2000	3,524	1,144	**4,668**	1,374	527	**1,901**	2,150	617	**2,767**
1999	2,642	320	**2,962**	1,490	523	**2,012**	1,152	-202	**950**
1998	2,499	296	**2,795**	1,045	694	**1,739**	1,453	-398	**1,056**

Note(s): Data are from the Research and Development in Canadian Industry respondents only. Components may not add to totals due to rounding.

Table 12
Expenditures made and payments received for intellectual property and other technology related services, 2009

	Expenditures made	Payments received
	millions of dollars	
Total	**435**	**741**
Patents	133	536
Copyrights	2	x
Trademarks	51	x
Industrial designs and intergrated circuit topography designs	5	x
Technical assistance, industrial processes and know-how, etc.	245	203

Note(s): Data are from the Research and Development in Canadian Industry respondents only. Components may not add to totals due to rounding.

Table 13
Energy research and development expenditures, by area of technology and by source of funds, 2009p

	Intramural research and development expenditures	Payments outside Canada
	millions of dollars	
Total	**1,314**	**93**
Fossil fuels	**928**	**x**
Crude oils and natural gas	388	**x**
Oil sands and heavy crude oil	478	**0**
Refining, Processing and Upgrading	41	**x**
Coal production, preparation and processing	7	**0**
Transportation of fossil fuels	14	**x**
Renewable energy resources	**91**	**x**
Solar	14	**0**
Wind energy	4	**0**
Bio-energy	31	x
Hydro	33	x
Other renewable energy	9	**0**
Nuclear fission and fusion	**18**	**x**
Electric Power	**81**	**x**
Generation in utility sector	10	0
Combine heat and power in industry, buildings	0 s	0
Electricity transmission, distribution and storage	70	x
Hydrogen and fuel cells	**60**	**x**
Hydrogen	44	x
Fuel cells	15	x
Energy efficiency	**68**	**x**
Industry	**27**	**x**
Residential, institutional and commercial	**12**	**0**
Transportation	**28**	**x**
Other	**1**	**0**
Other technologies	**68**	**x**

Note(s): Data are from the Energy Research and Development expenditures by Area of Technology survey. Components may not add to totals due to rounding.

Table 14-1
Research and development performers by industry and by country of control, 2008

	Canada	Foreign	**Total**
	number		
Total	**23,146**	**1,057**	**24,203**
Agriculture, forestry, fishing and hunting	**x**	**x**	**1,052**
Agriculture	x	x	902
Forestry and logging	x	x	95
Fishing, hunting and trapping	x	x	55
Mining and oil and gas extraction	**176**	**39**	**215**
Oil and gas extraction	x	x	140
Mining	x	x	75
Utilities	**x**	**x**	**154**
Electric power	x	x	31
Other utilities	x	x	123
Construction	**x**	**x**	**856**
Manufacturing	**9,329**	**597**	**9,926**
Food	728	41	769
Beverage and tobacco	x	x	89
Textile	x	x	184
Wood products	357	17	374
Paper	124	26	150
Printing	x	x	394
Petroleum and coal products	x	x	39
Pharmaceutical and medicine	104	25	129
Other chemicals	446	67	513
Plastic products	531	33	564
Rubber products	x	x	67
Non-metallic mineral products	233	16	249
Primary metal (ferrous)	x	x	83
Primary metal (non-ferrous)	77	15	92
Fabricated metal products	1,448	42	1,490
Machinery	1,557	65	1,622
Computer and peripheral equipment	x	x	95
Communications equipment	142	15	157
Semiconductor and other electronic components	x	x	188
Navigational, measuring, medical and control instruments	326	33	359
Other computer and electronic products	x	x	53
Electrical equipment, appliance and components	309	37	346
Motor vehicle and parts	328	40	368
Aerospace products and parts	69	17	86
All other transportation equipment	x	x	99
Furniture and related products	x	x	417
Other manufacturing industries	934	16	950
Services	**11,601**	**399**	**12,000**
Wholesale trade	2,029	125	2,154
Retail trade	x	x	611
Transportation and warehousing	x	x	205
Information and cultural industries	849	50	899
Finance, insurance and real estate	x	x	363
Architectural, engineering and related services	1,005	31	1,036
Computer system design and related services	2,880	74	2,954
Management, scientific and technical consulting services	x	x	525
Scientific research and development services	920	52	972
Health care and social assistance	x	x	330
All other services	1,912	39	1,951

Table 14-2
Research and development performers by province, 2004 to 2008

	2004 r	2005 r	2006 r	2007 r	2008	Absolute change from 2008 to 2004	Change from 2004 to 2008
	number						percent
Canada - total	**17,952**	**19,514**	**21,142**	**23,172**	**24,203**	**6,251**	**34.8**
Total - Multi-province	**18,220**	**19,805**	**22,483**	**24,628**	**25,749**	**7,529**	**41.3**
Newfoundland and Labrador	118	134	142	148	164	46	39.0
Prince Edward Island	37	50	55	67	90	53	143.2
Nova Scotia	241	255	304	387	464	223	92.5
New Brunswick	212	215	254	277	323	111	52.4
Quebec	7,191	7,839	8,825	9,202	8,987	1,796	25.0
Ontario	6,907	7,646	8,987	9,979	10,349	3,442	49.8
Manitoba	401	409	397	440	502	101	25.2
Saskatchewan	211	232	225	287	343	132	62.6
Alberta	1,172	1,196	1,279	1,446	1,702	530	45.2
British Columbia [1]	1,730	1,829	2,015	2,395	2,825	1,095	63.3

1. Includes Yukon, Northwest Territories and Nunavut.

Note(s): A new imputation system was implemented for reference year 2008. This imputation system incorporated information on firm structure obtained from Statistics Canada's Business Register for all records which were obtained through administrative sources. This change does not impact national totals, but had the effect of increasing the number of units reporting R&D within provinces. Caution should be used when making any comparison of counts of provincial R&D performers.

Table 14-3
Research and development performers as a percentage of enterprises with one or more employees, 2004 to 2008

	2004	2005	2006	2007 r	2008
	percent				
Total	**1.9**	**2.0**	**2.2**	**2.4**	**2.5**
Agriculture, forestry, fishing and hunting	**1.2**	**1.3**	**1.6**	**2.0**	**2.1**
Agriculture	1.3	1.6	1.9	2.5	2.5
Forestry and logging	0.7	0.7	0.8	1.1	1.2
Fishing, hunting and trapping	0.8	0.7	0.8	0.9	1.0
Mining and oil and gas extraction	**2.1**	**2.2**	**2.3**	**2.5**	**2.6**
Oil and gas extraction	1.5	1.7	1.9	2.0	2.1
Mining	4.5	4.3	4.0	4.5	4.5
Utilities	**3.0**	**3.5**	**4.2**	**4.6**	**4.8**
Electric power	3.5	4.1	5.3	7.9	9.6
Other utilities	2.9	3.4	4.0	4.0	4.2
Construction	**0.5**	**0.5**	**0.5**	**0.7**	**0.7**
Manufacturing	**14.7**	**16.3**	**17.5**	**18.6**	**19.3**
Food	11.0	12.4	13.8	14.5	15.1
Beverage and tobacco	7.6	10.0	12.7	12.9	14.2
Textile	11.2	11.8	13.7	13.0	13.6
Wood products	7.8	8.3	9.4	9.7	10.4
Paper	22.8	22.7	22.9	25.5	27.0
Printing	5.0	5.7	6.4	8.2	9.3
Petroleum and coal products	35.9	35.9	33.3	33.3	28.1
Pharmaceutical and medicine	50.0	50.0	50.6	50.6	49.4
Other chemicals	27.6	30.3	32.8	33.2	35.6
Plastic products	26.7	29.0	32.5	32.0	33.0
Rubber products	20.8	24.7	24.6	24.7	25.3
Non-metallic mineral products	10.0	11.8	12.7	13.7	13.6
Primary metal (ferrous)	23.9	26.1	21.0	22.8	28.3
Primary metal (non-ferrous)	26.5	31.3	36.7	35.6	34.7
Fabricated metal products	14.5	16.1	17.2	18.6	18.9
Machinery	27.5	29.8	30.8	32.6	32.7
Computer and peripheral equipment	32.6	34.5	37.0	38.5	38.6
Communications equipment	56.9	56.2	55.7	58.3	57.3
Semiconductor and other electronic components	38.9	38.4	41.9	43.4	47.4
Navigational, measuring, medical and control instruments	38.0	42.6	44.2	46.3	49.4
Other computer and electronic products	26.2	26.2	28.3	27.8	29.6
Electrical equipment, appliance and components	25.2	28.3	28.8	30.6	33.0
Motor vehicle and parts	20.6	23.3	25.5	28.3	29.1
Aerospace products and parts	40.1	34.9	38.5	38.6	38.6
All other transportation equipment	16.0	17.7	19.9	21.5	19.0
Furniture and related products	6.4	7.3	8.2	9.3	9.7
Other manufacturing industries	8.1	9.7	10.7	11.5	12.2
Services	**1.2**	**1.3**	**1.3**	**1.5**	**1.6**
Wholesale trade	2.8	3.0	3.5	4.1	4.2
Retail trade	0.3	0.4	0.4	0.5	0.6
Transportation and warehousing	0.3	0.3	0.3	0.5	0.5
Information and cultural industries	5.2	5.9	6.3	7.6	8.3
Finance, insurance and real estate	0.4	0.4	0.4	0.6	0.6
Architectural, engineering and related services	5.3	5.1	4.9	5.4	5.9
Computer system design and related services	11.0	11.0	10.9	12.6	12.8
Management, scientific and technical consulting services	1.6	1.7	1.5	1.9	2.1
Scientific research and development services	38.4	37.4	37.2	41.4	40.0
Health care and social assistance	0.2	0.2	0.2	0.3	0.4
All other services	0.4	0.4	0.5	0.5	0.6

Note(s): Components may not add to totals due to rounding.

Table 14-4
Research and development performers by the North American industry classification system (NAICS) 2007, in 2008

	NAICS Code	Performers
		number
Total, all industries		**24,203**
Agriculture, Forestry, Fishing and Hunting		**1,052**
Agriculture		**902**
Soybean Farming	111110	3
Oilseed (except Soybean) Farming	111120	2
Dry Pea and Bean Farming	111130	4
Wheat Farming	111140	5
Corn Farming	111150	11
Rice Farming	111160	1
Other Grain Farming	111190	27
Potato Farming	111211	42
Other Vegetable (except Potato) and Melon Farming	111219	76
Orange Groves	111310	0
Citrus (except Orange) Groves	111320	0
Non-Citrus Fruit and Tree Nut Farming	111330	69
Mushroom Production	111411	14
Other Food Crops Grown Under Cover	111419	39
Nursery and Tree Production	111421	50
Floriculture Production	111422	95
Tobacco Farming	111910	15
Cotton Farming	111920	0
Sugar-Cane Farming	111930	0
Hay Farming	111940	6
Fruit and Vegetable Combination Farming	111993	22
Mayle Syrup and Products Production	111994	11
All Other Miscellaneous Crop Farming	111999	43
Beef Cattle Ranching and Farming, including Feedlots	112110	22
Dairy Cattle and Milk Production	112120	95
Hog and Pig Farming	112210	73
Chicken Egg Production	112310	5
Broiler and Other Meat-Type Chicken Production	112320	27
Turkey Production	112330	2
Poultry Hatcheries	112340	5
Combination Poultry and Egg Production	112391	6
All Other Poultry Production	112399	2
Sheep Farming	112410	3
Goat Farming	112420	1
Apiculture	112910	6
Horse and Other Equine Production	112920	1
Fur-Bearing Animal and Rabbit Production	112930	19
Livestock Combination Farming	112991	38
All Other Miscellaneous Animal Production	112999	2
Support Activities for Crop Production	115110	39
Support Activities for Animal Production	115210	21
Forestry and Logging		**95**
Timber Tract Operations	113110	5
Forest Nurseries and Gathering of Forest Products	113210	8
Logging (except Contract)	113311	20
Contract Logging	113312	32
Support Activities for Forestry	115310	30
Fishing, Hunting and Trapping		**55**
Aquaculture	112510	40
Salt Water Fishing	114113	14
Inland Fishing	114114	1
Hunting and Trapping	114210	0
Mining and Oil and Gas Extraction		**215**
Oil and Gas Extraction		**140**
Conventional Oil and Gas Extraction	211113	50
Non-Conventional Oil Extraction	211114	10
Oil and Gas Contract Drilling	213111	10
Services to Oil and Gas Extraction	213118	70
Mining		**75**
Bituminous Coal Mining	212114	1
Subbituminous Coal Mining	212115	0
Lignite Coal Mining	212116	0

Table 14-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2007, in 2008

	NAICS Code	Performers
		number
Iron Ore Mining	212210	5
Gold and Silver Ore Mining	212220	5
Lead-Zinc Ore Mining	212231	0
Nickel-Copper Ore Mining	212232	0
Copper-Zinc Ore Mining	212233	1
Uranium Ore Mining	212291	1
All Other Metal Ore Mining	212299	1
Granite Mining and Quarrying	212314	3
Limestone Mining and Quarrying	212315	4
Marble Mining and Quarrying	212316	1
Sandstone Mining and Quarrying	212317	0
Sand and Gravel Mining and Quarrying	212323	14
Shale, Clay and Refractory Mineral Mining and Quarrying	212326	0
Diamond Mines	212392	1
Salt Mines	212393	0
Asbestos Mining	212394	0
Gypsum Mining	212395	0
Potash Mining	212396	1
Peat Extraction	212397	9
All Other Non-Metallic Mineral Mining and Quarrying	212398	3
Contract Drilling (except Oil and Gas)	213117	4
Other Support Activities for Mining	213119	21
Utilities		**154**
Electric Power		**31**
Hydro-Electric Power Generation	221111	9
Fossil-Fuel Electric Power Generation	221112	6
Nuclear Electric Power Generation	221113	1
Other Electric Power Generation	221119	9
Electric Bulk Power Transmission and Control	221121	2
Electric Power Distribution	221122	4
Other Utilities		**123**
Natural Gas Distribution	221210	2
Water Supply and Irrigation Systems	221310	19
Sewage Treatment Facilities	221320	2
Steam and Air-Conditioning Supply	221330	0
Waste Collection	562110	20
Waste Treatment and Disposal	562210	32
Remediation Services	562910	28
Material Recovery Facilities	562920	7
All Other Waste Management Services	562990	13
Construction		**856**
Residential Building Construction	236110	76
Industrial Building and Structure Construction	236210	20
Commercial and Institutional Building Construction	236220	29
Water and Sewer Line and Related Structures Construction	237110	26
Oil and Gas Pipeline and Related Structures Construction	237120	21
Power and Communication Line and Related Structures Construction	237130	26
Land Subdivision	237210	13
Highway, Street and Bridge Construction	237310	44
Other Heavy and Civil Engineering Construction	237990	20
Poured Concrete Foundation and Structure Contractors	238110	19
Structural Steel and Precast Concrete Contractors	238120	20
Framing Contractors	238130	4
Masonry Contractors	238140	15
Glass and Glazing Contractors	238150	19
Roofing Contractors	238160	13
Siding Contractors	238170	8
Other Foundation, Structure and Building Exterior Contractors	238190	16
Electrical Contractors and Other Wiring Installation Contractors	238210	108
Plumbing, Heating and Air-Conditioning Contractors	238220	118
Elevator and Escalator Installation Contractors	238291	3
All Other Building Equipment Contractors	238299	33
Drywall and Insulation Contractors	238310	9
Painting and Wall Covering Contractors	238320	22
Flooring Contractors	238330	14
Tile and Terrazzo Contractors	238340	11
Finish Carpentry Contractors	238350	45
Other Building Finishing Contractors	238390	12
Site Preparation Contractors	238910	54

Table 14-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2007, in 2008

	NAICS Code	Performers
		number
All Other Specialty Trade Contractors	238990	38
Manufacturing		**9,926**
Food		**769**
Dog and Cat Food Manufacturing	311111	8
Other Animal Food Manufacturing	311119	58
Flour Milling	311211	7
Rice Milling and Malt Manufacturing	311214	5
Wet Corn Milling	311221	2
Oilseed Processing	311224	8
Fat and Oil Refining and Blending	311225	2
Breakfast Cereal Manufacturing	311230	5
Sugar Manufacturing	311310	5
Chocolate and Confectionery Manufacturing from Cacao Beans	311320	7
Confectionery Manufacturing from Purchased Chocolate	311330	12
Non-Chocolate Confectionery Manufacturing	311340	18
Frozen Food Manufacturing	311410	28
Fruit and Vegetable Canning, Pickling and Drying	311420	58
Fluid Milk Manufacturing	311511	15
Butter, Cheese, and Dry and Condensed Dairy Product Manufacturing	311515	52
Ice Cream and Frozen Dessert Manufacturing	311520	15
Animal (except Poultry) Slaughtering	311611	23
Rendering and Meat Processing from Carcasses	311614	46
Poultry Processing	311615	33
Seafood Product Preparation and Packaging	311710	37
Retail Bakeries	311811	38
Commercial Bakeries and Frozen Bakery Product Manufacturing	311814	106
Cookie and Cracker Manufacturing	311821	14
Flour Mixes and Dough Manufacturing from Purchased Flour	311822	12
Dry Pasta Manufacturing	311823	12
Tortilla Manufacturing	311830	1
Roasted Nut and Peanut Butter Manufacturing	311911	5
Other Snack Food Manufacturing	311919	8
Coffee and Tea Manufacturing	311920	16
Flavouring Syrup and Concentrate Manufacturing	311930	8
Seasoning and Dressing Manufacturing	311940	23
All Other Food Manufacturing	311990	82
Beverages and Tobacco		**89**
Soft Drink and Ice Manufacturing	312110	10
Breweries	312120	27
Wineries	312130	46
Distilleries	312140	4
Tobacco Stemming and Redrying	312210	0
Tobacco Product Manufacturing	312220	2
Textile		**184**
Fibre, Yarn and Thread Mills	313110	10
Broad-Woven Fabric Mills	313210	18
Narrow Fabric Mills and Schiffli Machine Embroidery	313220	10
Nonwoven Fabric Mills	313230	9
Knit Fabric Mills	313240	17
Textile and Fabric Finishing	313310	27
Fabric Coating	313320	8
Carpet and Rug Mills	314110	12
Curtain and Linen Mills	314120	18
Textile Bag and Canvas Mills	314910	28
All Other Textile Product Mills	314990	27
Wood Products		**374**
Sawmills (except Shingle and Shake Mills)	321111	78
Shingle and Shake Mills	321112	4
Wood Preservation	321114	7
Hardwood Veneer and Plywood Mills	321211	19
Softwood Veneer and Plywood Mills	321212	5
Structural Wood Product Manufacturing	321215	19
Particle Board and Fibreboard Mills	321216	7
Waferboard Mills	321217	5
Wood Window and Door Manufacturing	321911	55
Other Millwork	321919	79
Wood Container and Pallet Manufacturing	321920	24
Manufactured (Mobile) Home Manufacturing	321991	4

Table 14-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2007, in 2008

	NAICS Code	Performers
		number
Prefabricated Wood Building Manufacturing	321992	16
All Other Miscellaneous Wood Product Manufacturing	321999	52
Paper		**150**
Mechanical Pulp Mills	322111	0
Chemical Pulp Mills	322112	6
Paper (except Newsprint) Mills	322121	11
Newsprint Mills	322122	6
Paperboard Mills	322130	7
Corrugated and Solid Fibre Box Manufacturing	322211	27
Folding Paperboard Box Manufacturing	322212	14
Other Paperboard Container Manufacturing	322219	8
Paper Bag and Coated and Treated Paper Manufacturing	322220	35
Stationery Product Manufacturing	322230	11
Sanitary Paper Product Manufacturing	322291	6
All Other Converted Paper Product Manufacturing	322299	19
Printing		**394**
Commercial Screen Printing	323113	46
Quick Printing	323114	11
Digital Printing	323115	18
Manifold Business Forms Printing	323116	19
Other Printing	323119	244
Support Activities for Printing	323120	56
Petroleum and Coal Products		**39**
Petroleum Refineries	324110	8
Asphalt Paving Mixture and Block Manufacturing	324121	5
Asphalt Shingle and Coating Material Manufacturing	324122	5
Other Petroleum and Coal Product Manufacturing	324190	21
Pharmaceutical and Medicine		**129**
Pharmaceutical and Medicine Manufacturing	325410	129
Other Chemical		**513**
Petrochemical Manufacturing	325110	5
Industrial Gas Manufacturing	325120	5
Synthetic Dye and Pigment Manufacturing	325130	15
Alkali and Chlorine Manufacturing	325181	0
All Other Basic Inorganic Chemical Manufacturing	325189	20
Other Basic Organic Chemical Manufacturing	325190	31
Resin and Synthetic Rubber Manufacturing	325210	35
Artificial and Synthetic Fibres and Filaments Manufacturing	325220	8
Chemical Fertilizer (except Potash) Manufacturing	325313	11
Mixed Fertilizer Manufacturing	325314	18
Pesticide and Other Agricultural Chemical Manufacturing	325320	9
Paint and Coating Manufacturing	325510	77
Adhesive Manufacturing	325520	23
Soap and Cleaning Compound Manufacturing	325610	58
Toilet Preparation Manufacturing	325620	71
Printing Ink Manufacturing	325910	17
Explosives Manufacturing	325920	4
Custom Compounding of Purchased Resins	325991	11
All Other Miscellaneous Chemical Product Manufacturing	325999	95
Plastic Product		**564**
Plastic Bag and Pouch Manufacturing	326111	37
Plastic Film and Sheet Manufacturing	326114	29
Unlaminated Plastic Profile Shape Manufacturing	326121	36
Plastic Pipe and Pipe Fitting Manufacturing	326122	19
Laminated Plastic Plate, Sheet (except Packaging) and Shape Manufacturing	326130	14
Polystyrene Foam Product Manufacturing	326140	23
Urethane and Other Foam Product (except Polystyrene) Manufacturing	326150	22
Plastic Bottle Manufacturing	326160	15
Plastic Plumbing Fixture Manufacturing	326191	17
Motor Vehicle Plastic Parts Manufacturing	326193	49
Plastic Window and Door Manufacturing	326196	37
All Other Plastic Product Manufacturing	326198	266
Rubber Product		**67**
Tire Manufacturing	326210	5
Rubber and Plastic Hose and Belting Manufacturing	326220	13
Other Rubber Product Manufacturing	326290	49

Table 14-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2007, in 2008

	NAICS Code	Performers
		number
Non-Metallic Mineral Products		**249**
Pottery, Ceramics and Plumbing Fixture Manufacturing	327110	7
Clay Building Material and Refractory Manufacturing	327120	15
Glass Manufacturing	327214	13
Glass Product Manufacturing from Purchased Glass	327215	29
Cement Manufacturing	327310	4
Ready-Mix Concrete Manufacturing	327320	20
Concrete Pipe, Brick and Block Manufacturing	327330	35
Other Concrete Product Manufacturing	327390	44
Lime Manufacturing	327410	4
Gypsum Product Manufacturing	327420	11
Abrasive Product Manufacturing	327910	10
All Other Non-Metallic Mineral Product Manufacturing	327990	57
Primary Metal (Ferrous)		**83**
Iron and Steel Mills and Ferro-Alloy Manufacturing	331110	15
Iron and Steel Pipes and Tubes Manufacturing from Purchased Steel	331210	19
Cold-Rolled Steel Shape Manufacturing	331221	5
Steel Wire Drawing	331222	5
Iron Foundries	331511	27
Steel Foundries	331514	12
Primary Metal (Non-Ferrous)		**92**
Primary Production of Alumina and Aluminum	331313	9
Aluminum Rolling, Drawing, Extruding and Alloying	331317	16
Non-Ferrous Metal (except Aluminum) Smelting and Refining	331410	13
Copper Rolling, Drawing, Extruding and Alloying	331420	8
Non-Ferrous Metal (except Copper and Aluminum) Rolling, Drawing, Extruding and Alloying	331490	10
Non-Ferrous Die-Casting Foundries	331523	17
Non-Ferrous Foundries (except Die-Casting)	331529	19
Fabricated Metal Product		**1,490**
Forging	332113	33
Stamping	332118	74
Cutlery and Hand Tool Manufacturing	332210	52
Prefabricated Metal Building and Component Manufacturing	332311	27
Concrete Reinforcing Bar Manufacturing	332314	3
Other Plate Work and Fabricated Structural Product Manufacturing	332319	100
Metal Window and Door Manufacturing	332321	85
Other Ornamental and Architectural Metal Product Manufacturing	332329	103
Power Boiler and Heat Exchanger Manufacturing	332410	18
Metal Tank (Heavy Gauge) Manufacturing	332420	33
Metal Can Manufacturing	332431	2
Other Metal Container Manufacturing	332439	27
Hardware Manufacturing	332510	33
Spring (Heavy Gauge) Manufacturing	332611	3
Other Fabricated Wire Product Manufacturing	332619	35
Machine Shops	332710	525
Turned Product and Screw, Nut and Bolt Manufacturing	332720	37
Coating, Engraving, Heat Treating and Allied Activities	332810	142
Metal Valve Manufacturing	332910	28
Ball and Roller Bearing Manufacturing	332991	6
All Other Miscellaneous Fabricated Metal Product Manufacturing	332999	124
Machinery		**1,622**
Agricultural Implement Manufacturing	333110	112
Construction Machinery Manufacturing	333120	47
Mining and Oil and Gas Field Machinery Manufacturing	333130	82
Sawmill and Woodworking Machinery Manufacturing	333210	39
Rubber and Plastics Industry Machinery Manufacturing	333220	36
Paper Industry Machinery Manufacturing	333291	14
All Other Industrial Machinery Manufacturing	333299	128
Commercial and Service Industry Machinery Manufacturing	333310	136
Industrial and Commercial Fan and Blower and Air Purification Equipment Manufacturing	333413	49
Heating Equipment and Commercial Refrigeration Equipment Manufacturing	333416	100
Industrial Mould Manufacturing	333511	141
Other Metalworking Machinery Manufacturing	333519	305
Turbine and Turbine Generator Set Unit Manufacturing	333611	22
Other Engine and Power Transmission Equipment Manufacturing	333619	32
Pump and Compressor Manufacturing	333910	46

Table 14-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2007, in 2008

	NAICS Code	Performers
		number
Material Handling Equipment Manufacturing	333920	132
All Other General-Purpose Machinery Manufacturing	333990	201
Computer and Peripheral Equipment		**95**
Computer and Peripheral Equipment Manufacturing	334110	95
Communications Equipment		**157**
Telephone Apparatus Manufacturing	334210	27
Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	334220	79
Other Communications Equipment Manufacturing	334290	51
Semiconductor and Other Electronic Component		**188**
Semiconductor and Other Electronic Component Manufacturing	334410	188
Navigational, Measuring, Medical and Control Instruments		**359**
Navigational and Guidance Instruments Manufacturing	334511	51
Measuring, Medical and Controlling Devices Manufacturing	334512	308
Other Computer and Electronic Product		**53**
Audio and Video Equipment Manufacturing	334310	36
Manufacturing and Reproducing Magnetic and Optical Media	334610	17
Electrical Equipment, Appliance and Component		**346**
Electric Lamp Bulb and Parts Manufacturing	335110	3
Lighting Fixture Manufacturing	335120	54
Small Electrical Appliance Manufacturing	335210	19
Major Kitchen Appliance Manufacturing	335223	8
Other Major Appliance Manufacturing	335229	11
Power, Distribution and Specialty Transformers Manufacturing	335311	29
Motor and Generator Manufacturing	335312	18
Switchgear and Switchboard, and Relay and Industrial Control Apparatus Manufacturing	335315	72
Battery Manufacturing	335910	6
Communication and Energy Wire and Cable Manufacturing	335920	31
Wiring Device Manufacturing	335930	21
All Other Electrical Equipment and Component Manufacturing	335990	74
Motor Vehicle and Parts		**368**
Automobile and Light-Duty Motor Vehicle Manufacturing	336110	11
Heavy-Duty Truck Manufacturing	336120	18
Motor Vehicle Body Manufacturing	336211	41
Truck Trailer Manufacturing	336212	52
Motor Home, Travel Trailer and Camper Manufacturing	336215	15
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	336310	25
Motor Vehicle Electrical and Electronic Equipment Manufacturing	336320	28
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	336330	11
Motor Vehicle Brake System Manufacturing	336340	15
Motor Vehicle Transmission and Power Train Parts Manufacturing	336350	12
Motor Vehicle Seating and Interior Trim Manufacturing	336360	19
Motor Vehicle Metal Stamping	336370	35
Other Motor Vehicle Parts Manufacturing	336390	86
Aerospace Product and Parts		**86**
Aerospace Product and Parts Manufacturing	336410	86
All Other Transportation Equipment		**99**
Railroad Rolling Stock Manufacturing	336510	8
Ship Building and Repairing	336611	9
Boat Building	336612	42
Other Transportation Equipment Manufacturing	336990	40
Furniture and Related Product		**417**
Wood Kitchen Cabinet and Counter Top Manufacturing	337110	83
Upholstered Household Furniture Manufacturing	337121	30
Other Wood Household Furniture Manufacturing	337123	86
Household Furniture (except Wood and Upholstered) Manufacturing	337126	20
Institutional Furniture Manufacturing	337127	42
Wood Office Furniture, including Custom Architectural Woodwork, Manufacturing	337213	30
Office Furniture (except Wood) Manufacturing	337214	28
Showcase, Partition, Shelving and Locker Manufacturing	337215	73
Mattress Manufacturing	337910	13
Blind and Shade Manufacturing	337920	12
Other Manufacturing Industries		**950**
Hosiery and Sock Mills	315110	8

Table 14-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2007, in 2008

	NAICS Code	Performers
		number
Other Clothing Knitting Mills	315190	18
Cut and Sew Clothing Contracting	315210	29
Men's and Boys' Cut and Sew Underwear and Nightwear Manufacturing	315221	1
Men's and Boys' Cut and Sew Suit, Coat and Overcoat Manufacturing	315222	9
Men's and Boys' Cut and Sew Shirt Manufacturing	315226	7
Men's and Boys' Cut and Sew Trouser, Slack and Jean Manufacturing	315227	6
Other Men's and Boys' Cut and Sew Clothing Manufacturing	315229	19
Women's and Girls' Cut and Sew Lingerie, Loungewear and Nightwear Manufacturing	315231	15
Women's and Girls' Cut and Sew Blouse and Shirt Manufacturing	315232	4
Women's and Girls' Cut and Sew Dress Manufacturing	315233	15
Women's and Girls' Cut and Sew Suit, Coat, Tailored Jacket and Skirt Manufacturing	315234	12
Other Women's and Girls' Cut and Sew Clothing Manufacturing	315239	27
Infants' Cut and Sew Clothing Manufacturing	315291	1
Fur and Leather Clothing Manufacturing	315292	25
All Other Cut and Sew Clothing Manufacturing	315299	11
Clothing Accessories and Other Clothing Manufacturing	315990	22
Leather and Hide Tanning and Finishing	316110	10
Footwear Manufacturing	316210	17
Other Leather and Allied Product Manufacturing	316990	19
Medical Equipment and Supplies Manufacturing	339110	195
Jewellery and Silverware Manufacturing	339910	31
Sporting and Athletic Goods Manufacturing	339920	89
Doll, Toy and Game Manufacturing	339930	28
Office Supplies (except Paper) Manufacturing	339940	15
Sign Manufacturing	339950	54
All Other Miscellaneous Manufacturing	339990	263
Services		**12,000**
Wholesale Trade		**2,154**
Live Animal Wholesaler-Distributors	411110	6
Oilseed and Grain Wholesaler-Distributors	411120	9
Nursery Stock and Plant Wholesaler-Distributors	411130	22
Other Farm Product Wholesaler-Distributors	411190	6
Petroleum Product Wholesaler-Distributors	412110	15
General-Line Food Wholesaler-Distributors	413110	25
Dairy and Milk Products Wholesaler-Distributors	413120	5
Poultry and Egg Wholesaler-Distributors	413130	4
Fish and Seafood Product Wholesaler-Distributors	413140	11
Fresh Fruit and Vegetable Wholesaler-Distributors	413150	36
Red Meat and Meat Product Wholesaler-Distributors	413160	28
Other Specialty-Line Food Wholesaler-Distributors	413190	112
Non-Alcoholic Beverage Wholesaler-Distributors	413210	5
Alcoholic Beverage Wholesaler-Distributors	413220	3
Cigarette and Tobacco Product Wholesaler-Distributors	413310	1
Clothing and Clothing Accessories Wholesaler-Distributors	414110	81
Footwear Wholesaler-Distributors	414120	7
Piece Goods, Notions and Other Dry Goods Wholesaler-Distributors	414130	25
Home Entertainment Equipment Wholesaler-Distributors	414210	10
Household Appliance Wholesaler-Distributors	414220	12
China, Glassware, Crockery and Pottery Wholesaler-Distributors	414310	3
Floor Covering Wholesaler-Distributors	414320	3
Linen, Drapery and Other Textile Furnishings Wholesaler-Distributors	414330	4
Other Home Furnishings Wholesaler-Distributors	414390	23
Jewellery and Watch Wholesaler-Distributors	414410	5
Book, Periodical and Newspaper Wholesaler-Distributors	414420	9
Photographic Equipment and Supplies Wholesaler-Distributors	414430	4
Sound Recording Wholesalers	414440	0
Video Cassette Wholesalers	414450	0
Toy and Hobby Goods Wholesaler-Distributors	414460	12
Amusement and Sporting Goods Wholesaler-Distributors	414470	19
Pharmaceuticals and Pharmacy Supplies Wholesaler-Distributors	414510	70
Toiletries, Cosmetics and Sundries Wholesaler-Distributors	414520	33
New and Used Automobile and Light-Duty Truck Wholesaler-Distributors	415110	2
Truck, Truck Tractor and Bus Wholesaler-Distributors	415120	8
Recreational and Other Motor Vehicles Wholesaler-Distributors	415190	3

Table 14-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2007, in 2008

	NAICS Code	Performers
		number
Tire Wholesaler-Distributors	415210	0
Other New Motor Vehicle Parts and Accessories Wholesaler-Distributors	415290	42
Used Motor Vehicle Parts and Accessories Wholesaler-Distributors	415310	7
Electrical Wiring and Construction Supplies Wholesaler-Distributors	416110	47
Plumbing, Heating and Air-Conditioning Equipment and Supplies Wholesaler-Distributors	416120	65
Metal Service Centres	416210	39
General-Line Building Supplies Wholesaler-Distributors	416310	14
Lumber, Plywood and Millwork Wholesaler-Distributors	416320	22
Hardware Wholesaler-Distributors	416330	27
Paint, Glass and Wallpaper Wholesaler-Distributors	416340	9
Other Specialty-Line Building Supplies Wholesaler-Distributors	416390	47
Farm, Lawn and Garden Machinery and Equipment Wholesaler-Distributors	417110	41
Construction and Forestry Machinery, Equipment and Supplies Wholesaler-Distributors	417210	30
Mining and Oil and Gas Well Machinery, Equipment and Supplies Wholesaler-Distributors	417220	18
Industrial Machinery, Equipment and Supplies Wholesaler-Distributors	417230	215
Computer, Computer Peripheral and Pre-Packaged Software Wholesaler-Distributors	417310	133
Electronic Components, Navigational and Communications Equipment and Supplies Wholesaler-Distributors	417320	100
Office and Store Machinery and Equipment Wholesaler-Distributors	417910	38
Service Establishment Machinery, Equipment and Supplies Wholesaler-Distributors	417920	33
Professional Machinery, Equipment and Supplies Wholesaler-Distributors	417930	107
All Other Machinery, Equipment and Supplies Wholesaler-Distributors	417990	52
Recyclable Metal Wholesaler-Distributors	418110	21
Recyclable Paper and Paperboard Wholesaler-Distributors	418120	3
Other Recyclable Material Wholesaler-Distributors	418190	47
Stationery and Office Supplies Wholesaler-Distributors	418210	6
Other Paper and Disposable Plastic Product Wholesaler-Distributors	418220	9
Agricultural Feed Wholesaler-Distributors	418310	20
Seed Wholesaler-Distributors	418320	15
Agricultural Chemical and Other Farm Supplies Wholesaler-Distributors	418390	25
Chemical (except Agricultural) and Allied Product Wholesaler-Distributors	418410	80
Log and Wood Chip Wholesaler-Distributors	418910	8
Mineral, Ore and Precious Metal Wholesaler-Distributors	418920	1
Second-Hand Goods (except Machinery and Automotive) Wholesaler-Distributors	418930	1
All Other Wholesaler-Distributors	418990	112
Business-to-Business Electronic Markets	419110	2
Wholesale Trade Agents and Brokers	419120	97
Retail Trade		**611**
New Car Dealers	441110	3
Used Car Dealers	441120	6
Recreational Vehicle Dealers	441210	3
Motorcycle, Boat and Other Motor Vehicle Dealers	441220	15
Automotive Parts and Accessories Stores	441310	24
Tire Dealers	441320	2
Furniture Stores	442110	7
Floor Covering Stores	442210	3
Window Treatment Stores	442291	3
Print and Picture Frame Stores	442292	4
All Other Home Furnishings Stores	442298	8
Appliance, Television and Other Electronics Stores	443110	34
Computer and Software Stores	443120	67

Table 14-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2007, in 2008

	NAICS Code	Performers
		number
Camera and Photographic Supplies Stores	443130	1
Home Centres	444110	8
Paint and Wallpaper Stores	444120	7
Hardware Stores	444130	10
Other Building Material Dealers	444190	29
Outdoor Power Equipment Stores	444210	2
Nursery and Garden Centres	444220	17
Supermarkets and Other Grocery (except Convenience) Stores	445110	12
Convenience Stores	445120	1
Meat Markets	445210	25
Fish and Seafood Markets	445220	5
Fruit and Vegetable Markets	445230	4
Baked Goods Stores	445291	43
Confectionery and Nut Stores	445292	7
All Other Specialty Food Stores	445299	16
Beer, Wine and Liquor Stores	445310	4
Pharmacies and Drug Stores	446110	11
Cosmetics, Beauty Supplies and Perfume Stores	446120	8
Optical Goods Stores	446130	6
Food (Health) Supplement Stores	446191	12
All Other Health and Personal Care Stores	446199	15
Gasoline Stations with Convenience Stores	447110	2
Other Gasoline Stations	447190	4
Men's Clothing Stores	448110	0
Women's Clothing Stores	448120	4
Children's and Infants' Clothing Stores	448130	3
Family Clothing Stores	448140	7
Clothing Accessories Stores	448150	1
Fur Stores	448191	0
All Other Clothing Stores	448199	8
Shoe Stores	448210	2
Jewellery Stores	448310	9
Luggage and Leather Goods Stores	448320	0
Sporting Goods Stores	451110	18
Hobby, Toy and Game Stores	451120	3
Sewing, Needlework and Piece Goods Stores	451130	4
Musical Instrument and Supplies Stores	451140	2
Book Stores and News Dealers	451210	2
Pre-Recorded Tape, Compact Disc and Record Stores	451220	1
Department Stores	452110	1
Warehouse Clubs and Superstores	452910	0
Home and Auto Supplies Stores	452991	0
All Other Miscellaneous General Merchandise Stores	452999	10
Florists	453110	2
Office Supplies and Stationery Stores	453210	2
Gift, Novelty and Souvenir Stores	453220	4
Used Merchandise Stores	453310	2
Pet and Pet Supplies Stores	453910	9
Art Dealers	453920	1
Manufactured (Mobile) Home Dealers	453930	0
Beer and Wine-Making Supplies Stores	453992	4
All Other Miscellaneous Store Retailers (except Beer and Wine-Making Supplies Stores)	453999	34
Internet Shopping	454111	23
Electronic Auctions	454112	0
Mail-Order Houses	454113	18
Vending Machine Operators	454210	1
Heating Oil Dealers	454311	0
Liquefied Petroleum Gas (Bottled Gas) Dealers	454312	0
Other Fuel Dealers	454319	1
Other Direct Selling Establishments	454390	7
Transportation and Warehousing		**205**
Scheduled Air Transportation	481110	1
Non-Scheduled Chartered Air Transportation	481214	6
Non-Scheduled Specialty Flying Services	481215	8
Short-Haul Freight Rail Transportation	482112	0
Mainline Freight Rail Transportation	482113	1

Table 14-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2007, in 2008

	NAICS Code	Performers
		number
Passenger Rail Transportation	482114	0
Deep Sea, Coastal and Great Lakes Water Transportation (except by Ferries)	483115	3
Deep Sea, Coastal and Great Lakes Water Transportation by Ferries	483116	0
Inland Water Transportation (except by Ferries)	483213	0
Inland Water Transportation by Ferries	483214	0
General Freight Trucking, Local	484110	10
General Freight Trucking, Long Distance, Truck-Load	484121	14
General Freight Trucking, Long Distance, Less Than Truck-Load	484122	3
Used Household and Office Goods Moving	484210	4
Bulk Liquids Trucking, Local	484221	2
Dry Bulk Materials Trucking, Local	484222	7
Forest Products Trucking, Local	484223	4
Other Specialized Freight (except Used Goods) Trucking, Local	484229	2
Bulk Liquids Trucking, Long Distance	484231	0
Dry Bulk Materials Trucking, Long Distance	484232	2
Forest Products Trucking, Long Distance	484233	3
Other Specialized Freight (except Used Goods) Trucking, Long Distance	484239	8
Urban Transit Systems	485110	0
Interurban and Rural Bus Transportation	485210	0
Taxi Service	485310	0
Limousine Service	485320	0
School and Employee Bus Transportation	485410	5
Charter Bus Industry	485510	2
Other Transit and Ground Passenger Transportation	485990	1
Pipeline Transportation of Crude Oil	486110	1
Pipeline Transportation of Natural Gas	486210	3
Pipeline Transportation of Refined Petroleum Products	486910	0
All Other Pipeline Transportation	486990	0
Scenic and Sightseeing Transportation, Land	487110	0
Scenic and Sightseeing Transportation, Water	487210	1
Scenic and Sightseeing Transportation, Other	487990	2
Air Traffic Control	488111	0
Other Airport Operations	488119	3
Other Support Activities for Air Transportation	488190	30
Support Activities for Rail Transportation	488210	3
Port and Harbour Operations	488310	1
Marine Cargo Handling	488320	1
Marine Salvage Services	488331	0
Ship Piloting Services	488332	0
Other Navigational Services to Shipping	488339	1
Other Support Activities for Water Transportation	488390	4
Motor Vehicle Towing	488410	2
Other Support Activities for Road Transportation	488490	7
Marine Shipping Agencies	488511	0
Other Freight Transportation Arrangement	488519	18
Other Support Activities for Transportation	488990	9
Postal Service	491110	1
Couriers	492110	4
Local Messengers and Local Delivery	492210	2
General Warehousing and Storage	493110	13
Refrigerated Warehousing and Storage	493120	6
Farm Product Warehousing and Storage	493130	2
Other Warehousing and Storage	493190	5
Information and Cultural Industries		**899**
Newspaper Publishers	511110	5
Periodical Publishers	511120	10
Book Publishers	511130	12
Database and Directory Publishers	511140	11
Other Publishers	511190	3
Software Publishers	511210	419
Motion Picture and Video Production	512110	43
Motion Picture and Video Distribution	512120	1
Motion Picture and Video Exhibition	512130	0
Post-Production and Other Motion Picture and Video Industries	512190	27
Record Production	512210	0
Integrated Record Production/Distribution	512220	0
Music Publishers	512230	0
Sound Recording Studios	512240	3
Other Sound Recording Industries	512290	0
Radio Broadcasting	515110	0

Table 14-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2007, in 2008

	NAICS Code	Performers
		number
Television Broadcasting	515120	7
Pay and Specialty Television	515210	1
Wired Telecommunications Carriers (except Cable)	517111	27
Cable and Other Program Distribution	517112	11
Wireless Telecommunications Carriers (except Satellite)	517210	21
Satellite Telecommunications	517410	12
Other Telecommunications	517910	72
Data Processing, Hosting, and Related Services	518210	100
News Syndicates	519110	3
Libraries	519121	0
Archives	519122	0
Internet Publishing and Broadcasting, and Web Search Portals	519130	93
All Other Information Services	519190	18
Finance, Insurance and Real Estate		**363**
Monetary Authorities - Central Bank	521110	0
Personal and Commercial Banking Industry	522111	7
Corporate and Institutional Banking Industry	522112	1
Local Credit Unions	522130	2
Other Depository Credit Intermediation	522190	0
Credit Card Issuing	522210	2
Sales Financing	522220	2
Consumer Lending	522291	2
All Other Non-Depository Credit Intermediation	522299	11
Mortgage and Non-mortgage Loan Brokers	522310	3
Central Credit Unions	522321	1
Other Financial Transactions Processing and Clearing House Activities	522329	11
Other Activities Related to Credit Intermediation	522390	2
Investment Banking and Securities Dealing	523110	4
Securities Brokerage	523120	6
Commodity Contracts Dealing	523130	4
Commodity Contracts Brokerage	523140	1
Securities and Commodity Exchanges	523210	3
Miscellaneous Intermediation	523910	52
Portfolio Management	523920	43
Investment Advice	523930	10
All Other Financial Investment Activities	523990	12
Direct Individual Life, Health and Medical Insurance Carriers	524111	2
Direct Group Life, Health and Medical Insurance Carriers	524112	3
Direct General Property and Casualty Insurance Carriers	524121	7
Direct, Private, Automobile Insurance Carriers	524122	1
Direct, Public, Automobile Insurance Carriers	524123	0
Direct Property Insurance Carriers	524124	0
Direct Liability Insurance Carriers	524125	0
Other Direct Insurance (except Life, Health and Medical) Carriers	524129	2
Life Reinsurance Carriers	524131	0
Accident and Sickness Reinsurance Carriers	524132	0
Automobile Reinsurance Carriers	524133	0
Property Reinsurance Carriers	524134	0
Liability Reinsurance Carriers	524135	0
General and Other Reinsurance Carriers	524139	0
Insurance Agencies and Brokerages	524210	9
Claims Adjusters	524291	2
All Other Insurance Related Activities	524299	4
Trusteed Pension Funds	526111	0
Non-Trusteed Pension Funds	526112	0
Equity Funds - Canadian	526911	0
Equity Funds - Foreign	526912	0
Mortgage Funds	526913	0
Money Market Funds	526914	0
Bond and Income / Dividend Funds - Canadian	526915	0
Bond and Income / Dividend Funds - Foreign	526916	0
Balanced Funds / Asset Allocation Funds	526917	0
Other Open-Ended Funds	526919	0
Segregated (except Pension) Funds	526930	0
Securitization Vehicles	526981	0
All Other Miscellaneous Funds and Financial Vehicles	526989	1
Lessors of Residential Buildings and Dwellings (except Social Housing Projects)	531111	5
Lessors of Social Housing Projects	531112	0
Lessors of Non-Residential Buildings (except Mini-Warehouses)	531120	19
Self-Storage Mini-Warehouses	531130	1

Table 14-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2007, in 2008

	NAICS Code	Performers
		number
Lessors of Other Real Estate Property	531190	3
Real Estate Agents	531211	0
Offices of Real Estate Brokers	531212	6
Real Estate Property Managers	531310	14
Offices of Real Estate Appraisers	531320	2
Other Activities Related to Real Estate	531390	5
Passenger Car Rental	532111	0
Passenger Car Leasing	532112	1
Truck, Utility Trailer and RV (Recreational Vehicle) Rental and Leasing	532120	2
Consumer Electronics and Appliance Rental	532210	1
Formal Wear and Costume Rental	532220	0
Video Tape and Disc Rental	532230	2
Other Consumer Goods Rental	532290	7
General Rental Centres	532310	0
Construction, Transportation, Mining, and Forestry Machinery and Equipment Rental and Leasing	532410	29
Office Machinery and Equipment Rental and Leasing	532420	2
Other Commercial and Industrial Machinery and Equipment Rental and Leasing	532490	28
Lessors of Non-Financial Intangible Assets (Except Copyrighted Works)	533110	26
Architectural, Engineering and Related Services		**1,036**
Architectural Services	541310	19
Landscape Architectural Services	541320	2
Engineering Services	541330	780
Drafting Services	541340	20
Building Inspection Services	541350	8
Geophysical Surveying and Mapping Services	541360	32
Surveying and Mapping (except Geophysical) Services	541370	44
Testing Laboratories	541380	131
Computer System Design and Related		**2,954**
Computer Systems Design and Related Services	541510	2,954
Management, Scientific and Technical Consulting		**525**
Administrative Management and General Management Consulting Services	541611	165
Human Resources Consulting Services	541612	12
Other Management Consulting Services	541619	107
Environmental Consulting Services	541620	86
Other Scientific and Technical Consulting Services	541690	155
Scientific Research and Development		**972**
Scientific Research and Development Services	5417	972
Health Care and Social Assistance		**330**
Offices of Physicians	621110	144
Offices of Dentists	621210	29
Offices of Chiropractors	621310	4
Offices of Optometrists	621320	5
Offices of Mental Health Practitioners (except Physicians)	621330	9
Offices of Physical, Occupational, and Speech Therapists and Audiologists	621340	6
Offices of All Other Health Practitioners	621390	14
Family Planning Centres	621410	3
Out-Patient Mental Health and Substance Abuse Centres	621420	1
Community Health Centres	621494	4
All Other Out-Patient Care Centres	621499	5
Medical and Diagnostic Laboratories	621510	78
Home Health Care Services	621610	4
Ambulance (except Air Ambulance) Services	621911	0
Air Ambulance Services	621912	0
All Other Ambulatory Health Care Services	621990	4
General (except Paediatric) Hospitals	622111	1
Paediatric Hospitals	622112	0
Psychiatric and Substance Abuse Hospitals	622210	1
Specialty (except Psychiatric and Substance Abuse) Hospitals	622310	3
Nursing Care Facilities	623110	0
Residential Developmental Handicap Facilities	623210	0
Residential Substance Abuse Facilities	623221	1
Homes for the Psychiatrically Disabled	623222	0
Community Care Facilities for the Elderly	623310	0
Transition Homes for Women	623991	0
Homes for Emotionally Disturbed Children	623992	0
Homes for the Physically Handicapped or Disabled	623993	0
All Other Residential Care Facilities	623999	0
Child and Youth Services	624110	1

Table 14-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2007, in 2008

	NAICS Code	Performers
		number
Services for the Elderly and Persons with Disabilities	624120	2
Other Individual and Family Services	624190	2
Community Food Services	624210	1
Community Housing Services	624220	1
Emergency and Other Relief Services	624230	3
Vocational Rehabilitation Services	624310	3
Child Day-Care Services	624410	1
All Other Services		**1,951**
Offices of Lawyers	541110	5
Offices of Notaries	541120	1
Other Legal Services	541190	11
Offices of Accountants	541212	9
Tax Preparation Services	541213	0
Bookkeeping, Payroll and Related Services	541215	20
Interior Design Services	541410	5
Industrial Design Services	541420	93
Graphic Design Services	541430	58
Other Specialized Design Services	541490	15
Advertising Agencies	541810	72
Public Relations Services	541820	4
Media Buying Agencies	541830	3
Media Representatives	541840	7
Display Advertising	541850	24
Direct Mail Advertising	541860	4
Advertising Material Distribution Services	541870	3
Specialty Advertising Distributors	541891	10
All Other Services Related to Advertising	541899	13
Marketing Research and Public Opinion Polling	541910	29
Photographic Services	541920	17
Translation and Interpretation Services	541930	5
Veterinary Services	541940	9
All Other Professional, Scientific and Technical Services	541990	93
Holding Companies	551113	214
Head Offices	551114	2
Office Administrative Services	561110	114
Facilities Support Services	561210	1
Employment Placement Agencies and Exectutive Search Services	561310	10
Temporary Help Services	561320	15
Employee Leasing Services	561330	2
Document Preparation Services	561410	7
Telephone Call Centres	561420	17
Business Service Centres	561430	20
Collection Agencies	561440	5
Credit Bureaus	561450	7
Other Business Support Services	561490	11
Travel Agencies	561510	9
Tour Operators	561520	5
Other Travel Arrangement and Reservation Services	561590	6
Investigation Services	561611	3
Security Guard and Patrol Services	561612	5
Armoured Car Services	561613	0
Security Systems Services (except Locksmiths)	561621	38
Locksmiths	561622	6
Exterminating and Pest Control Services	561710	4
Window Cleaning Services	561721	1
Janitorial Services (except Window Cleaning)	561722	11
Landscaping Services	561730	35
Carpet and Upholstery Cleaning Services	561740	6
Duct and Chimney Cleaning Services	561791	3
All Other Services to Buildings and Dwellings	561799	5
Packaging and Labelling Services	561910	34
Convention and Trade Show Organizers	561920	10
All Other Support Services	561990	87
Elementary and Secondary Schools	611110	1
Community Colleges and C.E.G.E.P.s	611210	3
Universities	611310	0
Business and Secretarial Schools	611410	2
Computer Training	611420	14
Professional and Management Development Training	611430	15
Technical and Trade Schools	611510	9

Table 14-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2007, in 2008

	NAICS Code	Performers
		number
Fine Arts Schools	611610	1
Athletic Instruction	611620	7
Language Schools	611630	1
All Other Schools and Instruction	611690	18
Educational Support Services	611710	16
Theatre (except Musical) Companies	711111	1
Musical Theatre and Opera Companies	711112	0
Dance Companies	711120	0
Musical Groups and Artists	711130	0
Other Performing Arts Companies	711190	1
Sports Teams and Clubs	711211	0
Horse Race Tracks	711213	1
Other Spectator Sports	711218	2
Live Theatres and Other Performing Arts Presenters with Facilities	711311	0
Sports Stadiums and Other Presenters with Facilities	711319	1
Performing Arts Promoters (Presenters) without Facilities	711321	2
Festivals without Facilities	711322	1
Sports Presenters and Other Presenters without Facilities	711329	2
Agents and Managers for Artists, Athletes, Entertainers and Other Public Figures	711410	0
Independent Artists, Visual Arts	711511	6
Independent Actors, Comedians and Performers	711512	3
Independent Writers and Authors	711513	4
Non-Commercial Art Museums and Galleries	712111	0
History and Science Museums	712115	0
Other Museums	712119	0
Historic and Heritage Sites	712120	0
Zoos and Botanical Gardens	712130	1
Nature Parks and Other Similar Institutions	712190	0
Amusement and Theme Parks	713110	1
Amusement Arcades	713120	0
Casinos (except Casino Hotels)	713210	0
Lotteries	713291	2
All Other Gambling Industries	713299	2
Golf Courses and Country Clubs	713910	2
Skiing Facilities	713920	3
Marinas	713930	0
Fitness and Recreational Sports Centres	713940	3
Bowling Centres	713950	0
All Other Amusement and Recreation Industries	713990	5
Hotels	721111	3
Motor Hotels	721112	0
Resorts	721113	0
Motels	721114	0
Casino Hotels	721120	0
Bed and Breakfast	721191	1
Housekeeping Cottages and Cabins	721192	0
Hunting and Fishing Camps	721212	0
Recreational (except Hunting and Fishing) and Vacation Camps	721213	1
Rooming and Boarding Houses	721310	0
Full-Service Restaurants	722110	30
Limited-Service Eating Places	722210	25
Food Service Contractors	722310	4
Caterers	722320	14
Mobile Food Services	722330	1
Drinking Places (Alcoholic Beverages)	722410	6
General Automotive Repair	811111	45
Automotive Exhaust System Repair	811112	2
Other Automotive Mechanical and Electrical Repair and Maintenance	811119	17
Automotive Body, Paint and Interior Repair and Maintenance	811121	30
Automotive Glass Replacement Shops	811122	1
Car Washes	811192	2
All Other Automotive Repair and Maintenance	811199	3
Electronic and Precision Equipment Repair and Maintenance	811210	52
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	811310	251
Home and Garden Equipment Repair and Maintenance	811411	13
Appliance Repair and Maintenance	811412	8
Reupholstery and Furniture Repair	811420	8
Footwear and Leather Goods Repair	811430	0

Table 14-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2007, in 2008

	NAICS Code	Performers
		number
Other Personal and Household Goods Repair and Maintenance	811490	25
Barber Shops	812114	1
Beauty Salons	812115	3
Unisex Hair Salons	812116	0
Other Personal Care Services	812190	13
Funeral Homes	812210	0
Cemeteries and Crematoria	812220	0
Coin-Operated Laundries and Dry Cleaners	812310	1
Dry Cleaning and Laundry Services (except Coin-Operated)	812320	8
Linen and Uniform Supply	812330	3
Pet Care (except Veterinary) Services	812910	1
Photo Finishing Laboratories (except One-Hour)	812921	6
One-Hour Photo Finishing	812922	0
Parking Lots and Garages	812930	2
All Other Personal Services	812990	7
Religious Organizations	813110	0
Grant-Making and Giving Services	813210	1
Social Advocacy Organizations	813310	4
Civic and Social Organizations	813410	2
Business Associations	813910	10
Professional Organizations	813920	8
Labour Organizations	813930	1
Political Organizations	813940	0
Other Membership Organizations	813990	0
Private Households	814110	1
Defence Services	911110	0
Federal Courts of Law	911210	0
Federal Correctional Services	911220	0
Federal Police Services	911230	0
Federal Regulatory Services	911240	0
Other Federal Protective Services	911290	0
Federal Labour and Employment Services	911310	0
Immigration Services	911320	0
Other Federal Labour, Employment and Immigration Services	911390	0
Foreign Affairs	911410	0
International Assistance	911420	1
Other Federal Government Public Administration	911910	1
Provincial Courts of Law	912110	0
Provincial Correctional Services	912120	0
Provincial Police Services	912130	0
Provincial Fire-Fighting Services	912140	0
Provincial Regulatory Services	912150	0
Other Provincial Protective Services	912190	0
Provincial Labour and Employment Services	912210	0
Other Provincial and Territorial Public Administration	912910	1
Municipal Courts of Law	913110	0
Municipal Correctional Services	913120	0
Municipal Police Services	913130	0
Municipal Fire-Fighting Services	913140	0
Municipal Regulatory Services	913150	0
Other Municipal Protective Services	913190	1
Other Local, Municipal and Regional Public Administration	913910	0
Aboriginal Public Administration	914110	0
International and Other Extra-Territorial Public Administration	919110	0

Note(s): Empty cells under the NAICS column appear where there is a subtotal of the number of industry performers.

Table 15
Enterprises with one or more employee, by industry, with percentage change from 2004 to 2008 and percentage distribution, 2008

	2004	2005	2006	2007	2008	Change from 2004 to 2008	2008 distribution
	number					percent	
Total	**952,985**	**959,856**	**973,485**	**974,910**	**985,288**	**3.3**	**100.0**
Agriculture, forestry, fishing and hunting	**57,048**	**56,254**	**54,926**	**49,119**	**49,270**	**-15.8**	**5.0**
Agriculture	40,870	40,393	39,544	35,201	35,935	-13.7	3.6
Forestry and logging	9,971	9,722	9,414	8,410	7,881	-26.5	0.8
Fishing, hunting and trapping	6,207	6,139	5,968	5,508	5,454	-13.8	0.6
Mining and oil and gas extraction	**7,315**	**7,639**	**8,332**	**8,326**	**8,418**	**13.1**	**0.9**
Oil and gas extraction	5,911	6,190	6,780	6,684	6,755	12.5	0.7
Mining	1,404	1,449	1,552	1,642	1,663	15.6	0.2
Utilities	**3,162**	**3,248**	**3,423**	**3,485**	**3,220**	**1.8**	**0.3**
Electric power	433	435	457	469	323	-34.1	0.0
Other utilities	2,729	2,813	2,966	3,016	2,897	5.8	0.3
Construction	**110,213**	**113,733**	**118,278**	**116,165**	**120,539**	**8.6**	**12.2**
Manufacturing	**54,669**	**53,885**	**53,580**	**52,553**	**51,485**	**-6.2**	**5.2**
Food	5,575	5,404	5,254	5,226	5,083	-9.7	0.5
Beverage and tobacco	580	578	630	618	627	7.5	0.1
Textile	1,625	1,563	1,477	1,410	1,355	-19.9	0.1
Wood products	3,702	3,745	3,729	3,675	3,583	-3.3	0.4
Paper	635	617	590	588	555	-14.4	0.1
Printing	4,697	4,655	4,535	4,357	4,233	-11.0	0.4
Petroleum and coal products	128	131	147	153	139	7.9	0.0
Pharmaceutical and medicine	262	268	267	265	261	-0.4	0.0
Other chemicals	1,520	1,511	1,507	1,487	1,439	-5.6	0.1
Plastic products	1,857	1,846	1,775	1,739	1,711	-8.5	0.2
Rubber products	303	288	281	275	265	-14.3	0.0
Non-metallic mineral products	1,916	1,854	1,857	1,870	1,837	-4.3	0.2
Primary metal (ferrous)	284	303	314	325	293	3.1	0.0
Primary metal (non-ferrous)	294	294	281	278	265	-10.9	0.0
Fabricated metal products	8,000	7,947	7,974	7,907	7,893	-1.4	0.8
Machinery	5,071	5,091	5,109	5,041	4,963	-2.2	0.5
Computer and peripheral equipment	258	261	257	247	246	-4.9	0.0
Communications equipment	290	297	296	283	274	-5.8	0.0
Semiconductor and other electronic components	473	443	439	422	397	-19.1	0.0
Navigational, measuring, medical and control instruments	808	766	769	750	727	-11.1	0.1
Other computer and electronic products	191	183	191	187	179	-6.7	0.0
Electrical equipment, appliance and components	1,078	1,085	1,085	1,073	1,049	-2.8	0.1
Motor vehicle and parts	1,301	1,298	1,308	1,295	1,263	-3.0	0.1
Aerospace products and parts	212	218	221	233	223	4.9	0.0
All other transportation equipment	636	617	602	558	520	-22.3	0.1
Furniture and related products	4,349	4,269	4,350	4,268	4,289	-1.4	0.4
Other manufacturing industries	8,624	8,353	8,335	8,023	7,816	-10.3	0.8
Services	**720,578**	**725,097**	**734,946**	**745,262**	**752,356**	**4.2**	**76.4**
Wholesale trade	51,951	51,789	52,281	51,184	50,731	-2.4	5.1
Retail trade	107,511	106,531	105,893	104,288	104,282	-3.1	10.6
Transportation and warehousing	42,481	43,157	44,528	43,666	45,397	6.4	4.6
Information and cultural industries	11,224	11,263	11,450	10,934	10,781	-4.1	1.1
Finance, insurance and real estate	64,095	69,398	70,740	62,436	63,201	-1.4	6.4
Architectural, engineering and related services	17,228	17,675	18,576	17,643	17,664	2.5	1.8
Computer system design and related services	20,709	21,610	23,174	21,865	23,154	10.6	2.3
Management, scientific and technical consulting services	27,019	27,483	27,045	24,258	24,471	-10.4	2.5
Scientific research and development services	2,267	2,298	2,422	2,403	2,432	6.8	0.2
Health care and social assistance	77,765	77,959	79,256	81,031	81,599	4.7	8.3
All other services	298,328	295,934	299,581	325,554	328,644	9.2	33.4

Note(s): Components may not add to totals due to rounding.
Source(s): Statistics Canada, Business Register, enterprises with one or more employees, December 2004-2008.

Survey methodology

The 2009 survey

The 2009 survey collected data on four years. The four years were:

- 2008 for which the expenditures data are revised, if required, and are considered as final;
- 2009 for which respondents report actual expenditures,
- 2010 for which respondents report planned expenditures, and
- 2011 for which respondents forecast spending intentions.

Estimates are not available from administrative data for 2010 and 2011, and for 2009 are subject to revision. Therefore, estimates are imputed for planned expenditures and spending intentions that are based on the administrative data.

The sample was made up of firms which had reported R&D in the previous surveys, firms claiming an R&D income tax incentive for 2009, firms reported by government respondents as R&D contractors or grantees for 2009 to 2010, firms reported by other firms as funding or performing of R&D, and firms indicated in some other way, such as newspaper or journal articles or provincial directories. These performing and/or funding firms received the Research and Development in Canadian Industry (RDCI) questionnaire, covering R&D performing expenditures for: 2008, 2009, 2010 and 2011. The largest performers by industry group were selected, along with a random sample of small and medium R&D performers.

The 2009 survey was mailed out in August 2010.

Upcoming and recent changes to survey methodology

The RDCI survey is continuing through an ongoing process of change. There have been a series of changes in methodology over the past few reference years and further changes are anticipated. These changes are itemized below by reference year in which they are being or were implemented.

Changes implemented for the 2009 reference year

Data users are advised that the RDCI was formally linked to the Business Register (BR) for reference year 2009. The BR is the survey frame for all industry-based surveys. As part of the linking process some statistical entities which were treated as enterprises on the RDCI frame were determined to be in fact companies on the BR (*http://www.statcan.gc.ca/concepts/units-unites-eng.htm*). Steps were taken to ensure consistency of the data at the industry level, but there were some impact in the distribution R&D expenditures and personnel at the industry level.

Changes implemented for the 2008 reference year

For reference year 2008 greater use was made of information available from the Business Register. This included information about the business structure of larger firms who performed R&D and who had business operations in multiple provinces. This change also had some impact on the count of R&D performers by province, as information about the structure of the enterprise has been used to allocate R&D expenditures as reported through administrative data across multiple provinces where applicable. Previously, the expenditures and personnel were reported in one province only, based on the province in the address from which the tax records were filed.

For reference years 2008, and those following, the survey sample methodology was revised to improve the quality of forecast estimates at the industry level. The entire population of all known R&D performing firms and firms which fund or purchase technologies were sorted by NAICS-based industrial categories and then divided into the following groups:

1. Special entities were included in a "must-take" stratum. These entities included industrial non-profit organizations, known R&D performers that do not file scientific research and experimental development (SR&ED) tax incentive applications, and technology purchasers or vendors.

2. The largest R&D performers in each industrial category compose a "take-all" stratum. These large R&D performers cover about two-thirds of R&D expenditures in each of the given industry groups.

3. Mid-size R&D performers in each industrial category were placed in a "take-some" stratum, which meant that these firms were randomly selected within each industrial category.

4. The smallest R&D performers in each industrial category were placed in a "take-none" stratum and excluded from the sample so as to reduce response burden. These firms continue to be included in our tabulations as their key R&D data are obtained from CRA administrative data from the SR&ED tax incentive program. Detailed data not directly available from administrative sources, such as level of education of R&D personnel, are imputed.

Changes implemented for the 2007 reference year

For reference year 2007, all firms believed to be performing or funding one and a half million dollars or more of R&D were sent a questionnaire. The sample was composed of firms which had reported R&D in the previous survey, of firms claiming an R&D tax incentive for 2007, of firms reported by government respondents as R&D contractors or grantees for 2007 to 2008, of firms reported by other firms as funding or performing of R&D, and of firms indicated in some other way, such as newspaper or journal articles or provincial directories. These larger performing and/or funding firms received the Research and Development in Canadian Industry questionnaire, covering R&D performing expenditures for: 2006, 2007, 2008 and 2009.

Changes implemented for the 2006 reference year

To relieve respondent burden, the survey threshold was raised from one million dollars to one and one half million dollars in the survey year 2006, thereby reducing the number of surveyed firms. These firms continue to be included in our tabulations as their R&D data are obtained from the Scientific Research and Experimental Development tax incentive program's administrative data.

Beginning reference year 2006, Canada Revenue Agency (CRA) Payroll Deductions total employment data (PD7) was used to improve the quality of missing or inconsistent total employment data for survey years 2001 through the current survey year. Payroll Deduction data are monthly data, therefore an annual average is calculated from CRA monthly Payroll Deduction data for all firms that reported having one or more employees in at least one of the twelve months of the tax year.

Changes implemented for the 2005 reference year

Beginning reference year 2005, revenue figures for the SR&ED tax filers were adjusted to reflect corporate income tax data for the corresponding filer. These tax data are from T2 corporate income tax data mapped to the Statistics Canada Chart of Accounts (COA) classification, by firm, from Tax Data Division. The variable COA4 comprises (Total) Revenue for firms. COA4 values were used to improve data quality for missing total revenues data from reference year 1997 through the current year. Inconsistent reported total revenue data were also examined by subject matter experts with reference to COA4 data. Within the publication, the revisions have impacted the revenue size groups. It is believed the revisions have substantially improved the quality of the revenue variable.

Canada Revenue Agency (CRA) changes to the Scientific Research and Experimental Development (SR&ED) tax forms (2008)

In 2008, the CRA introduced new tax forms for applicants to the Scientific Research and Experimental Development (SR&ED) tax incentive program. These changes have impacted the data produced from the Research and Development in Canadian Industry (RDCI) survey. The new forms went into effect in November 2008. SR&ED applicants have been given the opportunity to use either the new or the old forms for their financial years ending in 2008. Please see the CRA's web-site for copies of the new and old SR&ED tax forms (*http://www.cra-arc.gc.ca/E/pbg/tf/t661/*).

The CRA changes that impact data continuity include:

- February 25, 2008, the federal budget provided for a change in the SR&ED tax qualified expenditures for wages and salaries of R&D activities performed outside of Canada that was directly performed by employee(s) of the applicant; "the employee who performed the SR&ED work was a resident of Canada at the time the expense was incurred; the SR&ED work carried on by the employees outside Canada was an integral part and solely in support of the SR&ED work for a project carried on in Canada; and salary or wages paid were not subject to income or profits tax from another country." (Guide to Form T661 – Scientific Research and Experimental Development (SR&ED) Expenditures Claim, *http://www.cra-arc.gc.ca/E/pub/tg/t4088/*, accessed December 09, 2008).
- The nature of R&D data are no longer available.
- The area of specialization of R&D activities (biotechnology, software development, and environmental protection) are no longer available.
- R&D personnel are not clearly identified as required in full-time equivalent on the SR&ED form.

Other changes to the SR&ED forms which impacted data processing for 2008 reference year are:

- R&D expenditures are by project rather than program.
- Selected type of R&D activity by project is included.
- Field of science has been added.
- Type of location used for R&D has been added.

For the 2008 R&D expenditures, SR&ED tax data were processed from two forms, therefore, data availability for 2008 are limited when compared with data from previous years.

The forms for the Scientific Research and Experimental Development (SR&ED) tax incentive program were subject to minor changes for 2010 and 2011. One area of change is the "field of science" category assigned to software development. In the 2008 Guide software development was assigned to Computer and information systems, but was moved to Electrical engineering, electronic engineering and Information technology in 2010. For reference year 2010, the data will be mapped to the new category. For reference year 2011, the survey questionnaire will be modified for 2011 to match the tax form.

The survey's history

Data on R&D in the business enterprise sector have been collected since 1955. Until 1969, the survey was biennial. From 1970 to 1981, all known performing or funding firms of industrial R&D were surveyed for odd-numbered years and a sample, including the leading performers, were surveyed for even-numbered years. From 1982 to 1991, a full survey was conducted annually.

Only the top 100 R&D performers (accounting for 64% of all industrial R&D) were surveyed for the 1992 and 1994 reference years. However, as a result of a cost-sharing agreement with the province of Quebec, the 1992 and 1994 industrial R&D survey results also included small firms having R&D activities in the province of Quebec.

From 1991 to 1997, with the exceptions of 1992 and 1994 above, Statistics Canada surveyed all firms known to be performing or funding industrial R&D in Canada. Virtually all of these firms also provided information to CRA in order to claim tax benefits under the Scientific Research and Experimental Development (SR&ED) tax incentive program. In an effort to reduce respondent burden, Statistics Canada stopped surveying the small performing and funding firms (those with less than $1 million of R&D in Canada) and instead, obtains their R&D data using CRA administrative data from the SR&ED tax incentive program. In the 2006 survey year this threshold was raised to $1.5 million thereby further reducing respondent burden.

When first implemented, this administrative data initiative resulted in an understatement of the total value of intramural expenditure and of the total number of R&D personnel. Under the current tax regulations, firms must file their application to the SR&ED program within 18 months of expenditure. Once claims are submitted, they are processed and forwarded to Statistics Canada. As a result, data may not arrive for up to two years after the expenditures were incurred. To remedy the situation, an imputation system was subsequently put into place to impute values for outstanding administrative data. This imputation system confirms the firm is active using Statistics Canada's extensive Business Register, and then applies an imputation based on industry trends.

Recent developments in R&D spending are important economic signals, desired promptly by a variety of users. Because the small imputation of outstanding CRA data does not seriously influence overall trends, the R&D data are published as soon as possible after the survey is conducted, and revised in subsequent publications.

Other notes

Different interpretations of the definition of R&D may also result in discrepancies between federal government reporting of funds to industry (the business enterprise sector) for R&D and industry's reporting of such funds. For example, a federal government department may regard a contract to industry for the building of a prototype (e.g., communications satellite) as R&D. The contractors and subcontractors, however, may only use a portion of the R&D contract and even that portion may not be reported because the contract is considered as part of the firm's "routine" contract work. Differences may also arise for contracts awarded to industry for services or equipment required for a government in-house project which are reported by the federal sponsor as industrial R&D contracts. Therefore, the totals for R&D grants and contracts from the federal government to industry shown in this publication do not agree with those reported in *Federal Science Activities, 2009/2010*, (Catalogue no. 88-204-X).

The business enterprise sector is the only sector in which data are not collected on R&D in the social sciences and humanities.

In this survey, the sampling unit is the enterprise while the reporting unit may, in some cases, be the company. The survey is designed to reflect the structure of the enterprise as it appears on the Business Register and the structure of the enterprise as it reports its R&D activities (including reporting R&D expenditures for the SR&ED tax incentive program). This procedure creates a problem when classifying data by industry. An enterprise can only be assigned to one industry although that enterprise may have companies or establishments in several industries. The assignment is based on the activity from which the firm derived the greatest portion of its income. Thus, comparisons between R&D data collected at the enterprise or company level and other data collected at the establishment level, such as "census value added", may be misleading. Since industrial R&D is highly concentrated, the use of the company/enterprise as the main reporting unit also means that classification cannot be very detailed, to avoid disclosing individual firm data.

The survey response

For 2009, the response rate was 62%. Survey questionnaires were mailed to 1,985 firms: 1,114 were returned; 162 indicated no research and development activity; 7 were out of business and 10 were duplicates.

An additional 18,301 firms were added to the survey universe from the 2009 Scientific Research & Experimental Development tax incentive program data.

Interpretation of R&D

- **Research and experimental development (R&D) definition:** Research and experimental development (R&D) comprise creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications (OECD, Frascati manual (2002) *http://www.oecd.org/document/6/0,3746,en_2649_34451_33828550_1_1_1_1,00.html)*.

Therefore, industrial R&D is intended to result in an invention which may subsequently become a technological innovation. An essential requirement is that the outcome of the work is uncertain, i.e., that the possibility of obtaining a given technical objective cannot be known in advance on the basis of current knowledge or experience. Hence much of the work done by scientists and engineers is not R&D, since they are primarily engaged in "routine" production, engineering, quality control or testing. Although they apply scientific or engineering principles, their work is not directed towards the discovery of new knowledge or the development of new products and processes. However, work elements which are not considered R&D by themselves, but which directly support R&D projects, should be included with R&D in these cases. Examples of such work elements are design and engineering, shop work, computer programming, and secretarial work.

If the primary objective is to make further technical improvements to the product or process, then the work comes within the definition of R&D. If however, the product, process or approach is substantially set and the primary objective is to develop markets, to do pre-production planning or to get a production or control system working smoothly, then the activity can no longer be considered as part of R&D even though it could be regarded as an important part of the total innovation process. Thus, the design, construction and testing of prototypes, models and pilot plants are part of R&D. But, when necessary modifications have been made and testing has been satisfactorily completed, the boundary of R&D has been reached. Hence, the costs of tooling (design and try-out), construction drawings and manufacturing blueprints, and production start-up are not included in development costs.

Pilot plants may be included in development only if the main purpose is to acquire experience and compile data. As soon as they begin operating as normal production units, their costs can no longer be attributed to R&D. Similarly, once the original prototype has been found satisfactory, the cost of other "prototypes" built to meet a special need or fill a very small order are not to be considered as part of R&D.

Text table 1
Specific cases and their treatment

Activity	Treatment	Remarks
Prototypes, pilot plants	Include	As long as the primary objective is to make further improvements.
Contracts for R&D	Include	All contracts which require R&D. For contracts which include other work, report only the R&D costs.
Economic research, market research, management studies	Exclude	All activities in the social sciences.
Quality control, routine testing, style changes, minor adaptation of a product to meet a customer's specific requirements	Exclude	Even if carried out by staff normally engaged in R&D
Prospecting, exploratory drilling, development of mines, oil or gas wells	Exclude	Except for R&D projects concerned with new equipment or techniques in these activities, such as in-situ and tertiary recovery research.
Engineering	Exclude	Engineering unless it is in direct support of R&D.
Design and drawing	Exclude	Design and drawing unless it is in direct support of R&D.
Tooling up, trial production, trouble shooting	Exclude	Although R&D may be required as a result of these steps.
Patent and licence work	Exclude	All administrative and legal work connected with patents and licences.

Processes in place to address sources of errors

Coverage

- **Coverage errors** which consist of omissions, erroneous inclusions, and duplications in the frame used to conduct the survey. Since they affect all survey estimates, they constitute one of the most important types of error. Coverage errors may translate into a negative or positive bias in the data, and the impact may vary depending on the survey universe subgroup. One should also be concerned about classification errors, notably industrial and geographical, among others. For example, badly defined limits or erroneous coding may lead to an omission of part of the territory.[1]

Survey questionnaires are sent to all known and suspected, large R&D performing and/or funding firms i.e., those believed to have the largest R&D expenditures within their industry group.

Administrative data are used for the remaining R&D performing or funding firms which are not included in the questionnaire coverage. Firms have up to 18 months after their fiscal year end to file a Scientific Research & Experimental Development tax incentive program claim for their R&D expenditures. Underreporting due to this time lag is estimated to be less than 8%, and is largely corrected by imputation based on industry trends for all known performers who have not yet submitted their claim.

Nonresponse

- **Nonresponse errors** occur when there is no response to one or all of the survey questions. Nonresponse leads to an increase in variance as a result of a reduction in the actual size of the sample and the recourse to imputation, and produces a bias if the nonrespondents have characteristics of interest that are different from those of the respondents. Furthermore, there is a risk of significantly underestimating the sampling error, if imputed data are treated as though they were observed data.[2]

Non-response is a potential problem in three areas. One is the estimate of R&D expenditures two years past the base year. If no response is provided, editing rules are applied and a response is imputed based on the response of a similar firm in the same industry group.

The second involves the administrative data used for the smaller R&D performers. These represent 20% of all R&D performed by businesses. Certain information is not asked of them. However, the missing data are imputed from the replies of the sampled performers in the same industry.

1. *http://www.statcan.gc.ca/pub/12-539-x/steps-etapes/4058331-eng.htm*
2. *http://www.statcan.gc.ca/pub/12-539-x/steps-etapes/4058331-eng.htm*

Failure of surveyed firms to reply is the third type of non-response. We believe non-response error to be minor and may result in a minor under-estimation of R&D expenditures.

Nonresponse is addressed through imputation. Automatic imputations are made for the administrative SR&ED tax data portion of the universe as well as for non-response and invalid response within the questionnaire portion of the universe. Imputation of records is based on responses to other questions within the questionnaire, prior year's projections by that firm, tax data and ratios of expenditures or personnel and rates of change in expenditures or personnel reported by other firms in the same industry group.

Measurement

- **Measurement errors** occur when the response provided differs from the real value; such errors may be attributable to the respondent, the interviewer, the questionnaire, the collection method or the respondent's record-keeping system. Such errors may be random or they may result in a systematic bias if they are not random.[3]

As a result of a reconciliation of federal and industrial accounts of government grants and contracts, we think that industrial R&D performance estimates may be slightly low. This is caused by the non-reporting of industrial R&D funded by contract. Such work is sometimes not distinguishable from non-R&D contract work.

The accuracy of the firm's estimates of future expenditures has also been a problem in the past, particularly in the oil and gas extraction industries. Where applicable, adjustments are made to microdata records.

Processing and data capture

- **Processing errors** occur at subsequent stages of the process, when checking, coding, entering, imputing, and tabulating data. Like measurement errors, processing errors may lead to variance and bias. It is also necessary to look into the potential impact of snags in the survey process: uneven staff training, unusually high staff turnover, procedural changes in mid-operation, etc.[4]

Processing errors are monitored and controlled using quality control techniques. Significant uncorrected data capture errors are unlikely because of the examination of numerous tables and listings prepared for data validation and analysis before publication tables are created.

Sampling

- **Sampling errors** occur when survey results were obtained from a sample rather than the population as a whole. In practice, these errors may also include estimation errors that may be attributable to the use of estimators which, deliberately or otherwise, create a bias (e.g., some small area estimators).[5]

Although a complete enumeration is carried out of known and suspected R&D performing and/or funding firms, records received from the administrative data do not provide as much information as does the sampled universe. Certain data are imputed for records from the administrative file based on ratios in responses received from survey questionnaire respondents in the same industry group.

3. *http://www.statcan.gc.ca/pub/12-539-x/steps-etapes/4058331-eng.htm*
4. *http://www.statcan.gc.ca/pub/12-539-x/steps-etapes/4058331-eng.htm*
5. *http://www.statcan.gc.ca/pub/12-539-x/steps-etapes/4058331-eng.htm*

Technical notes

Data availability

Data for the reference year 2009 are available for all tables with the exception of counts of firms.

In the even years prior to 1982 and for 1992 and 1994, the estimation procedures did not permit the preparation of tables based on revenue size, employment size, sources of funds and country of control of firms.

Regional data on research and development (R&D) expenditures and personnel are only available for 1977, 1979 and 1981 to 2009.

Terminology

The following terminology is used within the publication:

Performing company: is the organization which carried out the R&D. In the case of a consolidated return, performing company could include several companies. It also includes divisions of an enterprise which send separate returns or organizations such as industrial non-profit organizations.

Related companies: Includes parent, subsidiary and other affiliated companies. In the case where a consolidated return is submitted, "related companies" would exclude companies included in the consolidation.

R&D contracts for other companies: R&D contract work performed by the reporting company for other companies.

Federal grants: Federal R&D grants and the R&D portion of any other federal grants; it excludes funds or tax credits from R&D tax incentives.

Federal contracts: Federal R&D contracts and the R&D portion of any other federal contracts.

Provincial sources: Provincial R&D grants and contracts, and the R&D portion of any provincial grants and contracts; it excludes funds or tax credits from R&D tax incentives.

Other Canadian sources: Includes funds from universities and from levels of government other than federal and provincial.

Intramural expenditures: Expenditures for R&D work performed within the reporting company, including work financed by others.

Current intramural expenditures: Labour costs, fringe benefits and other current costs for R&D, including non-capital purchases of materials, supplies and equipment but excluding capital depreciation. Current intramural expenditures also include contracts for services required to carry out R&D (e.g. contracts awarded for drilling needed for heavy oil R&D).

Capital expenditures: Expenditures on fixed assets used in the R&D program, classified into land, buildings, and equipment.

Revenues: Revenues resulting from the sale of products and services (after deducting sales and excise taxes), and other revenues such as those generated from investment and rentals.

Non-commercial firms: R&D performers without a directly affiliated Canadian commercial base. Included are industrial non-profit organizations and trade associations, R&D performed by consortia, and R&D performed by non-residents without associated commercial enterprises and funded principally from abroad.

Country of control: In most cases of foreign control, the country of control is the country of residence of the ultimate foreign controlling parent corporation, family, trust, estate or related group. Each subsidiary within the global enterprise is assigned the same country of control as its parent. A corporation whose voting rights are equally owned by Canadian-controlled and foreign- controlled corporations is Canadian-controlled. If two foreign-controlled corporations jointly own an equal amount of the voting rights of a Canadian resident corporation, the country of control is assigned according to an order of precedence based on their aggregate level of foreign control in Canada.

For example, United States takes precedence over all other foreign countries because it has the highest level of aggregate foreign control in Canada.

R&D personnel: Calculated in full-time equivalent (FTE). R&D may be carried out by persons who work solely on R&D projects or by persons who devote only part of their time to R&D, and the balance to other activities such as testing, quality control and production engineering. To arrive at the total effort devoted to R&D in terms of person-years, it is necessary to estimate the full-time equivalent of these persons working only part-time in R&D.

Professional personnel: are researchers or R&D managers.They can be either scientists or engineers.Researchers are professionals engaged in the conception or creation of new knowledge, products, processes, methods and systems and also in the management of the projects concerned.Managers and administrators engaged in the planning and management of the scientific and technical aspects of a researcher's work also fall into this category.

Scientists and engineers: Are professionally trained to conduct investigations or enquiries to acquire a theoretical, abstract or practical knowledge of physical and natural phenomena, improve or develop concepts, theories and operational methods, or apply scientific and technological knowledge relating to fields such as physics, astronomy, meteorology, chemistry, geophysics, geology, mathematics, statistics, computing, architecture, engineering and technology.

Senior administrators and managers: Managers and administrators engaged in the planning and management of the scientific and technical aspects of a researcher's work also fall into this category.

Technical and administrative support personnel: Technicians and equivalent staff are persons whose main tasks require technical knowledge and experience in one or more fields of engineering, physical and life sciences.Other supporting staff includes skilled and unskilled craftsmen, secretarial and clerical staff participating in R&D projects or directly associated with such projects.Both technical and administrative support personnel work to directly support the activities of researchers.

Technicians and technologists: Technically trained personnel who assist scientists and engineers in R&D, e.g. chemical technicians, draftspersons.They may be certified by either provincial educational authorities or by provincial or national scientific or engineering associations.

Other administrative support: Personnel directly engaged in the R&D program, e.g. machinists and electricians in construction of prototypes, or clerks, typists, accountants and storekeepers engaged in the administration or clerical support of R&D firms.

Full-time equivalent (FTE) = number of persons who work solely on R&D projects + estimate of time of persons working only part of their time on R&D.

Example calculation:

If out of four scientists engaged in R&D work, one works solely on R&D projects and the remaining three devote only one quarter of their working time to R&D, then: FTE = 1 + 1/4 + 1/4 + 1/4 = 1.75 scientists.

Federal government funds for industrial R&D: Federal support consists of grants and contracts for R&D to be performed by business enterprises. Taxes foregone as a result of income tax incentives for R&D are not considered direct government support and are not attributed to the federal government.

Industrial classification

North American Industry Classification System (NAICS) is the standard industrial classification system used for presenting R&D expenditures data for the business enterprise sector. There are limitations to its use. One important limitation is due to firms with activities in more than one industry (e.g., firms which both refine petroleum and extract oil). Another is caused by the concentration of the R&D activity among a few firms. In order to prevent disclosure of individual respondents NAICS codes may be combined to provide sufficient observations for publication.

A third problem is that the classification, chosen to represent general industrial activity, may not be entirely suitable for identifying firms chosen only for their involvement in R&D.

There are some restrictions on the application of the NAICS, for example, large R&D performing firms that are classified as “holding companies” are assigned to the principle industrial activity of the firm.

The R&D activities of other sectors such as the federal government, provincial governments, higher education, and private non-profit organizations are covered in other reports.

Definitions

Research and development

For the purpose of this survey, research and development (R&D) is systematic investigation carried out in the natural and engineering sciences by means of experiment or analysis to achieve a scientific or technological advance.

Research is original investigation undertaken on a systematic basis to gain new knowledge.

Development is the application of research findings or other scientific knowledge for the creation of new or significantly improved products or processes. If successful, development will usually result in devices or processes which represent an improvement in the "state of the art" and are likely to be patentable.

Example:

The investigation of electrical conduction in crystals was research. The application of this knowledge to the creation of a new amplifying device - the transistor - was development. The application of the device to the construction of new electrical circuits for television receivers was development. The formulation of new plastic cases for a television receiver is design, not development.

Research and development may be carried out either by a permanent R&D unit (e.g., R&D division) or by a unit generally engaged in any non-R&D activity such as engineering or production. In the first case, the R&D unit may spend part of its time on routine testing or trouble shooting or on some other activities which should not be included in R&D. In the second, only the R&D portion of such units’ total activity should be considered.

Research and development should be considered to be “scientific research and experimental development” as defined in Section 37, Regulation 2900 of the Income Tax Act; this section specifically excludes the following:

i. market research, sales promotion,

ii. quality control or routine analysis and testing of materials, devices or products,

iii. research in the social sciences or the humanities,

iv. prospecting, exploring or drilling for or producing minerals, petroleum or natural gas,

v. the commercial production of a new or improved material, device or product or the commercial use of a new or improved process,

vi. style changes, or routine data collection

Note:

Although the definition of “scientific research and experimental development” is considered to be the same as R&D, certain expenditures for scientific research cannot be claimed for income tax purposes (e.g., land, building). All expenditures attributable to R&D are included in this report.

Appendix I

North American industry classification system 2007 by Industry group

Agriculture, forestry, fishing and hunting	
Agriculture	111110, 111120, 111130, 111140, 111150, 111160, 111190, 111211, 111219, 111310, 111320, 111330, 111411, 111419, 111421, 111422, 111910, 111920, 111930, 111940, 111993, 111994, 111999, 112110, 112120, 112210, 112310, 112320, 112330, 112340, 112391, 112399, 112410, 112420, 112910, 112920, 112930, 112991, 112999, 115110, 115210, 115212
Forestry and logging	113110, 113210, 113311, 113312, 115310
Fishing, hunting and trapping	114113, 114114, 114210,112510
Mining and oil and gas extraction	
Oil and gas extraction	211113, 211114, 213111, 213118
Mining	212114-212116, 212210, 212220, 212231-212233, 212291, 212299, 212314-212317, 212323, 212326, 212392-212398, 213117, 213119
Utilities	
Electric power	221111-221113, 221119, 221121, 221122
Other utilities	221210, 221310, 221320, 221330, 562110, 562210, 562910, 562920, 562990
Construction	236110, 236210, 236220, 237110, 237120, 237130, 237210, 237310, 237990, 238110, 238120, 238130, 238140, 238150, 238160, 238170, 238190, 238210, 238220, 238291, 238299, 238310, 238320, 238330, 238340, 238350, 238390, 238910, 238990
Manufacturing	
Food	311111, 311119, 311211, 311214, 311221, 311224, 311225, 311230, 311310, 311320, 311330, 311340, 311410, 311420, 311511, 311515, 311520, 311611, 311614, 311615, 311710, 311811, 311814, 311821-311823, 311830, 311911, 311919, 311920, 311930, 311940, 311990
Beverage and tobacco	312110, 312120, 312130, 312140, 312210, 312220
Textile	313110, 313210, 313220, 313230, 313240, 313310, 313320, 314110, 314120, 314910, 314990
Wood products	321111, 321112, 321114, 321211, 321212, 321215-321217, 321911, 321919, 321920, 321991, 321992, 321999
Paper	322111, 322112, 322121, 322122, 322130, 322211, 322212, 322219, 322220, 322230, 322291, 322299
Printing	323113-323116, 323119, 323120
Petroleum and coal products	324110, 324121, 324122, 324190
Pharmaceutical and medicine	325410
Other chemical	325110, 325120, 325130, 325181,325189, 325190, 325210, 325220, 325313, 325314, 325320, 325510, 325520, 325610, 325620, 325910, 325920, 325991, 325999
Plastic products	326111, 326114, 326121, 326122, 326130, 326140, 326150, 326160, 326191, 326193, 326196, 326198
Rubber products	326210, 326220, 326290
Non-metallic mineral products	327110, 327120, 327214, 327215, 327310, 327320, 327330, 327390, 327410, 327420, 327910, 327990
Primary metal (ferrous)	331110, 331210, 331221, 331222, 331511, 331514

Primary metal (non-ferrous)	331313, 331317, 331410, 331420, 331490, 331523, 331529
Fabricated metal products	332113, 332118, 332210, 332311, 332314, 332319, 332321, 332329, 332410, 332420, 332431, 332439, 332510, 332611, 332619, 332710, 332720, 332810, 332910, 332991, 332999
Machinery	333110, 333120, 333130, 333210, 333220, 333291, 333299, 333310, 333413, 333416, 333511, 333519, 333611, 333619, 333910, 333920, 333990
Computer and peripheral equipment	334110
Communications equipment	334210, 334220, 334290
Semiconductor and other electronic components	334410
Navigational, measuring, medical and control instruments	334511, 334512
Other computer and electronic products	334310, 334610
Electrical equipment, appliance and components	335110, 335120, 335210, 335223, 335229, 335311, 335312, 335315, 335910, 335920, 335930, 335990
Motor vehicle and parts	336110, 336120, 336211, 336212, 336215, 336310, 336320, 336330, 336340, 336350, 336360, 336370, 336390
Aerospace products and parts	336410
All other transportation equipment	336510, 336611, 336612, 336990
Furniture and related products	337110, 337121, 337123, 337126, 337127, 337213-337215, 337910, 337920
Other manufacturing industries	315110, 315190, 315210, 315221, 315222, 315226, 315227, 315229, 315231-315234, 315239, 315291, 315292, 315299, 315990, 316110, 316210, 316990, 339110, 339910, 339920, 339930, 339940, 339950, 339990
Services	
Wholesale trade	411110, 411120, 411130, 411190, 412110, 413110, 413120, 413130, 413140, 413150, 413160, 413190, 413210, 413220, 413310, 414110, 414120, 414130, 414210, 414220, 414310, 414320, 414330, 414390, 414410, 414420, 414430, 414440, 414450, 414460, 414470, 414510, 414520, 415110, 415120, 415190, 415210, 415290, 415310, 416110, 416120, 416210, 416310, 416320, 416330, 416340, 416390, 417110, 417210, 417220, 417230, 417310, 417320, 417910, 417920, 417930, 417990, 418110, 418120, 418190, 418210, 418220, 418310, 418320, 418390, 418410, 418910, 418920, 418930, 418990, 419110, 419120
Retail trade	441110, 441120, 441210, 441220, 441310, 441320, 442110, 442210, 442291, 442292, 442298, 443110, 443120, 443130, 444110, 444120, 444130, 444190, 444210, 444220, 445110, 445120, 445210, 445220, 445230, 445291, 445292, 445299, 445310, 446110, 446120, 446130, 446191, 446199, 447110, 447190, 448110, 448120, 448130, 448140, 448150, 448191, 448199, 448210, 448310, 448320, 451110, 451120, 451130, 451140, 451210, 451220, 452110, 452910, 452991, 452999, 453110, 453210, 453220, 453310, 453910, 453920, 453930, 453992, 453999, 454111, 454112, 454113, 454210, 454311, 454312, 454319, 454390
Transportation and warehousing	481110, 481214, 481215, 482112-482114, 483115, 483116, 483213, 483214, 484110, 484121, 484122, 484210, 484221-484223, 484229, 484231-484233, 484239, 485110, 485210, 485310, 485320, 485410, 485510, 485990, 486110, 486210, 486910, 486990, 487110, 487210, 487990, 488111, 488119, 488190, 488210, 488310, 488320, 488331, 488332, 488339, 488390, 488410, 488490, 488511, 488519, 488990, 491110, 492110, 492210, 493110, 493120, 493130, 493190
Information and cultural industries	511110, 511120, 511130, 511140, 511190, 511210, 512110, 512120, 512130, 512190, 512210, 512220, 512230, 512240, 512290, 515110, 515120, 515210, 517111, 517112, 517210, 517410, 517910, 518210, 519110, 519121, 519122, 519130, 519190

Finance, insurance and real estate	521110, 522111, 522112, 522130, 522190, 522210, 522220, 522291, 522299, 522310, 522321, 522329, 522390, 523110, 523120, 523130, 523140, 523210, 523910, 523920, 523930, 523990, 524111, 524112, 524121-524125, 524129, 524131-524135, 524139, 524210, 524291, 524299, 526111, 526112, 526911-529917, 526919, 526930, 526981, 526989, 531111, 531112, 531120, 531130, 531190, 531211, 531212, 531310, 531320, 531390, 532111, 532112, 532120, 532210, 532220, 532230, 532290, 532310, 532410, 532420, 532490, 533110
Architectural, engineering and related services	541310, 541320, 541330, 541340, 541350, 541360, 541370, 541380
Computer system design and related services	541510
Management, scientific and technical consulting services	541611, 541612, 541619, 541620, 541690
Scientific research and development services	541710, 541720
Health care and social assistance	621110, 621210, 621310, 621320, 621330, 621340, 621390, 621410, 621420, 621494, 621499, 621510, 621610, 621911, 621912, 621990, 622111, 622112, 622210, 622310, 623110, 623210, 623221, 623222, 623310, 623991-623993, 623999, 624110, 624120, 624190, 624210, 624220, 624230, 624310, 624410
All other services	541110, 541120, 541190, 541212, 541213, 541215, 541410, 541420, 541430, 541490, 541810, 541820, 541830, 541840, 541850, 541860, 541870, 541891, 541899, 541910, 541920, 541930, 541940, 541990, 551113, 551114, 561110, 561210, 561310, 561320, 561330, 561410, 561420, 561430, 561440, 561450, 561490, 561510, 561520, 561590, 561611-561613, 561621, 561622, 561710, 561721, 561722, 561730, 561740, 561791, 561799, 561910, 561920, 561990, 611110, 611210, 611310, 611410, 611420, 611430, 611510, 611610, 611620, 611630, 611690, 611710, 711111, 711112, 711120, 711130, 711190, 711211, 711213, 711218, 711311, 711319, 711321, 711322, 711329, 711410, 711511, 711512, 711513, 712111, 712115, 712119, 712120, 712130, 712190, 713110, 713120, 713210, 713291, 713299, 713910, 713920, 713930, 713940, 713950, 713990, 721111-721114, 721120, 721191, 721192, 721198, 721211-721213, 721310, 722110, 722210, 722310, 722320, 722330, 722410, 811111, 811112, 811119, 811121, 811122, 811192, 811199, 811210, 811310, 811411, 811412, 811420, 811430, 811490, 812114-812116, 812190, 812210, 812220, 812310, 812320, 812330, 812910, 812921, 812922, 812930, 812990, 813110, 813210, 813310, 813410, 813910, 813920, 813930, 813940, 813990, 814110, 911110, 911210, 911220, 911230, 911240, 911290, 911310, 911320, 911390, 911410, 911420, 911910, 912110, 912120, 912130, 912140, 912150, 912190, 912210, 912910, 913110, 913120, 913130, 913140, 913150, 913190, 913910, 914110, 919110