

RD82  
.8C214  
June 1992



MINERAL  
POLICY  
SECTOR

SECTEUR DE  
LA POLITIQUE  
MINÉRALE

---

# MINERAL INDUSTRY QUARTERLY REPORT

---

JUNE 1992

LIBRARY / BIBLIOTHÈQUE

OCT 15 1992

GEOLOGICAL SURVEY  
COMMISSION GÉOLOGIQUE



Energy, Mines and  
Resources Canada

Énergie, Mines et  
Ressources Canada

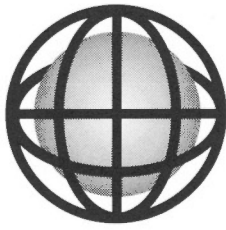
Canada

THE ENERGY OF OUR RESOURCES - THE POWER OF OUR IDEAS

L'ÉNERGIE DE NOS RESSOURCES - NOTRE FORCE CRÉATRICE

This document was produced  
by scanning the original publication.

Ce document est le produit d'une  
numérisation par balayage  
de la publication originale.



*MINERAL  
POLICY  
SECTOR*

*SECTEUR DE  
LA POLITIQUE  
MINÉRALE*

---

# MINERAL INDUSTRY QUARTERLY REPORT

---

JUNE 1992



Energy, Mines and  
Resources Canada

Énergie, Mines et  
Ressources Canada

Canada

THE ENERGY OF OUR RESOURCES - THE POWER OF OUR IDEAS

L'ÉNERGIE DE NOS RESSOURCES - NOTRE FORCE CRÉATRICE



The year 1992 marks the 150th Anniversary of the Geological Survey of Canada. The Mineral Policy Sector is pleased to recognize one of Canada's oldest scientific agencies and its distinguished record of public service.



## **PREFACE**

This publication is prepared by the Mineral Policy Sector of Energy, Mines and Resources Canada. Data appearing in this publication are compiled from many sources using the best information available to us. This report is intended to provide the reader with a digest of general information on the status of the mineral industry in Canada. It should not be considered an authority for exact quotation or an expression of the official views of the Government of Canada.

Your comments on the format and contents of this report are welcomed. Specific comments can be directed to:

Rob Dunn  
Mineral and Metal Statistics Division  
Mineral Policy Sector  
460 O'Connor Street  
Ottawa, Ontario K1A 0E4

Telephone: (613) 996-6384  
FAX: (613) 992-5565





## INTRODUCTION

After an absence of less than a year, this issue marks the return of this report on the Canadian mineral industry. Readers may recall that our last issue of the Canadian Mineral Industry Monthly Report included a readership survey questionnaire. The results of that survey have been compiled and a summary appears in this report. The conclusions reached from these survey results, together with an internal review of our publication strategy, have led us to reformat this report as a quarterly publication. We are, however, prepared to produce special editions of interest to our clients as issues of importance to the industry arise. This review is a reflection of the ongoing effort of the Mineral Policy Sector of EMR Canada to serve our clientele effectively within reasonable cost limitations.

We hope that the content of these publications will evolve to properly reflect a balance between the statistics that characterize the Canadian mineral industry and analyses of issues affecting the mineral industry. This issue is, unfortunately, slanted towards the statistical material that has become available for release in the gap between publications. We expect that a proper balance will be re-established in the next one or two issues.

The Mineral Policy Sector appreciates the efforts of those who did respond to our readership survey last year. We highly value any comments or suggestions on our current publications.

The year 1991 was not a banner year for the Canadian mineral industry. In particular, the continuing decline in mineral prices has caused a significant reduction in the value of mineral production in Canada. An important overview of the year as it appeared to the mineral industry is presented in the article, "The Canadian Mineral Industry - 1991 in Review." A brief summary of recent mine openings and closures shows an aspect of the impact of the overall decline in mineral prices.

Lower mineral commodity prices have also led to a reduction in the exploration programs of mining companies. Reduced levels of exploration have been a major factor contributing to the decline in Canadian reserves. This publication includes an article giving recently-released estimates of the levels of mineral exploration in Canada.

The environment continues to be a major issue for the mineral industry. The positive response of the mineral industry to environmental concerns is clearly reflected in the data collected in the Pollution Abatement and Control survey conducted by Statistics Canada, and summarized in this issue.



# CONTENTS

	Page
<b>NOTES</b>	
Mineral Industry Information Available from Mineral Policy Sector	1
Highlights of Recent Mineral Industry Publications by Statistics Canada	3
<b>REVIEWS</b>	
The Canadian Mineral Industry - 1991 in Review	4
Summary of the Survey of the Readership of the Canadian Mineral Industry Monthly Report	9
Canadian Mine Openings and Closures 1988-91 (Trends and Implications)	11
Exploration 1990-92 (Mineral Exploration Statistics)	13
The 1989 Pollution Abatement and Control Survey Highlights for the Mineral Industry	22
<b>STATISTICAL TABLES<sup>1</sup></b>	
1. Canada, Production of Leading Minerals	26
2. Metal Prices, 1992	27
3. Canada, Real Gross Domestic Product at Factor Cost by Industry, in 1986 Prices, Quarterly	28
4. Canada Real Gross Domestic Product at Factor Cost by Industries Involved in Mineral Manufacturing, in 1986 Prices, Quarterly	29
5. Mineral Production in Canada, 1989-91 and Average 1987-91	30
6. Canada, Value of Mineral Production, Per Capita Value of Mineral Production, and Population, 1962-91	31
7. Canada, Value of Mineral Production by Provinces, Territories and Mineral Classes, 1991	32
8. Canada, Value of Mineral Production by Provinces, Territories and Mineral Classes, 1990	33

---

<sup>1</sup> Users of the statistical tables should note that a statistical table entitled "Canada, Production of Leading Minerals, 1990 and 1991" appears in the article "The Canadian Mineral Industry - 1991 in Review."

	<b>Page</b>
9. Canada, Value of Mineral Production by Provinces and Territories, 1985-91	34
10. Canada, Percentage Contribution of Provinces and Territories to Total Value of Mineral Production, 1985-91	35
11. Value of Leading Minerals in the Provinces, Territories and Canada, 1990 and 1991	36
12. Production of Leading Minerals, by Provinces and Territories in Canada, 1991	38
13. Production of Leading Minerals, by Provinces and Territories in Canada, 1990	39
14. Canada, Percentage Contribution of Leading Minerals to Total Value of Mineral Production, 1985-91	40
15. Production of Canada's Ten Leading Mineral Commodities, 1984-91	41
16. Canada's World Role as a Producer of Certain Important Minerals, 1990	42
17. Canada's World Role as a Producer of Certain Important Minerals, 1989	43
18. Exports of Mineral Commodities by Country and by Commodity as Defined by the Harmonized System (H.S.) 1991	44
19. Exports of Mineral Commodities by Country and by Commodity as Defined by the Harmonized System (H.S.) 1990 Revised	45
20. Imports of Mineral Commodities by Country and by Commodity as Defined by the Harmonized System, (H.S.) 1991	46
21. Imports of Mineral Commodities by Country and by Commodity as Defined by the Harmonized System, (H.S.) 1990 Revised	47
22. Canada, Principal Statistics of the Mineral Industry, 1989	48
23. Canada, Principal Statistics of the Mineral Industry by Region, 1989	49
24. Canada, Principal Statistics of the Mineral Industry by Region, 1988	49
25. Canada, Principal Statistics of the Mineral Industry, 1982-89	50

## **NOTES**

### **Mineral Industry Information Available from Mineral Policy Sector**

#### **CATALOGUE OF MINERAL STATISTICS**

A catalogue, listing federal and provincial publications and surveys in Canada, is available to interested parties. A copy of this catalogue, jointly prepared by the Mineral Policy Sector (MPS) of EMR Canada, Statistics Canada, Indian and Northern Affairs Canada and the provincial departments responsible for mineral statistics, may be obtained by contacting the MPS Publications Distribution Office.

#### **STATISTICAL REVIEW OF COAL IN CANADA, 1991**

MPS would like to announce the release of its publication, Statistical Review of Coal in Canada, 1991. This publication includes detailed information on Canadian coal production, consumption and exports over the past ten years. Copies are available from the MPS Publications Distribution Office.

#### **MINING INDUSTRY EMPLOYMENT UPDATE**

MPS publishes the Mining Industry Employment Update on a quarterly basis. This publication provides an in-depth analysis of current issues related to employment in the mining industry, including employment estimates, bargaining settlements and labour disputes. Copies are available from the MPS Publications Distribution Office.

## **MINERALS AND THE ENVIRONMENT**

Between October and December 1991, the Standing Committee on Energy, Mines and Resources invited a number of industry organizations to submit reports which reflected their concerns on the environmental challenge. On October 2, 1991, Ron R. Sully, Assistant Deputy Minister of the Mineral Policy Sector, was invited to speak before the Committee. This document contains the text and presentation used by Mr. Sully.

Copies are available from the MPS Publications Distribution Office.

#### **MPS PUBLICATIONS DISTRIBUTION OFFICE**

Publications Distribution Office  
Mineral Policy Sector  
Energy, Mines and Resources  
Canada  
460 O'Connor Street  
Ottawa, Ontario  
K1A 0E4  
Telephone: (613) 992-1108

#### **DATA SUMMARY OF THE IRON- AND STEEL-MAKING INDUSTRY**

In response to a request for data from the International Iron and Steel Institute (IISI), Mineral Policy Sector has prepared a summary of information pertinent to the iron- and steel-making industry. These data, assembled from various data sources, include estimates of international trade, production and consumption of related minerals and relevant product price indexes for the years 1989 to 1991 and are used by the IISI to prepare an international review of the industry.

A notable feature of the data presented is the overall declining trend in the levels of production and consumption of output products and the general decline in

product prices over this period. As an example, production of pig iron has declined by 18.5% and consumption by 19.3% between 1989 and 1991. Also during this time the price index for pig iron and steel ingots has fallen by 6.9%. This is in contrast to a significant increase of 12.5% in the cost of electricity, a production input, over the same period.

Copies of this summary can be obtained by contacting:

Laurie Morrison,  
Mineral and Metal Statistics  
Division  
(613) 992-0378.

## **ELECTRONIC DISTRIBUTION OF PUBLICATIONS**

MPS is investigating electronic distribution of this and other sector publications. If you have access to a link on the Internet and would, at some future date, prefer to receive this publication electronically, then send a message to:

[bmccutch@emr.ca](mailto:bmccutch@emr.ca)

Please state in the body of the message whether you would be interested in receiving this particular publication electronically.

If you have an account on another network (such as Compuserve), you may still be

able to receive mail from the Internet. Please contact your representative to obtain information on how to send a message to Internet users. You may also wish to enquire about the charges that you will incur for receiving publications (such as the charge per kilobyte).

Please remember that we have not yet established a system to distribute information electronically. Your interest will be recorded, however, and will be used in making our publication decisions.

## **MINERAL INDUSTRY INFORMATION CONTACT POINT**

In order to provide our clients with timely access to information describing the mineral industry, MPS has established a contact point through which requests for statistical information on the mineral industry can be channelled.

This contact point is:

Despo Makris,  
Mineral and Metal Statistics Division  
Mineral Policy Sector  
Energy, Mines and Resources Canada  
460 O'Connor Street, Room 502,  
Ottawa, Ontario  
K1A 0E4  
Telephone: (613) 992-6522  
FAX: (613) 995-5565

## **Highlights of Recent Mineral Industry Publications by Statistics Canada**

Statistics Canada will soon be releasing two publications of interest to the mineral industry. Highlights of these publications appear below.

### **QUARRIES AND SAND PITS - 1990 CATALOGUE 26-225**

The total value of structural materials produced by all establishments in 1990 regardless of industrial classification was \$2796.4 million, a decrease of 3.7% from the \$2903.0 million registered in 1989. Of this amount, a total of \$136.0 million of clay products, \$991.4 million of cement, \$188.3 million of lime, \$817.3 million of sand and gravel, and \$663.4 million of stone were produced.

### **NONMETAL MINES - 1990 CATALOGUE 26-224**

The total value of production by establishments classified in the nonmetal mines industry group was \$1802.1 million in 1990, compared to \$1953.4 million in 1989, a decrease of 7.7%. Although each of the nonmetal mining industries registered a decline in the value of production, 70% of the total decrease occurred in the potash mines industry.

As well as potash mines, the nonmetal mines industry group includes asbestos mines, the peat industry, gypsum mines, salt mines and other nonmetal mines (except coal).

*To order a Statistics Canada publication (including those given above), you may telephone 1-613-951-7277 or use facsimile number 1-613-951-1584. For toll-free, in Canada only, telephone 1-800-267-6677. When ordering by telephone or facsimile, a written confirmation is not required.*



## REVIEWS

### **The Canadian Mineral Industry 1991 in Review**

*A.B. Siminowski*  
(613) 943-8096

This article presents a brief summary of the mineral industry's performance in 1991 and highlights its importance within the context of the Canadian economy. The following sections provide a general overview of the industry in regard to Gross Domestic Product, employment, production and trade. Some of the data are presented on the basis of the different stages of industry activity.

In broad terms, the industry can be described in terms of four stages of processing activity which are defined as follows:

- Stage I - Primary Mineral Production (mining and concentrating);
- Stage II - Metal Production (smelting and refining);
- Stage III - Minerals and Metals-Based Semi-Fabricating Industries; and
- Stage IV - Metal Fabricating Industries.

#### **GROSS DOMESTIC PRODUCT (GDP)**

Including all four stages of activity, the mineral industry accounted for about 4.4% of Canada's GDP in 1991 (including the coal and uranium industries, but

excluding oil and natural gas). The mineral industry contributed about \$21.9 billion (at 1986 prices) to Canada's GDP. This was a decrease from the 1990 level of \$23.2 billion, essentially resulting from a 12.6% decline in Stages III and IV combined (from \$11.1 billion in 1990 to \$9.7 billion in 1991). GDP in Stage I stayed essentially the same at \$7.1 billion, while Stage II increased to \$5.1 billion from \$5.0 billion in 1990.

#### **EMPLOYMENT**

Estimates for 1991 indicated that total employment in the mineral industry (excluding oil and natural gas) was about 330 000, down 12.7% from 378 000 in 1990. This reflected a general downward trend in employment in the various sectors of the Canadian economy. Overall, the industry accounted for about 3% of total national employment. All stages of the mineral industry experienced a decline in 1991, particularly the semi-fabricating and fabricating mineral industries. Total employment in Stages III and IV fell by 17.6% in 1991 to 191 000, compared to decreases of 4.2% in Stage I to 72 000 and 5.7% in Stage II to 67 000.

#### **MINERAL PRODUCTION**

The value of Canadian mineral production (including mineral fuels) totalled \$34.8 billion in 1991 compared with \$40.8 billion in 1990, representing a decrease of 14.6%, or about \$6.0 billion. Although this drop was mainly precipitated by lower prices, reduced volumes of output were also recorded by some commodities. Declines in the value of output occurred in all four commodity groups: metals, nonmetals, structural materials and fuels.

Commodity prices were on a general downward trend throughout 1991. In particular, nonferrous metal prices averaged out at much lower levels than in 1990. By year-end, the Raw Materials Price Index for nonferrous metals had fallen by 16.1% from its December 1990 level. Over the same period, the Raw Materials Price Index for ferrous materials fell by 4.5%, and for nonmetallic minerals by 3.3%.

Similarly, the Industrial Product Price Index for primary metal products continued the downward slide that had begun in the last quarter of 1990. By December 1991, after 15 consecutive monthly declines, the primary metal products index was 8.2% below its December 1990 level, falling to its lowest point since April 1987. On the other hand, the Industrial Product Price Indexes for fabricated metal products and for nonmetallic mineral products remained relatively constant over the course of the year.

Significant decreases in the average prices of crude petroleum and metallic minerals accounted for most of the decrease in the overall value of production. The nonfuels sector as a group (metals, nonmetals and structurals) saw the total value of production fall by 15.9% to \$15.0 billion in 1991 from \$17.8 billion in 1990. The value of production, by commodity group, is summarized in the following table:

#### THE CANADIAN MINERAL INDUSTRY VALUE OF PRODUCTION, 1990 AND 1991

	1990	1991	Change
	(\$ million)		(%)
Metals	12 500.0	10 425.3	-16.6
Nonmetals	2 492.2	2 250.5	-9.7
Structurals	2 796.0	2 286.7	-18.2
Total			
Nonfuels	17 788.2	14 962.4	-15.9
Fuels	22 989.9	19 851.8	-13.6
Total	40 778.0	34 814.2	-14.6

Note: Numbers may not add to totals due to rounding.

The total value of metallic mineral production fell by 16.6% to \$10.4 billion in 1991 from \$12.5 billion in 1990. Metallic minerals, led by gold, copper, nickel, zinc, and iron ore, accounted for 29.9% of the total value of mineral production in 1991.

The value of output of the nonmetallics, which include minerals such as asbestos, potash, salt, and sulphur, declined by 9.7% to \$2.3 billion in 1991 from \$2.5 billion in the previous year. The nonmetals group accounted for 6.5% of the total value of mineral output in 1991.

The value of production for the structural materials group, which includes sand and gravel, stone, cement, and lime, fell to \$2.3 billion from \$2.8 billion, a decrease of 18.2%. The value of structural materials produced in 1991 represented 6.6% of the overall mineral total.

In the fuels sector, which includes crude petroleum, natural gas, natural gas by-products, and coal, the value of production decreased by 13.6% to \$19.9 billion in 1991 from \$23.0 billion in 1990. This decrease of \$3.1 billion was largely the result of lower petroleum prices, and brought the overall value of fuels production back to its 1989 level. In 1991, the average price for crude oil was much lower than in 1990, which had seen a temporary escalation of prices in the latter half of the year caused by the Persian Gulf crisis.

Although the volume of petroleum production fell by only 0.6% in 1991, the lower average price caused the overall value of petroleum production to decrease by 18.9%, or about \$2.5 billion, from the 1990 level. While petroleum, natural gas and natural gas by-products all experienced declines in the value of production, coal recorded increases in both volume and value of output. Overall, the fuels sector accounted for 57.0% of the total value of mineral production in 1991.

The top ten commodities in terms of value of output in 1991 were: crude petroleum (\$10.6 billion), natural gas (\$5.2 billion), gold (\$2.4 billion), natural gas by-products (\$2.1 billion), copper (\$2.1 billion), coal (\$1.9 billion), nickel (\$1.8 billion), zinc (\$1.4 billion), iron ore (\$1.3 billion), and potash (\$0.9 billion)

The table compares the volume and value of production of the leading minerals in 1990 and 1991. The figure which follows shows the percentage shares of the total

value of mineral production accounted for by each of the leading minerals.

On a provincial basis, Alberta's contribution to total Canadian mineral output (including fuels) represented the largest share, amounting to \$16.1 billion, or 46.4% of the total in 1991. Ontario was second with a value of \$5.1 billion, or 14.5% of the total, followed by British Columbia with \$3.8 billion (10.8%). The percentage shares by province and territory for 1990 and 1991 are shown in the figure.

## MINERAL TRADE

The mineral industry continued to make a significant contribution to Canada's merchandise trade surplus in 1991. Mineral and mineral product exports, including fuels, totalled \$27.8 billion for the first three quarters of 1991. This represented 27.1% of total domestic exports. Imports of minerals and mineral products over the same period totalled \$13.9 billion, or 13.8% of all Canadian imports. In terms of net trade, a mineral trade surplus of approximately \$14.0 billion, including fuels, was recorded for the first three quarters of 1991, illustrating the importance of the mineral industry in Canada. Over the first nine months of 1991, 70.4% of total mineral exports went to the United States, 8.8% to the European Community and 6.9% to Japan.

Excluding petroleum and natural gas, but including coal, the total value of mineral exports was estimated at \$17.8 billion for the first nine months of 1991. This included crude minerals, smelted and refined products, semi-fabricated and fabricated forms, as well as waste and scrap for recycling. The output from the mining and metallurgical extraction industries (Stages I and II) accounts for roughly three quarters of this total.

Imports were estimated at \$9.5 billion, resulting in a trade surplus for minerals (excluding petroleum and natural gas, but including coal) of \$8.3 billion for the first three quarters of 1991.

## SUMMARY

For several years, Canada's mineral industry (excluding oil and natural gas) has accounted for an average of about 4.7% of Canada's GDP, over 3% of total national employment and 18% to 19% of total Canadian exports. In addition, expenditures by the mineral industry for capital investment and repair, as well as for R&D, have represented major spending

within the economy. It is anticipated that the Canadian mineral industry will continue to be a major contributor to the Canadian economy.

*Note: The material in this article was taken from the more detailed General Review chapter of the 1991 Canadian Minerals Yearbook to be published in August 1992. Interested readers can obtain an advance copy of the General Review article free of charge by contacting the author at (613) 943-8096 or by writing the Mineral and Metal Statistics Division, Energy, Mines and Resources Canada, 460 O'Connor Street, Ottawa, Ontario, K1A 0E4. Information contained in this review was current as of January 1992.*

### CANADA, PRODUCTION OF LEADING MINERALS, 1990 AND 1991

		Volume		Percent Change	Value		Percent Change
		1990	1991P	1991/1990	1990	1991P	1991/1990
		(000 tonnes except where noted)			(\$ million)		
<b>Metals</b>							
Gold	kg	167 372.5	176 720.1	5.6	2 407.7	2 355.3	-2.2
Copper		771.4	773.6	0.3	2 428.9	2 101.2	-13.5
Nickel		195.0	189.2	-3.0	2 027.9	1 828.2	-9.8
Zinc		1 179.4	1 079.9	-8.4	2 272.6	1 351.0	-40.6
Iron ore		35 670.0	35 961.1	0.8	1 258.8	1 307.9	3.9
Uranium	tU	9 720.2	7 813.3	-19.6	888.0	472.1	-46.8
Lead		233.4	239.6	2.7	279.3	203.9	-27.0
Silver	t	1 381.3	1 239.9	-10.2	249.7	185.3	-25.8
Platinum group	kg	11 123.4	10 955.4	-1.5	189.4	141.8	-25.1
Molybdenum	t	12 188.5	11 292.0	-7.4	84.7	70.4	-16.9
<b>Nonmetals</b>							
Potash (K <sub>2</sub> O)		7 344.6	7 012.0	-4.5	964.9	919.0	-4.8
Asbestos		685.6	670.4	-2.2	272.1	274.5	0.9
Salt		11 191.4	11 585.3	3.5	240.9	258.6	7.3
Sulphur, elemental		5 822.1	6 029.0	3.6	368.9	244.1	-33.8
Peat		774.6	737.1	-4.8	89.7	91.7	2.2
Sulphur, in smelter gas		789.8	726.4	-8.0	81.2	76.6	-5.7
<b>Structurals</b>							
Cement		11 745.2	9 395.9	-20.0	991.4	816.8	-17.6
Sand and gravel		244 315.8	200 497.1	-17.9	817.3	631.4	-22.7
Stone		111 351.8	85 784.8	-23.0	662.9	512.8	-22.6
Lime		2 340.7	2 335.8	-0.2	188.3	186.3	-1.1
Clay products		..	..	..	136.0	139.4	2.5
<b>Fuels</b>							
Petroleum	000 m <sup>3</sup>	90 278.6	89 702.6	-0.6	13 103.4	10 629.5	-18.9
Natural gas	million m <sup>3</sup>	98 770.8	103 393.4	4.7	5 692.0	5 191.0	-8.8
Natural gas by-products	000 m <sup>3</sup>	23 862.7	24 705.1	3.5	2 370.8	2 125.5	-10.3
Coal		68 332.0	71 000.0	3.9	1 823.7	1 905.9	4.5

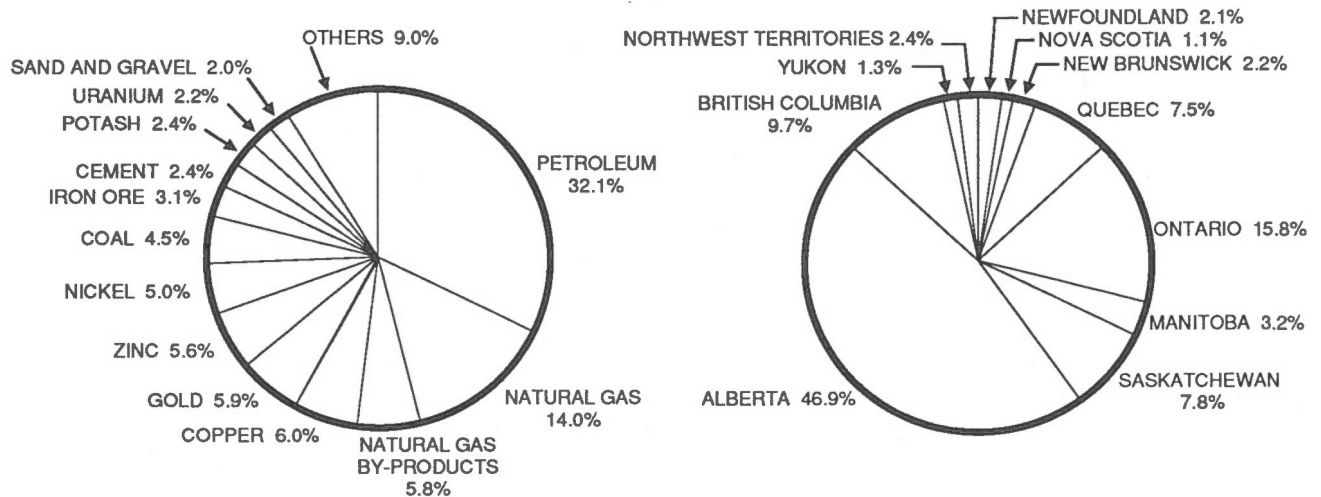
Sources: Energy, Mines and Resources Canada; Statistics Canada.

.. Not available; P Preliminary.

Note: Figures have been rounded.

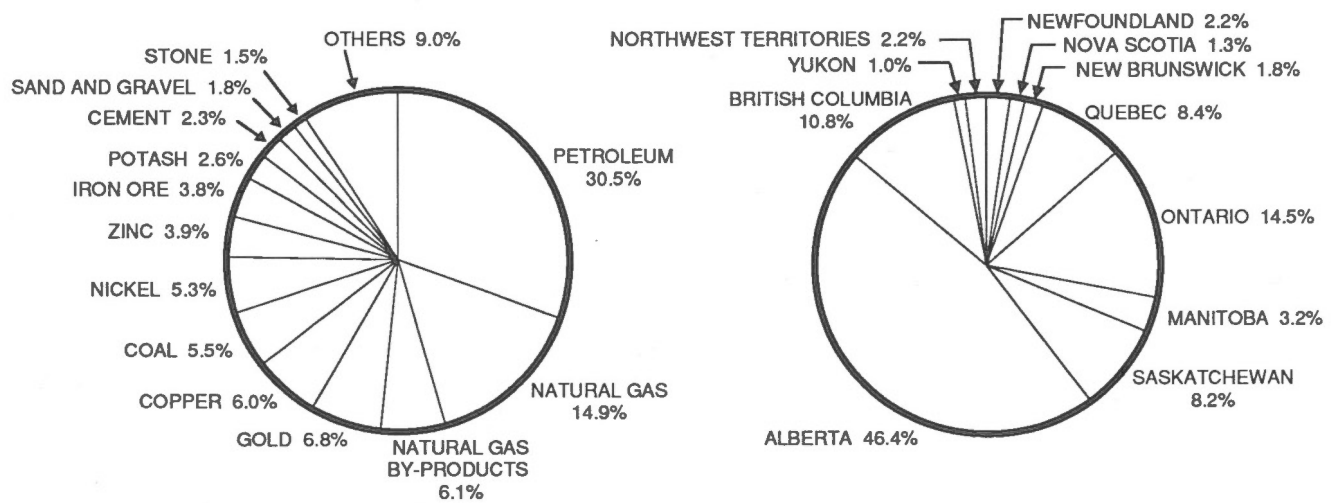
## VALUE OF MINERAL PRODUCTION IN 1990 \$40.8 BILLION

(% SHARES BY COMMODITY AND BY PROVINCE)



## VALUE OF MINERAL PRODUCTION IN 1991 \$34.8 BILLION

(% SHARES BY COMMODITY AND BY PROVINCE)



Sources: Energy, Mines and Resources Canada; Statistics Canada.

# **Summary of the Survey of the Readership of the Canadian Mineral Industry Monthly Report**

*Jean Bureau, Rob Dunn  
Energy, Mines and Resources Canada*

## **BACKGROUND**

Preparation of a monthly report on the mining industry began in 1957 as a report internal to the government. In 1979, the Canadian Mineral Industry Monthly Report was established and made available to the private sector. However, during 1991/92, preparation of this publication was temporarily suspended and only one edition (called the August-September edition) was released. In that issue, readers were advised that MPS was conducting an in-depth review of our publications in order to improve the level of service that we provide to our clients. Readers were asked to provide input into the publications review by responding to a readership survey questionnaire included with that publication.

Earlier this year, the results of that readership survey were compiled and presented to management as a key component of the MPS publication review. Based on the positive and encouraging response to that survey, publication of a report on the mineral industry has been resumed with this issue. It was, however, decided for cost and quality considerations to limit the publication of this report to a quarterly review, to be called the "Mineral Industry Quarterly Report." In order to ensure that clients' needs for timely data are suitably addressed, other means have been identified to meet such demands as they arise.

## **RESULTS OF THE READERSHIP SURVEY**

### **Respondent Characteristics**

Close to 200 readers responded to the survey. A wide range of organizations were represented although the majority of the respondents were from mining companies or associations and federal and provincial government departments and agencies. Other respondents represented universities, foreign governments (particularly the U.S. Government) and scientific and consultant organizations. About 60% of respondents referred to the report occasionally throughout the month, 28% referred to it once and 8% referred to it often. English was the preferred language of most of the respondents.

The major uses reported for the publication were spread over a range of purposes including planning and forecasting (26%), research (22%), monitoring the industry (21%), and reference (23%).

### **Usefulness of the Information**

Over three quarters of the respondents to the readership survey felt that the Monthly Report was 'Very Important' or 'Important' to them as a source of statistics. The statistical tables appearing in the Monthly Report were 'Useful' or 'Very Useful' to 86% of the respondents. Three quarters of the respondents considered that the written articles appearing in the report were either 'Useful' or 'Very Useful.' Most respondents felt that the technical level of these articles was 'Just Right.'

Respondents were generally satisfied with the clarity of the articles and the reliability of the data. Some concern was expressed with the timeliness of the information and



these concerns were reflected in the General Comments section at the end of the questionnaire.

### **Frequency of Publication**

When asked how often this publication should appear, respondents were split between a monthly release and a less frequent release. This split was mirrored in the written comments in which a large portion of the respondents indicated that publication on a quarterly basis would be sufficient to meet their needs. Other respondents indicated that bi-annual or annual release would be satisfactory. No respondent indicated a preference for publication more frequently than once a month.

### **General Comments**

A large number of the respondents made comments and suggestions on the content and format of the publication. Most of these comments were positive and reflected the needs of the readership group and the uses to which the information is put. Included in these comments were requests to give more detailed geographic information, to provide more written analyses of trends, to present mineral commodity profiles and to include more up-to-date statistics. It is the intention of the Sector to review **all** of these comments carefully in the course of preparation of the reinstituted publication in order to make the publication as useful as possible to our clientele.

### **Conclusion**

The results of the survey have, first and foremost, clearly demonstrated the importance of this publication as a vehicle for the dissemination of information and analyses of the mining industry. Accordingly, the Sector has made the

decision to reinstate the publication as a part of its publication program.

The comments made on the questionnaire suggest that, although the decision to produce this report on a quarterly basis is sound, there is a need to retain the capability to deliver timely and accurate information to our clients. To allow this, we have decided to undertake three specific steps to maintain and enhance our capability in this area.

- We have established a contact point in the sector where current information on the mineral industry can be requested and will highlight this to our clients. This contact point is given earlier in this publication in the 'Notes' section.
- In the near future, we intend to upgrade our monthly statistical bulletin, 'Production of Canada's Leading Minerals,' to include information on current statistical releases. [You can be put on the mailing list for this bulletin by contacting Ron Mosher at (613) 992-2274.]
- We are prepared to produce special issues of the Mineral Industry Quarterly Report to inform our readership on relevant information and analyses of the mineral industry as they become available.

MPS would like to take this opportunity to thank all those who have responded to the readership survey. We would, at the same time, like to continue to encourage participation by the readers in order to help us develop the content and format of this release. We are particularly interested in receiving ideas on any topics that readers feel should be presented in this publication.

## **Canadian Mine Openings and Closures 1988-91**

### **Trends and Implications**

*Lo-Sun Jen*  
(613) 992-0658

A recently completed analysis of mine openings and closures in Canada shows that, between 1988 and 1991, there was a decline in mine openings and a rise in mine closures.

The rise in mine closures since 1988 coincides with downward trends of metal prices (especially gold prices) which began in late 1989. This increase also correlates with a rising annual inventory of temporarily closed mines, many of which offer good potential for reopening (see Table) when market conditions improve. In the Table, mine openings include new and reopened mining operations; closures include permanent closures and suspensions which are considered as temporary shut-downs. "Reopening potential" refers to mines that were closed but were not mined out. There have been numerous examples of mine reopenings in Canada, many of recent date. In fact, many mines that were closed between 1988 and 1991 reopened in the same period. Examples are the Francoeur gold mine in Quebec, the Kerr (formerly Kerr Addison) gold mine and the Redstone and Shebandowan nickel mines in Ontario, and the Sullivan zinc-lead mine in British Columbia. This list does not include many that had closed prior to 1988 and later reopened, and still many others which had

opened or reopened but later closed again in the 1988-91 period. Mine reopenings reflect improved metal prices or market conditions, or better mining, financial or labour management arrangements.

Although the reasons for mine closures vary, they ultimately fall into three categories:

- those closed for the foreseeable future due to the exhaustion of mineable resources,
- those closed because of economic problems, and
- those closed due to mining or environmental problems.

Recent data show that in the period 1988-91, less than one-third of the mine closures in Canada were due to exhaustion of mineable resources. The majority of closures were the result of economic and financial reasons caused by weakened metal prices. The next upturn in metal prices, especially if it is expected to continue for several years, could trigger a significant recovery in mine reopenings in addition to new mine openings. Some gold and base metal mines that were closed but not mined out can offer new opportunities for reassessment and others may become targets for renewed exploration activities. As infrastructure, buildings, equipment and many other essential mining facilities are often in place, it generally requires less capital to reopen a mine than to find and bring a new mine into production.



**CANADIAN MINE OPENINGS AND CLOSURES, 1988-91**  
**(Trends and reopening potential)**

Mining Operations	1988	1989	1990	1991
Openings and reopenings	26	23	24	18
Closures and suspensions	16	22	26	33
Net effect on production capacity (t/d)	+18 700	+25 600	-30 800	-44 800
Net effect on employment (number of workers)	+904	+1 847	-1 762	-2 057
Reopening potential	12	13	17	19

Source: Energy, Mines and Resources Canada.

Note: The annual numbers of new mines, reopenings, suspensions and closures in Canada in the 1988-91 period have been published by the Mineral Policy Sector. More detailed information on mine openings and closures may be obtained by contacting the author.

## **Exploration 1990-92**

### **Mineral Exploration Statistics**

*Ginette Bouchard*  
(613) 992-3058

#### **BACKGROUND**

Energy, Mines and Resources Canada and Statistics Canada work in cooperation with corresponding provincial ministries to assemble a comprehensive set of national exploration statistics. The collection of all statistics for expenditures on general exploration (including both field and overhead expenditures) has been coordinated by EMR while Statistics Canada collects comprehensive statistics on minesite exploration needed for the preparation of Canada's System of National Accounts. The integration of these statistics into a summarization of expenditures for both general and minesite exploration activities is the responsibility of EMR.

EMR has published detailed information on field exploration expenditures excluding overhead costs since 1985. In 1989, a parallel statistical series including overhead costs has also been made available. The final results of the exploration surveys for the year 1990 are provided as Tables 1 to 7. In addition, the preliminary estimates of exploration expenditures for 1991 and the forecast levels for 1992 are presented in Table 8. An extensive set of exploration statistics, together with a detailed analysis of the status of exploration in Canada, appears annually in the Canadian Minerals Yearbook. This information can also be obtained by contacting the author directly.

#### **EXPLORATION RESULTS**

Canadian exploration expenditures, exclusive of those spent in the search for oil and gas resources, totalled \$775 million, down from the \$828 million spent in 1989. Senior companies spent \$534 million of the \$775 million and junior companies spent the remaining \$241 million. Out of this \$775 million, a total of \$662 million was spent on general exploration. The remaining \$113 million was directed to minesite exploration (defined as the search for new mines on the properties of existing mines). The most active exploration areas were British Columbia (\$226.5 million), Quebec (\$196.4 million), and Ontario (\$152.6 million). Although total exploration expenditures in British Columbia exceeded those in Quebec by \$30 million, field exploration expenditures in British Columbia were only \$2 million higher than those in Quebec.

The preliminary data for 1991 show a decline in the level of exploration expenditures to about \$600 million. Again British Columbia, Quebec and Ontario, in that order, are expected to be the provinces in which the majority of exploration activity occurs. The 1992 forecast reveals that the decline in exploration expenditures will likely continue, dropping to some \$500 million in that year.

Forecast values for 1992 are based on a survey carried out in December 1991 and January 1992. The overall outlook for the exploration industry may change as a result of unforeseen factors that arise before the end of the year.

TABLE 1. GENERAL EXPLORATION PLUS MINESITE EXPLORATION<sup>1</sup> ACTIVITIES BY PROVINCE AND TERRITORY, BY TYPE OF WORK, 1990

Province/Territory	Drilling (Surface and Underground)				Surveys - Other Exploration Work						Total Field Expenditures	Total Including Overhead <sup>2</sup>
	Diamond		Other		Geochemical	Geology	Geophysical		Rock Work	Other Field Costs		
	Metres	Cost	Metres	Cost			Ground	Airborne				
	(000)	(\$000)	(000)	(\$000)						(\$000)		
Newfoundland	83	6 882	—	11	2 230	5 070	1 598	320	1 062	2 061	19 234	23 275
Nova Scotia	23	1 863	—	12	275	1 133	513	35	3 512	896	8 240	11 025
New Brunswick	97	6 721	2	12	1 054	2 689	1 346	152	517	1 636	14 128	16 506
Quebec	1 208	74 825	11	1 187	5 646	20 730	11 094	1 351	23 657	46 471	184 961	196 356
Ontario	815	61 984	13	974	5 077	20 161	7 617	952	11 367	14 697	122 829	152 603
Manitoba	201	18 969	12	659	754	3 047	3 453	1 127	6 717	1 916	36 642	41 167
Saskatchewan	143	12 528	13	3 848	1 612	3 839	2 973	421	1 077	8 166	34 466	42 218
Alberta	4	374	129	3 009	147	971	232	792	76	1 533	7 134	10 667
British Columbia	911	76 315	44	1 914	10 290	28 683	7 685	3 435	24 990	33 935	187 247	226 534
Northwest Territories	187	17 406	—	—	631	6 326	1 786	210	305	4 827	31 491	35 994
Yukon Territory	30	4 115	17	948	574	1 578	1 040	134	4 134	1 388	13 912	18 374
CANADA	3 702	281 982	241	12 575	28 291	94 227	39 339	8 928	77 414	117 527	660 284	774 719

Source: Energy, Mines and Resources Canada from the Federal-Provincial Survey of Mining and Exploration Companies.

— Nil.

<sup>1</sup> Exploration activity includes only the search for new mines; it does not include exploration for extensions to deposits already being mined or committed to production. <sup>2</sup> Overhead expenditures include land costs, field administration costs and exploration-related head office expenses.

Note: Numbers may not add to totals due to rounding.

TABLE 2. GENERAL EXPLORATION PLUS MINESITE EXPLORATION<sup>1</sup> ACTIVITIES BY TYPE OF COMPANY, 1990

Type of Company	Drilling (Surface and Underground)				Surveys - Other Exploration Work						Total Field Expenditures	Total Including Overhead <sup>2</sup>
	Diamond		Other		Geochemical	Geology	Geophysical		Rock Work	Other Field Costs		
	Metres	Cost	Metres	Cost			Ground	Airborne				
	(000)	(\$000)	(000)	(\$000)						(\$000)		
1. Companies with a producing mine in Canada	2 106	145 575	173	8 953	8 488	35 939	15 425	2 173	34 743	55 446	306 742	348 220
2. Affiliates of group 1	519	41 502	49	2 873	6 001	16 876	7 148	2 346	4 858	9 607	91 209	111 493
3. Oil companies	18	1 464	1	16	174	1 411	602	198	279	2 284	6 428	8 673
4. Foreign companies (excluding group 3)	142	10 930	—	9	1 583	6 860	2 466	802	812	7 157	30 620	43 344
5. Junior companies and prospectors	825	73 625	17	725	11 700	29 688	11 245	2 917	35 974	39 850	205 724	241 021
6. Other companies	92	8 887	—	—	345	3 454	2 453	492	748	3 183	19 562	21 968

Source: Energy, Mines and Resources Canada from the Federal-Provincial Survey of Mining and Exploration Companies.

— Nil.

<sup>1</sup> Exploration activity includes only the search for new mines; it does not include exploration for extensions to deposits already being mined or committed to production. <sup>2</sup> Overhead expenditures include land costs, field administration costs and exploration-related head office expenses.

Note: Numbers may not add to totals due to rounding.

**TABLE 3. GENERAL EXPLORATION PLUS MINESITE EXPLORATION<sup>1</sup> EXPENDITURES, INCLUDING OVERHEAD<sup>2</sup>, BY PROVINCE AND TERRITORY, BY COMMODITY SOUGHT, 1990**

Province/Territory	Metals					Nonmetals	Coal	Commodity Not Specified	Total Including Overhead
	Base	Precious	Iron	Uranium	Other				
	(\$000)								
Newfoundland	9 157	11 722	5	52	602	1 734	—	2	23 275
Nova Scotia	1 531	8 333	58	—	211	516	305	71	11 025
New Brunswick	9 502	5 911	—	—	77	183	430	402	16 506
Quebec	69 897	114 266	39	—	6 161	5 994	—	—	196 356
Ontario	43 978	100 890	230	1	31	4 512	—	2 960	152 603
Manitoba	29 185	10 505	—	—	454	312	—	711	41 167
Saskatchewan	4 257	11 683	—	19 491	—	5 498	650	640	42 218
Alberta	45	100	—	964	—	2 062	7 377	119	10 667
British Columbia	57 348	156 431	11	—	1 394	2 047	3 186	6 117	226 534
Northwest Territories	4 145	26 558	12	3 569	119	879	—	714	35 994
Yukon Territory	7 242	10 345	—	—	34	35	—	718	18 374
CANADA	236 288	456 744	354	24 076	9 083	23 772	11 948	12 454	774 719

Source: Compiled by Energy, Mines and Resources Canada from the Federal-Provincial Survey of Mining and Exploration Companies.

— Nil.

<sup>1</sup> Exploration activity includes only the search for new mines; it does not include exploration for extensions to deposits already being mined or committed to production. <sup>2</sup> Overhead expenditures include land costs, field administration costs and exploration-related head office expenses.

Note: Numbers may not add to totals due to rounding.

**TABLE 4. GENERAL EXPLORATION PLUS MINESITE EXPLORATION<sup>1</sup> EXPENDITURES, INCLUDING OVERHEAD<sup>2</sup>, BY TYPE OF COMPANY AND BY COMMODITY SOUGHT, 1990**

COMPANY AND BY COMMODITY ACCOUNT, 1956									
Type of Company	Metals					Nonmetals	Coal	Commodity Not Specified	Total Including Overhead
	Base	Precious	Iron	Uranium	Other				
(\$000)									
1. Companies with a producing mine in Canada	147 614	158 587	226	9 058	2 739	9 814	10 172	10 010	348 220
2. Affiliates of group 1	34 610	74 756	3	601	384	170	648	321	111 493
3. Oil companies	828	5 942	—	—	448	645	777	32	8 673
4. Foreign companies (excluding group 3)	6 880	17 670	12	13 270	21	5 487	—	6	43 344
5. Junior companies and prospectors	40 499	184 678	113	1 148	5 481	6 776	319	2 007	241 021
6. Other companies	5 857	15 112	—	—	9	880	32	78	21 968

Source: Energy, Mines and Resources Canada from the Federal-Provincial Survey of Mining and Exploration Companies.

— Nil.

<sup>1</sup> Exploration activity includes only the search for new mines; it does not include exploration for extensions to deposits already being mined or committed to production.

<sup>2</sup> Overhead expenditures include land costs, field administration costs and exploration-related head office expenses.

Note: Numbers may not add to totals due to rounding.

**TABLE 5. GENERAL EXPLORATION PLUS MINESITE EXPLORATION<sup>1</sup> OF SURFACE AND UNDERGROUND DRILLING, BY PROVINCE AND TERRITORY, BY COMMODITY SOUGHT, 1990**

Province/Territory	Metals					Nonmetals	Coal	Total
	Base	Precious	Iron	Uranium	Other			
	(000 metres)							
Newfoundland	39	40	—	—	1	3	—	83
Nova Scotia	6	9	—	—	1	7	—	23
New Brunswick	52	25	—	—	—	2	20	99
Quebec	434	725	—	—	26	34	—	1 219
Ontario	258	568	—	—	—	3	—	828
Manitoba	151	60	—	—	2	1	—	213
Saskatchewan	17	55	—	70	—	11	2	156
Alberta	—	—	—	4	—	1	129	133
British Columbia	316	589	—	—	10	4	35	955
Northwest Territories	30	149	—	7	—	1	—	187
Yukon Territory	16	31	—	—	—	—	—	47
CANADA	1 318	2 250	—	81	41	66	186	3 944

Source: Energy, Mines and Resources Canada from the Federal-Provincial Survey of Mining and Exploration Companies.

— Nil.

<sup>1</sup> Exploration activity includes only the search for new mines; it does not include exploration for extensions to deposits already being mined or committed to production.

Note: Numbers may not add to totals due to rounding.

**TABLE 6. GENERAL EXPLORATION PLUS MINESITE EXPLORATION<sup>1</sup> OF SURFACE AND UNDERGROUND DRILLING, BY TYPE OF COMPANY AND BY COMMODITY SOUGHT, 1990**

Type of Company	Metals					Nonmetals	Coal	Total
	Base	Precious	Iron	Uranium	Other			
(000 metres)								
1. Companies with a producing mine in Canada	892	1 124	—	44	16	34	168	2 279
2. Affiliates of group 1	181	369	—	1	—	—	17	568
3. Oil companies	2	15	—	—	2	1	—	19
4. Foreign companies (excluding group 3)	47	64	—	31	—	1	—	142
5. Junior companies and prospectors	176	613	—	4	23	24	1	842
6. Other companies	21	65	—	—	—	6	—	92

Source: Energy, Mines and Resources Canada from the Federal-Provincial Survey of Mining and Exploration Companies.

— Nil.

<sup>1</sup> Exploration activity includes only the search for new mines; it does not include exploration for extensions to deposits already being mined or committed to production.

Note: Numbers may not add to totals due to rounding.



**TABLE 7. GENERAL EXPLORATION PLUS MINESITE EXPLORATION<sup>1</sup> EXPENDITURES, INCLUDING OVERHEAD<sup>2</sup>, BY PROVINCE AND TERRITORY, BY TYPE OF COMPANY, 1990**

Province/Territory	(1) Companies With a Producing Mine in Canada	(2) Affiliates of (1)	(3) Oil Companies	(4) Foreign Companies Excluding (3)	(5) Junior Companies and Prospectors	(6) Other Companies	Total Including Overhead
(\$000)							
Newfoundland	6 644	9 957	200	210	6 254	8	23 275
Nova Scotia	1 589	1 796	4	—	7 607	29	11 025
New Brunswick	4 974	7 647	—	—	3 497	388	16 506
Quebec	90 904	17 828	2 745	7 471	68 018	9 391	196 356
Ontario	79 823	41 809	628	8 751	20 433	1 158	152 603
Manitoba	25 280	12 249	—	238	3 400	—	41 167
Saskatchewan	25 252	2 163	113	11 021	3 670	—	42 218
Alberta	7 752	834	60	1 881	139	—	10 667
British Columbia	78 888	11 369	3 859	7 943	120 266	4 210	226 534
Northwest Territories	17 278	2 726	789	4 582	3 905	6 714	35 994
Yukon Territory	9 836	3 116	275	1 247	3 831	70	18 374
<b>CANADA</b>	<b>348 220</b>	<b>111 493</b>	<b>8 673</b>	<b>43 344</b>	<b>241 021</b>	<b>21 968</b>	<b>774 719</b>

Source: Energy, Mines and Resources Canada from the Federal-Provincial Survey of Mining and Exploration Companies.

— Nil.

<sup>1</sup> Exploration activity includes only the search for new mines; it does not include exploration for extensions to deposits already being mined or committed to production. <sup>2</sup> Overhead expenditures include land costs, field administration costs and exploration-related head office expenses.

Note: Numbers may not add to totals due to rounding.

**TABLE 8. GENERAL EXPLORATION PLUS MINESITE EXPLORATION<sup>1</sup>  
EXPENDITURES BY PROVINCE AND TERRITORY, 1990-92**

Province/Territory	1990		1991 <sup>pe</sup>	1992 <sup>f</sup>
	Total Field Expenditures	Total Field and Overhead <sup>2</sup> Expenditures	Total Field and Overhead Expenditures	Total Field and Overhead Expenditures
(\$000)				
Newfoundland	19 234	23 275	12 232	11 137
Nova Scotia	8 240	11 025	4 728	2 415
New Brunswick	14 128	16 506	18 880	16 996
Quebec	184 961	196 356	156 191	123 327
Ontario	122 829	152 603	107 570	98 043
Manitoba	36 642	41 167	30 913	26 182
Saskatchewan	34 466	42 218	590 034	53 514
Alberta	7 134	10 667	6 775	5 957
British Columbia	187 247	226 534	158 492	113 209
Northwest Territories	31 491	35 994	33 729	35 993
Yukon	13 912	18 374	15 336	10 767
Total	660 284	774 719	594 880	497 540
General Exploration	552 946	662 275	514 484	426 295
Minesite Exploration	107 338	112 444	80 396	71 245

Sources: Energy, Mines and Resources Canada and Statistics Canada from Federal-Provincial Survey of Mining and Exploration Companies.

<sup>pe</sup> Preliminary estimate 1991 (survey carried out December 1991 through March 1992). <sup>f</sup> Forecast 1992 (survey carried out December 1991 through March 1992).

<sup>1</sup> Exploration activity includes only the search for new mines; it does not include exploration for extensions to deposits already being mined or committed to production. <sup>2</sup> Overhead expenditures include land costs, field administration costs and exploration-related head office expenses.

Note: Numbers may not add to totals due to rounding. Statistics Canada totals for minesite exploration have been revised by EMR.

# **The 1989 Pollution Abatement and Control Survey Highlights for the Mineral Industry**

*Capital Expenditure Section, Investment and Capital Stock Division  
Statistics Canada*

## **OVERVIEW**

The 1989 Pollution Abatement and Control (PAC) Survey was conducted by Statistics Canada to evaluate the financial commitment of business and social organizations to the reduction or elimination of pollutants and wastes emitted into the environment. This financial involvement was measured in terms of both the capital and the operating expenditures on retrofit facilities and equipment specifically installed for the purpose of abating or controlling pollutants. The survey also included questions on the type of retrofit equipment purchased and on the sales and the savings made as a result of materials recovered by PAC equipment. At the present time, there are no firm plans to conduct this survey in the future.

Out of the 801 survey questionnaires mailed, 610 (or 76%) were completed and returned. Ninety questionnaires were sent to mining organizations and seventy of these were completed. In addition, the primary metals manufacturing industry (which includes smelters and refineries) was well represented in the sample. Survey results for each of these two areas have been summarized in this review.

## **HIGHLIGHTS OF THE OVERALL SURVEY RESULTS**

- Capital expenditures on retrofit facilities and equipment for PAC purposes were \$916 million in 1989.
- The PAC expenditures represented about 6% of total capital expenditures reported by the same group of respondents on the Capital and Repair Expenditures Survey (CRES), an annual survey conducted by Statistics Canada.
- Three sectors (manufacturing, mining and utilities) and four provinces (Ontario, Quebec, Alberta and British Columbia) each accounted for more than 90% of total PAC capital expenditures. Mining and primary metals manufacturing together accounted for 32.9% of the total PAC expenditures.
- Examples of retrofit facilities and equipment purchased include dust control filter systems, scrubbers, waste water treatment facilities and hazardous waste storage facilities.
- Operating expenditures for PAC purposes were \$728.8 million in 1989. Of this total, \$335.2 million (or 46.0%) was expended by the mining and primary metals manufacturing industries.
- Revenues from the sale of PAC-recovered materials amounted to \$80 million in 1989. Savings made using recovered materials totalled \$74 million.

## **SUMMARY OF THE RESULTS FOR THE MINING INDUSTRY**

A total of \$69.6 million in capital expenditures were made by the mining industry, representing 7.6% of the total PAC capital expenditures recorded. This expenditure was approximately evenly split between construction costs (\$35.8 million) and machinery and equipment purchases (\$33.8 million) and represented about 4.7% of the total capital expenditures (as reported to the CRES) of those organizations that responded to the PAC survey. Of the total \$69.6 million 31.8% was expended to abate air pollutants, 35.5% for water pollutants, 14.0% for contained liquids and 18.8% for solid wastes.

Operating expenditures made in the mining sector for PAC purposes totalled \$76.8 million (or 10.5%) of the total operating expenditures reported in the survey. Of this amount, \$19.5 million was expended on labour, \$15.4 million on fuel and electricity, \$32.3 million on materials and supplies and \$9.6 million on purchased services. These amounts were spent to abate air pollutants (31.2%), water pollutants (36.9%), contained liquids (18.8%) and solid wastes (13.0%).

## **SUMMARY OF THE RESULTS FOR THE PRIMARY METALS MANUFACTURING INDUSTRY**

Primary metals manufacturing accounted for \$231.4 million, or 25.3%, of the PAC capital expenditures recorded in the survey. Of this amount, a total of \$137.2 million was expended on construction and \$94.2 million on the cost of machinery and equipment. This represented 20.4% of the total capital expenditures reported in the CRES by the organizations that reported to the PAC survey. Most (68.9%) of this amount was expended to abate air pollutants, while

28.3% was used to abate water pollutants, 0.7% to abate contained liquids and 2.1% to control solid wastes.

A total operating expenditure of \$258.4 million was reported by the primary metals manufacturing industry. Of this total, 41.9% was used to abate air pollutants, 17.8% to control water pollutants, 3.7% for contained liquids and 36.5% for solid wastes.

In addition, primary metals manufacturers reported a total of \$23.0 million in revenues from the sale of PAC-recovered materials and \$20.4 million in savings from the use of PAC-recovered materials.

## **DATA LIMITATIONS**

Users of the survey results should note that data collected in the course of this survey were for facilities and equipment which are separately identifiable and which have been installed exclusively for pollution abatement and control purposes. This focused the survey on 'end-of-pipe' PAC investment and thus avoided the problem of measuring expenditures made to attain pollution abatement and control through changes in processing techniques which may also have been made to expand capacity and/or to replace or modernize existing processes.

Two other factors also limit the interpretation of the survey results:

- Only medium and large firms were included in the sample selected, and
- No estimation for non-respondents to the survey questionnaire or for the non-sampled organizations is included in the data.

As a consequence of the above factors, users should be aware that the data represent a lower limit on PAC spending levels for the year 1989 in the Canadian economy.

#### **FURTHER INFORMATION AVAILABLE**

A more detailed report, entitled 'Analysis of the 1989 Pollution Abatement and Control Survey' summarizing the survey results can be obtained by contacting Susan Horsley of Investment and Capital Stock Division, Statistics Canada at (613) 951-2209.

## **STATISTICAL TABLES<sup>1</sup>**

---

<sup>1</sup> Users of the statistical tables should note that a statistical table entitled "Canada, Production of Leading Minerals, 1990 and 1991" appears in the article "The Canadian Mineral Industry - 1991 in Review."

TABLE 1. CANADA, PRODUCTION OF LEADING MINERALS

		1991			1992			Percentage Changes		
		January	February	Total 2 Months	January	February	Total 2 Months	February 1992 February 1991	February 1992 January 1992	2 Months 1992 1991
(000 tonnes except where noted)										
<b>METALS</b>										
Copper		58.7 <sup>r</sup>	66.9 <sup>r</sup>	125.6	66.1	65.3	131.5	-2.4	-1.2	4.6
Gold	kg	12 531.8 <sup>r</sup>	13 038.9 <sup>r</sup>	25 570.8	12 931.8 <sup>r</sup>	12 041.1	24 972.9	-7.7	-6.9	-2.3
Iron ore		1 325.7	1 689.8	3 015.5	1 506.8	1 119.4	2 626.1	-33.8	-25.7	-12.9
Lead		13.0	13.8	26.8	21.4	22.8	44.2	65.1	6.8	64.8
Molybdenum	t	1 206.8	1 051.9	2 258.7	964.6	674.7	1 639.3	-35.9	-30.0	-27.4
Nickel		17.9 <sup>r</sup>	16.4 <sup>r</sup>	34.3	15.5	17.5	33.0	6.4	12.4	-3.8
Silver	t	92.7 <sup>r</sup>	119.7 <sup>r</sup>	212.4	102.9	97.3	200.3	-18.7	-5.4	-5.7
Uranium <sup>1</sup>	t	457.0	626.4	1 083.5	587.0	467.1	1 054.1	-25.4	-20.4	-2.7
Zinc		70.9 <sup>r</sup>	64.8 <sup>r</sup>	135.6	65.7	77.6	143.2	19.8	18.2	5.6
<b>NONMETALS</b>										
Asbestos		50.5	49.5 <sup>r</sup>	100.1	50.5	42.1	92.5	-15.1	-16.7	-7.5
Clay products	\$000	3 957.1	4 248.9 <sup>r</sup>	8 206.0	4 951.3	4 543.5	9 494.9	6.9	-8.2	15.7
Gypsum		620.0	520.1	1 140.0	628.2 <sup>r</sup>	572.2	1 200.3	10.0	-8.9	5.3
Potash K <sub>2</sub> O		595.9	552.5	1 148.3	630.3	523.5	1 153.9	-5.2	-16.9	0.5
Cement		304.3	375.1	679.3	296.0	328.1	624.0	-12.5	10.8	-8.1
Lime		201.4	173.5	374.9	197.8	188.0	385.8	8.3	-5.0	2.9
Salt		912.9 <sup>r</sup>	708.5 <sup>r</sup>	1 621.4	842.8	641.8	1 484.5	-9.4	-23.9	-8.4
<b>FUELS</b>										
Coal		5 935.2 <sup>r</sup>	5 890.1	11 825.3	..	..	..	..	..	..
Natural gas	million m <sup>3</sup>	12 408.0 <sup>r</sup>	10 357.0 <sup>r</sup>	22 765.0	..	..	..	..	..	..
Crude oil and equivalent	000 m <sup>3</sup>	8 363.0 <sup>r</sup>	7 821.0 <sup>r</sup>	16 184.0	..	..	..	..	..	..

Sources: Energy, Mines and Resources Canada; Statistics Canada.

.. Not available; <sup>r</sup> Revised.<sup>1</sup> Tonnes uranium (1 tonne U = 1.2999 short tons U<sub>3</sub>O<sub>8</sub>).

Note: Percentage changes are calculated on the basis of actual production figures as opposed to the rounded figures as shown.

**TABLE 2. METAL PRICES, 1992**

	January	February	March
<b>COPPER</b>			
Electrolytic, U.S. producer f.o.b. refinery, cents (U.S.)	99.323	103.628	104.783
Electrolytic, COMEX, 1st pos. plus 5¢, cents (U.S.)	96.159	100.521	101.561
Electrolytic, LME Grade A settlement, cents (U.S.)	97.034	100.061	101.030
<b>LEAD</b>			
U.S. producer, cents (U.S.)	35.000	35.000	33.000
Montreal, cents (C.)	39.500	39.500	39.500
LME cash, cents (U.S.)	23.335	22.885	23.625
<b>SILVER</b>			
Handy & Harmon, cents per troy oz. (U.S.)	412.080	413.711	410.364
Handy & Harmon, cents per troy oz. (C.)	476.571	489.213	489.400
<b>ZINC</b>			
LME SHG cash, cents (U.S.)	52.332	51.289	55.091
North American SHG, cents (U.S.)	54.712	52.885	56.945
<b>TIN</b>			
New York, dealers, cents (U.S.)	253.833	259.125	261.556
Metals Week, composite, cents (U.S.)	367.885	375.740	375.248
<b>GOLD</b>			
London, p.m., US\$ per troy oz.	354.448	353.913	344.336
<b>MERCURY</b>			
New York, dealers, US\$ per flask	165.238	168.684	168.409
<b>NICKEL</b>			
New York, dealers, cathode, US\$	3.416	3.588	3.405
LME cash, US\$	3.410	3.566	3.365
<b>ANTIMONY</b>			
New York, dealers, cents (U.S.)	82.000	82.000	80.727
<b>PLATINUM<sup>1</sup></b>			
London PM fix, US\$ per troy oz.	341.516	362.100	356.939
<b>CADMIUM</b>			
New York, dealers, US\$	1.464	1.100	1.136
<b>ALUMINUM</b>			
LME cash, cents (C.)	61.747	67.949	69.267
LME cash, cents (U.S.)	53.391	57.462	58.081
<b>COBALT</b>			
Shot/cathode/250 kg., US\$	25.000	25.000	25.000
U.S. spot cathode, US\$	30.375	27.750	27.700
<b>TUNGSTEN</b>			
US spot ore, US\$/MTU	60.627	60.627	59.966
<b>MOLYBDENUM</b>			
Metals Week dealer oxide, US\$	2.305	2.233	2.146
<b>URANIUM</b>			
Nuexco, US\$, U <sub>3</sub> O <sub>8</sub>	7.400	8.750	8.000

Sources: Metals Week; The Northern Miner.

Average U.S. Exchange Rate for January = 1.1565; February = 1.1825; March = 1.1926.

<sup>1</sup> As of January 1992 we replaced the Impala Producer price for platinum with the London PM Fix price.

Note: Prices are per pound unless otherwise stated.



**TABLE 3. CANADA, REAL GROSS DOMESTIC PRODUCT AT FACTOR COST BY INDUSTRY, IN 1986 PRICES, QUARTERLY (SEASONALLY ADJUSTED AT ANNUAL RATES)**

Industry Sector	1990 4th Quarter	1991 1st Quarter	1991 2nd Quarter	1991 3rd Quarter	1991 4th Quarter	% Change 4th Quarter 1991 3rd Quarter 1991	% Change 4th Quarter 1991 4th Quarter 1990
(\$ million)							
<b>TOTAL ECONOMY</b>	501 776.8	496 432.2	503 819.0	504 645.9	503 421.3	-0.2	0.3
<b>Business Sector</b>							
Agriculture	11 548.3	11 542.2	11 402.2	11 400.9	11 559.5	1.4	0.1
Fishing and trapping	905.1	879.1	879.1	878.3	829.1	-5.6	-8.4
Forestry	2 418.0	2 471.8	2 612.6	2 665.0	2 553.4	-4.2	5.6
<b>Mines, quarries and oil wells</b>	<b>19 813.2</b>	<b>20 045.9</b>	<b>19 873.2</b>	<b>19 778.2</b>	<b>19 788.3</b>	<b>0.1</b>	<b>-0.1</b>
Mining industries	6 099.2	6 215.0	6 307.5	6 374.9	6 319.1	-0.9	3.6
Gold mines	1 559.8	1 642.0	1 660.4	1 620.8	1 549.2	-4.4	-0.7
Other metal mines	2 332.2	2 298.6	2 328.1	2 519.8	2 456.8	-2.5	5.3
Iron mines	462.5	465.2	488.0	450.8	475.6	5.5	2.8
Asbestos mines	96.8	82.6	94.2	102.2	107.4	5.1	11.0
Nonmetal mines	550.1	598.5	565.5	547.2	549.6	0.4	-0.1
Salt mines	151.6	156.5	163.7	147.7	152.1	2.9	0.3
Coal mines	946.2	971.6	1 007.6	986.4	1 028.4	4.3	8.7
Crude petroleum and natural gas	11 728.4	11 743.5	11 759.5	11 695.1	11 899.1	1.7	1.5
Quarry and sand pit industries	762.6	772.8	736.4	746.4	743.2	-0.4	-2.5
Services related to mineral extraction	1 223.1	1 314.6	1 069.9	961.8	826.9	-14.0	-32.4
Manufacturing	86 688.8	83 746.8	85 278.4	86 196.6	84 664.4	-1.8	-2.3
Construction industry	31 927.9	31 082.9	31 623.5	32 384.9	32 127.7	-0.8	0.6
Transportation and storage	22 106.7	21 546.6	22 047.5	21 886.7	21 561.3	-1.5	-2.5
Communications	18 810.2	18 943.0	19 262.3	19 232.2	19 545.9	1.6	3.9
Other utilities	15 905.2	16 106.2	16 214.1	16 432.8	16 508.0	0.5	3.8
Wholesale trade	25 539.3	24 919.2	26 487.6	27 219.6	27 165.1	-0.2	6.4
Retail trade	29 869.3	29 060.9	29 659.8	29 382.5	29 127.4	-0.9	-2.5
Finance, insurance and real estate	80 672.7	82 121.5	84 278.4	84 318.8	85 540.2	1.4	6.0
Community, business and personal services	64 879.3	63 144.7	62 847.7	62 018.8	61 039.1	-1.6	-5.9
<b>Non-Business Sector</b>							
Government service industries	33 388.5	33 480.6	33 905.5	33 361.4	33 884.7	1.6	1.5
Community and personal services	53 060.7	53 038.4	53 179.2	53 265.1	53 372.7	0.2	0.6
Other non-business industries and services	4 243.6	4 302.6	4 267.9	4 224.0	4 154.6	-1.6	-2.1

Source: Statistics Canada.

Note: Numbers may not add to totals due to rounding.

**TABLE 4. CANADA, REAL GROSS DOMESTIC PRODUCT AT FACTOR COST BY INDUSTRIES INVOLVED IN MINERAL MANUFACTURING, IN 1986 PRICES, QUARTERLY (SEASONALLY ADJUSTED AT ANNUAL RATES)**

Industry	1990 4th Quarter	1991 1st Quarter	1991 2nd Quarter	1991 3rd Quarter	1991 4th Quarter	% Change 4th Quarter 1991 3rd Quarter 1991	% Change 4th Quarter 1991 4th Quarter 1990
(\$ million)							
<b>PRIMARY METAL INDUSTRIES</b>	<b>6 218.6</b>	<b>6 377.8</b>	<b>6 646.5</b>	<b>7 053.3</b>	<b>6 992.7</b>	<b>-0.9</b>	<b>12.5</b>
Primary steel industries	2 252.3	2 369.3	2 508.5	2 811.1	2 791.2	-0.7	23.9
Steel, pipe and tube industries	401.0	435.3	448.1	462.9	476.1	2.9	18.7
Iron foundries	344.0	313.9	321.3	304.5	298.1	-2.1	-13.3
Smelting and refining	2 354.6	2 441.4	2 514.1	2 589.2	2 568.0	-0.8	9.1
Aluminum rolling, casting and extruding	468.5	438.7	476.9	474.1	438.7	-7.5	-6.4
Copper rolling, casting and extruding	67.4	68.7	70.7	77.5	71.9	-7.2	6.7
Other metal rolling, casting, etc.	330.8	310.4	306.8	334.0	348.8	4.4	5.4
<b>FABRICATED METAL PRODUCTS INDUSTRIES</b>	<b>5 986.1</b>	<b>5 637.3</b>	<b>5 654.9</b>	<b>5 629.5</b>	<b>5 219.2</b>	<b>-7.3</b>	<b>-12.8</b>
Power boiler and heat exchanger industry	325.0	303.2	308.8	279.0	263.8	-5.5	-18.8
Fabricated structural metal industry	998.1	943.6	956.8	927.6	830.8	-10.4	-16.8
Ornamental and architectural metal products industry	645.7	589.4	619.9	635.6	600.6	-5.5	-7.0
Stamped, pressed and coated metals	1 413.5	1 261.5	1 302.0	1 314.0	1 158.1	-11.9	-18.1
Wire and wire products industries	477.6	454.0	466.4	491.2	490.4	-0.2	2.7
Hardware, tool and cutlery industries	692.0	667.3	673.7	686.9	666.5	-3.0	-3.7
Heating equipment industry	151.7	137.2	147.6	153.2	157.2	2.6	3.6
Machine shops industry	626.6	645.8	594.8	558.6	481.2	-13.9	-23.2
Other metal fabricating industries	656.0	635.3	584.9	583.3	570.5	-2.2	-13.0
<b>NONMETALLIC MINERAL PRODUCTS INDUSTRIES</b>	<b>2 640.1</b>	<b>2 414.0</b>	<b>2 566.1</b>	<b>2 596.2</b>	<b>2 520.9</b>	<b>-2.9</b>	<b>-4.5</b>
Clay products industry	94.9	90.9	106.5	112.9	111.7	-1.1	17.7
Cement industry	361.2	323.9	356.3	343.8	330.8	-3.8	-8.4
Concrete products industries	385.7	349.4	359.8	355.8	346.2	-2.7	-10.2
Ready-mix concrete industry	374.7	339.2	361.1	381.4	360.7	-5.4	-3.7
Glass and glass products industries	603.2	570.4	595.6	609.2	569.2	-6.6	-5.6
Miscellaneous nonmetallic mineral products	820.5	740.2	786.7	793.1	802.3	1.2	-2.2

Source: Statistics Canada.

Note: Numbers may not add to totals due to rounding.

TABLE 5. MINERAL PRODUCTION OF CANADA, 1989-91 AND AVERAGE 1987-91

		Unit of Measure	1989		1990		1991P		Average 1987-91		
			(000)	(Quantity)	(\$000)	(Quantity)	(\$000)	(Quantity)	(\$000)	(Quantity)	(\$000)
<b>METALS</b>											
Antimony	kg		2 818		6 957	565	1 188	525	1 099	2 157	5 407
Bismuth	kg		157		2 315	74	664	139	1 043	143	1 717
Cadmium	kg		1 711		28 027	1 334	11 588	1 565	7 837	1 551	17 562
Calcium	kg		x		x	x	x	x	x	279	2 931
Cesium, pollucite	kg		x		x	x	x	x	x	148	472
Cobalt	kg		2 344		45 781	2 184	49 563	2 158	61 764	2 315	49 771
Columbium (Niobium) (Cb <sub>2</sub> O <sub>5</sub> )	kg		x		x	x	x	x	x	3 375	21 472
Copper	kg		704 432		2 388 748	771 433	2 428 935	773 640	2 101 168	760 426	2 247 100
Germanium	kg		x		x	4	1 083	—	—	2	521
Gold	g		159 494		2 315 860	167 373	2 407 654	176 720	2 355 325	150 843	2 323 060
Ilmenite	t		x		x	554	x	400	x	494	21 469
Indium	g		x		x	x	x	x	x	9 667	2 518
Iron ore	t		39 445		1 369 193	35 670	1 258 792	35 961	1 307 888	37 742	1 330 948
Iron remelt	t		x		x	728	x	740	x	809	203 337
Lead	kg		268 887		279 643	233 372	279 346	239 558	203 864	293 236	302 747
Lithium	kg		x		x	x	x	x	x	878	3 825
Magnesium	kg		x		x	x	x	x	x	6 889	27 329
Molybdenum	kg		13 543		111 728	12 188	84 721	11 292	70 397	13 066	102 853
Nickel	kg		195 554		3 042 278	195 004	2 027 917	189 161	1 828 235	193 510	2 192 378
Platinum group	g		9 870		141 730	11 123	189 423	10 955	141 790	11 084	169 141
Rare earths	t		—		—	—	—	—	—	x	x
Rhenium	kg		x		x	x	x	x	x	1	1 242
Rubidium	kg		—		—	x	x	x	x	3	35
Selenium	kg		213		4 138	369	6 867	215	4 148	310	6 419
Silver	kg		1 312		274 737	1 381	249 746	1 240	185 261	1 350	304 016
Strontium	kg		x		x	x	x	x	x	x	x
Tantalum (Ta <sub>2</sub> O <sub>5</sub> )	kg		97		10 540	100	8 762	111	9 992	73	6 671
Tellurium	kg		8		591	12	994	13	1 173	13	835
Tin	kg		x		x	3 844	28 449	4 455	29 161	3 791	31 823
Tungsten (WO <sub>3</sub> )	kg		—		—	—	—	—	—	—	—
Uranium (U)	kg		10 995		912 684	9 720	887 975	7 813	472 074	10 841	894 721
Vanadium	kg		—		—	x	x	x	x	7	38
Yttrium (Y <sub>2</sub> O <sub>3</sub> )	kg		x		x	x	x	—	—	54	2 101
Zinc	kg		1 272 854		2 739 182	1 179 372	2 272 649	1 079 912	1 350 970	1 212 015	2 020 524
Total metals				13 982 451		12 499 965		10 425 251		12 295 537	
<b>NONMETALS</b>											
Arsenious trioxide	t		x		1 286	x	240	x	247	5	974
Asbestos	t		714r		289 153r	686	272 102	670	274 535	689	264 974
Barite	t		39		3 069	44	3 130	51	3 887	45	3 643
Fluorspar	t		x		x	x	x	—	—	25	3 327
Gemstones	kg		901		3 238	452	918	316	538	493	1 692
Graphite	t		x		x	x	x	x	x	7	5 756
Gypsum	t		8 180r		85 713r	7 978	80 080	7 305	74 315	8 274	82 548
Magnesite	t		x		x	x	x	x	x	177	22 982
Marl	t		x		x	x	x	x	x	2	36
Mica	t		x		x	x	x	x	x	15	5 730
Nepheline syenite	t		551		23 077	533	23 651	493	24 961	525	22 826
Peat	t		821r		99 666	775	89 735	737	91 675	746	87 878
Potash (K <sub>2</sub> O)	t		7 014		1 017 525	7 345	964 920	7 012	918 994	7 439	962 839
Potassium sulphate	t		x		x	x	x	x	x	1	575
Salt	t		11 158r		275 618r	11 191	240 890	11 585	258 585	10 950	252 088
Serpentine	t		x		x	x	x	x	x	4	640
Soapstone, talc and pyrophyllite	t		145		15 108	131	13 895	115	13 260	135	14 519
Sodium sulphate	t		327		26 344	347	27 088	285	21 800	326	25 359
Sulphur in smelter gas	t		809		86 909	790	81 229	726	76 592	781	82 010
Sulphur, elemental	t		5 750		419 541	5 822	368 864	6 029	244 104	5 878	399 885
Titanium dioxide	t		x		x	x	x	x	x	718	250 229
Tremolite	t		x		x	x	x	x	x	x	46
Total nonmetals				2 663 406r		2 492 168		2 250 462		2 499 553	
<b>FUELS</b>											
Coal	t		70 527		1 907 080	68 332	1 823 700	71 000	1 905 900	68 343	1 816 462
Natural gas	000m <sup>3</sup>		96 117		5 394 275	98 771	5 692 025	103 393	5 190 985	93 492	5 219 881
Natural gas by-products	m <sup>3</sup>		23 055		1 620 282	23 863	2 370 767	24 705	2 125 457	23 148	1 917 288
Petroleum, crude	m <sup>3</sup>		90 641		10 862 909	90 279	13 103 383	89 703	10 629 463	90 714	11 180 944
Total fuels				19 784 546		22 989 875		19 851 805		20 134 575	
<b>STRUCTURAL MATERIALS</b>											
Clay products	\$		..		200 138	..	136 029	..	139 411	..	176 612
Cement	t		12 591		960 000	11 745	991 442	9 396	816 802	11 737	947 353
Lime	t		2		201 571	2 341	188 283	2 336	186 287	1 905	187 076
Sand and gravel	t		244		874 078	244 316	817 317	200 497	631 391	202 325	794 773
Stone	t		119 335r		667 178r	111 352	662 945	85 785	512 837	109 978	612 799
Total structural materials				2 902 965r		2 796 017		2 286 729		2 718 613	
Total all minerals				39 333 368r		40 778 025		34 814 247		37 648 278	

Sources: Energy, Mines and Resources Canada; Statistics Canada.

— Nil; .. Not available; P Preliminary; r Revised; x Confidential.

Note: Numbers may not add to totals due to rounding. Confidential values are included in totals.

**TABLE 6. CANADA, VALUE OF MINERAL PRODUCTION, PER CAPITA  
VALUE OF MINERAL PRODUCTION, AND POPULATION, 1962-91**

	Metallics	Industrial Minerals	Fuels	Other Minerals <sup>1</sup>	Total	Per Capita Value of Mineral Production	Population of Canada
			(\$ million)			(\$)	(000)
1962	1 496	574	811		2 881	155.05	18 583
1963	1 510	632	885		3 027	159.91	18 931
1964	1 702	691	973		3 365	174.44	19 291
1965	1 908	761	1 046		3 715	189.11	19 644
1966	1 985	844	1 152		3 981	198.88	20 015
1967	2 285	861	1 235		4 381	214.98	20 378
1968	2 493	886	1 343		4 722	228.12	20 701
1969	2 378	893	1 465		4 736	225.51	21 001
1970	3 073	931	1 718		5 722	268.68	21 297
1971	2 940	1 008	2 014		5 963	276.46	21 568
1972	2 956	1 085	2 368		6 408	293.92	21 802
1973	3 850	1 292	3 227		8 370	379.69	22 043
1974	4 821	1 731	5 202		11 753	525.55	22 364
1975	4 795	1 898	6 653		13 347	588.05	22 697
1976	5 315	2 269	8 109		15 693	682.51	22 993
1977	5 988	2 612	9 873		18 473	794.24	23 258
1978	5 698	2 986	11 578		20 261	863.05	23 476
1979	7 951	3 514	14 617		26 081	1 101.83	23 671
1980	9 697	4 201	17 944		31 842	1 330.29	23 936
1981	8 753	4 485	19 046	136	32 420	1 331.86	24 342
1982	6 874	3 703	23 038	216	33 831	1 373.37	24 634
1983	7 399	3 741	27 154	245	38 539	1 548.68	24 885
1984	8 670	4 318	30 399	401	43 789	1 742.92	25 124
1985	8 709	4 859	31 120	41	44 730	1 763.79	25 360
1986	8 798	4 863	18 763	22	32 446	1 279.77	25 353
1987	10 962	5 125	20 274	—	36 361	1 419.39	25 617
1988	13 608	5 574	17 773	—	36 955	1 426.33	25 909
1989	13 982	5 566 <sup>r</sup>	19 785	—	39 333 <sup>r</sup>	1 498.97 <sup>r</sup>	26 240 <sup>r</sup>
1990	12 500	5 288	22 990	—	40 778	1 532.86	26 603
1991 <sup>p</sup>	10 425	4 537	19 852	—	34 814	1 289.82	26 992

Sources: Energy, Mines and Resources Canada; Statistics Canada.

— Nil; <sup>p</sup> Preliminary; <sup>r</sup> Revised.

<sup>1</sup> 1981-86 — Other minerals may include arsenious trioxide, bentonite, calcium, cesium, cobalt, diatomite, ilmenite, indium, iron remelt, lithium, marl, magnesium, niobium, perlite, rhenium, serpentine, sodium antimonate, strontium, tin, tungsten or yttrium for which the value of production may be confidential in that year. Beginning 1987, this category was discontinued.

Note: Beginning in 1986, bentonite, diatomite and sodium antimonate are reported in industrial minerals. Totals may not add due to rounding.

**TABLE 7. CANADA, VALUE OF MINERAL PRODUCTION BY PROVINCE, TERRITORY AND MINERAL CLASS, 1991P**

	Metals		Industrial Minerals		Fuels		Total	
	(\$000)	(% of total)	(\$000)	(% of total)	(\$000)	(% of total)	(\$000)	(% of total)
Alberta	3 021	...	469 269	10.3	15 675 428	79.0	16 147 718	46.4
Ontario	3 731 424	35.8	1 248 783	27.5	81 943	0.4	5 062 151	14.5
British Columbia	1 491 808	14.3	414 725	9.1	1 843 466	9.3	3 749 999	10.8
Quebec	1 932 343	18.5	1 001 886	22.1	—	—	2 934 229	8.4
Saskatchewan	347 205	3.3	831 028	18.3	1 673 811	8.4	2 852 043	8.2
Manitoba	930 915	8.9	83 945	1.9	92 934	0.5	1 107 794	3.2
Newfoundland	755 361	7.2	37 945	0.8	—	—	793 306	2.3
Northwest Territories	529 344	5.1	15 337	0.3	212 023	1.1	756 705	2.2
New Brunswick	325 546	3.1	257 262	5.7	34 200	0.2	617 008	1.8
Nova Scotia	38 952	0.4	167 675	3.7	238 000	1.2	444 627	1.3
Yukon	339 332	3.3	6 883	0.2	—	—	346 215	1.0
Prince Edward Island	—	—	2 453	0.1	—	—	2 453	...
Total	10 425 251	100.0	4 537 191	100.0	19 851 805	100.0	34 814 247	100.0

Sources: Energy, Mines and Resources Canada; Statistics Canada.

— Nil; ... Amount too small to be expressed; P Preliminary.

Note: Numbers may not add to totals due to rounding.

**TABLE 8. CANADA, VALUE OF MINERAL PRODUCTION BY PROVINCE, TERRITORY AND MINERAL CLASS, 1990**

	Metals		Industrial Minerals		Fuels		Total	
	(\$000)	(% of total)	(\$000)	(% of total)	(\$000)	(% of total)	(\$000)	(% of total)
Alberta	3 498	...	663 274	12.5	18 443 676	80.2	19 110 448	46.9
Ontario	4 883 529	39.1	1 471 138	27.8	91 158	0.4	6 445 825	15.8
British Columbia	1 622 514	13.0	468 783	8.9	1 863 095	8.1	3 954 393	9.7
Saskatchewan	310 941	2.5	895 368	16.9	1 976 192	8.6	3 182 501	7.8
Quebec	1 923 115	15.4	1 113 892	21.1	—	—	3 037 007	7.4
Manitoba	1 094 610	8.8	91 591	1.9	115 874	0.5	1 311 466	3.2
Northwest Territories	703 833	5.6	25 853	0.5	258 215	1.1	987 900	2.4
New Brunswick	584 492	4.7	256 234	4.8	37 200	0.2	877 926	2.2
Newfoundland	789 661	6.3	76 325	1.4	—	—	865 987	2.1
Yukon	531 981	4.3	9 833	0.2	—	—	541 814	1.3
Nova Scotia	51 790	0.4	203 233	3.8	204 465	0.9	459 488	1.1
Prince Edward Island	—	—	3 271	0.1	—	—	3 271	...
Total	12 499 965	100.0	5 288 185	100.0	22 989 875	100.0	40 778 025	100.0

Sources: Energy, Mines and Resources Canada; Statistics Canada.

— Nil; ... Amount too small to be expressed.

Note: Numbers may not add to totals due to rounding.

**TABLE 9. CANADA, VALUE OF MINERAL PRODUCTION BY PROVINCE AND TERRITORY, 1985-91**

	1985	1986	1987	1988	1989	1990	1991P
	(\$ million)						
Alberta	27 030	16 331	17 080	15 062 <sup>r</sup>	16 456	19 110	16 148
Ontario	4 630	4 825	5 652	6 895 <sup>r</sup>	7 308 <sup>r</sup>	6 446	5 062
British Columbia	3 541	3 160	3 615	3 943 <sup>r</sup>	4 123	3 954	3 750
Quebec	2 243	2 191	2 780	2 712 <sup>r</sup>	2 878 <sup>r</sup>	3 037	2 934
Saskatchewan	3 797	2 525	3 151	3 043 <sup>r</sup>	3 017 <sup>r</sup>	3 183	2 852
Manitoba	862	764	1 000	1 627 <sup>r</sup>	1 668 <sup>r</sup>	1 311	1 108
Newfoundland	870	817	743	865 <sup>r</sup>	897 <sup>r</sup>	866	793
Northwest Territories	865	788	870	957 <sup>r</sup>	1 149	988	757
New Brunswick	509	502	624	911 <sup>r</sup>	859 <sup>r</sup>	878	617
Nova Scotia	321	367	407	446 <sup>r</sup>	442	459	445
Yukon	60	176	437	492	534	542	346
Prince Edward Island	2	2	3	2 <sup>r</sup>	2	3	2
Total	44 730	32 446	36 361	36 955 <sup>r</sup>	39 333 <sup>r</sup>	40 778	34 814

Sources: Energy, Mines and Resources Canada; Statistics Canada.

P Preliminary; <sup>r</sup> Revised.

Note: Numbers may not add to totals due to rounding.

**TABLE 10. CANADA, PERCENTAGE CONTRIBUTION OF PROVINCES AND TERRITORIES TO TOTAL VALUE OF MINERAL PRODUCTION, 1985-91**

	1985	1986	1987	1988 <sup>r</sup>	1989 <sup>r</sup>	1990	1991 <sup>p</sup>
Alberta	60.4	50.3	47.0	40.8	41.8	46.9	46.4
Ontario	10.4	14.9	15.5	18.7	18.6	15.8	14.5
British Columbia	7.9	9.7	9.9	10.7	10.5	9.7	10.8
Quebec	5.0	6.8	7.6	7.3	7.3	7.4	8.4
Saskatchewan	8.5	7.8	8.7	8.2	7.7	7.8	8.2
Manitoba	1.9	2.4	2.8	4.4	4.2	3.2	3.2
Newfoundland	1.9	2.5	2.0	2.3	2.3	2.1	2.3
Northwest Territories	1.9	2.4	2.4	2.6	2.9	2.4	2.2
New Brunswick	1.1	1.5	1.7	2.5	2.2	2.2	1.8
Nova Scotia	0.7	1.1	1.1	1.2	1.1	1.1	1.3
Yukon	0.1	0.5	1.2	1.3	1.4	1.3	1.0
Prince Edward Island	...	...	...	...	...	...	...
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Sources: Energy, Mines and Resources Canada; Statistics Canada.

... Amount too small to be expressed; <sup>p</sup> Preliminary; <sup>r</sup> Revised.

Note: Numbers may not add to totals due to rounding.



**TABLE 11. VALUE OF LEADING MINERALS IN THE PROVINCES,  
TERRITORIES AND CANADA, 1990 AND 1991**

	Value of Production			
	1990f	1991p	Change 1991/1990	1991p Proportion of Provincial Total
	(\$ million)			(percent)
<b>NEWFOUNDLAND</b>				
Iron ore	708.4	737.7	4.1	93.0
Gold	x	x	x	x
Sand and gravel	14.5	11.7	-19.3	1.5
Stone	9.9	5.0	-49.5	0.6
Asbestos	29.0	4.0	-86.2	0.5
Total	866.0	793.3	-8.4	100.0
<b>PRINCE EDWARD ISLAND</b>				
Sand and gravel	3.3	2.5	-24.2	100.0
Total	3.3	2.5	-24.2	100.0
<b>NOVA SCOTIA</b>				
Coal	204.5	238.0	16.4	53.5
Gypsum	52.8	52.3	-0.9	11.8
Salt	x	x	x	x
Tin	28.4	29.2	2.8	6.6
Cement	x	x	x	x
Stone	39.5	23.6	-40.3	5.3
Total	459.5	444.6	-3.2	100.0
<b>NEW BRUNSWICK</b>				
Zinc	450.8	212.5	-52.9	34.4
Potash (K <sub>2</sub> O)	x	x	x	x
Lead	67.3	50.2	-25.4	8.1
Coal	37.2	34.2	-8.1	5.5
Peat	23.8	26.9	13.0	4.4
Total	877.9	617.0	-29.7	100.0
<b>QUEBEC</b>				
Gold	585.1	692.4	18.3	23.6
Iron ore	x	x	x	x
Copper	312.3	299.3	-4.2	10.2
Stone	243.6	206.2	-15.4	7.0
Titanium dioxide	x	x	x	x
Zinc	232.4	143.7	-38.2	4.9
Total	3 037.0	2 934.2	-3.4	100.0
<b>ONTARIO</b>				
Nickel	1 345.6	1 237.7	-8.0	24.4
Gold	1 150.3	1 025.6	-10.8	20.3
Copper	861.0	723.2	-16.0	14.3
Cement	475.2	388.5	-18.2	7.7
Zinc	532.1	276.5	-48.0	5.5
Stone	300.6	222.3	-26.0	4.4
Total	6 445.8	5 062.2	-21.5	100.0
<b>MANITOBA</b>				
Nickel	682.3	590.6	-13.4	52.6
Copper	174.8	154.6	-11.6	13.8
Zinc	149.4	98.4	-34.1	8.8
Petroleum, crude	114.9	92.1	-19.8	8.2
Total	1 311.5	1 107.8	-16.2	100.0

**TABLE 11. (cont'd)**

	Value of Production			1991p Proportion of Provincial Total
	1990f	1991p	Change 1991/1990	
	(\$ million)			(percent)
<b>SASKATCHEWAN</b>				
Petroleum, crude	1 557.8	1 259.2	-19.2	44.1
Potash (K <sub>2</sub> O)	x	x	x	x
Uranium (U)	260.7	307.1	17.8	10.8
Natural gas	306.0	307.0	0.3	10.8
Total	3 182.5	2 852.0	-10.4	100.0
<b>ALBERTA</b>				
Petroleum, crude	10 822.5	8 783.8	-18.8	54.4
Natural gas	4 841.6	4 306.5	-11.1	26.7
Natural gas by-products	2 297.6	2 044.1	-11.0	12.7
Coal	482.0	541.1	12.3	3.4
Sulphur, elemental	319.7	200.3	-37.3	1.2
Total	19 110.4	16 147.7	-15.6	100.0
<b>BRITISH COLUMBIA</b>				
Coal	1 000.6	997.3	-0.3	26.6
Copper	1 051.3	895.1	-14.9	23.9
Natural gas	491.0	519.3	5.8	13.8
Petroleum, crude	316.1	261.7	-17.2	7.0
Gold	231.7	248.7	7.3	6.6
Zinc	114.4	154.2	34.8	4.1
Sand and gravel	140.6	120.7	-14.2	3.2
Total	3 954.4	3 750.0	-5.2	100.0
<b>YUKON</b>				
Zinc	325.4	178.3	-45.2	51.5
Lead	124.7	81.0	-35.0	23.4
Gold	66.7	67.1	0.6	19.4
Silver	15.2	12.9	-15.1	3.7
Total	541.8	346.2	-36.1	100.0
<b>NORTHWEST TERRITORIES</b>				
Zinc	420.5	279.0	-33.7	36.9
Gold	223.8	220.7	-1.4	29.2
Petroleum, crude	247.7	196.3	-20.8	25.9
Lead	55.8	26.7	-52.2	3.5
Total	987.9	756.7	-23.4	100.0
<b>CANADA</b>				
				Proportion of Canada Total
Petroleum, crude	13 103.4	10 629.5	-18.9	30.5
Natural gas	5 692.0	5 191.0	-8.8	14.9
Gold	2 407.7	2 355.3	-2.2	6.8
Natural gas by-products	2 370.8	2 125.5	-10.3	6.1
Copper	2 428.9	2 101.2	-13.5	6.0
Coal	1 823.7	1 905.9	4.5	5.5
Nickel	2 027.9	1 828.2	-9.8	5.2
Zinc	2 272.6	1 351.0	-40.6	3.9
Iron ore	1 258.8	1 307.9	3.9	3.8
Potash (K <sub>2</sub> O)	964.9	919.0	-4.8	2.6
Grand Total	40 778.0	34 814.2	-14.7	100.0

Source: Energy, Mines and Resources Canada.

f Final; p Preliminary; x Confidential.

TABLE 12. PRODUCTION OF LEADING MINERALS, BY PROVINCE AND TERRITORY IN CANADA, 1991p

	Unit of Measure	Nfld.	P.E.I.	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Yukon	N.W.T.	Total Canada
	(000)													
Petroleum, crude	m <sup>3</sup>	-	-	-	-	-	240	713	12 699	72 178	1 991	-	1 882	89 703
	\$	-	-	-	-	-	36 437	92 104	1 259 208	8 783 753	261 685	-	196 276	10 629 463
Natural gas	000 m <sup>3</sup>	-	-	-	-	-	430	-	5 997	85 203	11 525	-	239	103 393
	\$	-	-	-	-	-	45 506	-	307 031	4 306 480	519 276	-	12 692	5 190 985
Gold	g	x	-	-	x	51 949	76 953	2 498	2 885	34	18 660	5 034	16 562	176 720
	\$	x	-	-	x	692 376	1 025 635	33 289	38 458	453	248 694	67 097	220 742	2 355 325
Natural gas by-products	m <sup>3</sup>	-	-	-	-	-	-	9	127	23 732	809	-	29	24 705
	\$	-	-	-	-	-	-	830	12 272	2 044 095	65 205	-	3 055	2 125 457
Copper	kg	-	-	x	10 138	110 189	266 274	56 922	x	-	329 575	-	-	773 640
	\$	-	-	x	27 535	299 268	723 187	154 598	x	-	895 110	-	-	2 101 168
Coal	t	-	-	4 050	500	-	-	-	9 000	32 350	25 100	-	-	71 000
	\$	-	-	238 000	34 200	-	-	-	95 300	541 100	997 300	-	-	1 905 900
Nickel	kg	-	-	-	-	-	127 027	62 135	-	-	-	-	-	189 161
	\$	-	-	-	-	-	1 237 668	590 567	-	-	-	-	-	1 828 235
Zinc	kg	-	-	x	169 887	114 890	221 052	78 628	x	-	123 265	142 558	223 024	1 079 912
	\$	-	-	x	212 529	143 727	276 536	98 364	x	-	154 205	178 340	279 002	1 350 970
Iron ore	t	19 200	-	-	-	15 500	1 195	-	-	-	66	-	-	35 961
	\$	737 704	-	-	-	x	x	-	-	-	3 095	-	-	1 307 888
Potash (K <sub>2</sub> O)	t	-	-	-	x	-	-	-	x	-	-	-	-	7 012
	\$	-	-	-	x	-	-	-	x	-	-	-	-	918 994
Cement	t	x	-	x	-	2 307	4 169	x	x	x	x	-	-	9 396
	\$	x	-	x	-	142 330	388 543	x	x	x	x	-	-	816 802
Sand and gravel	t	2 784	1 075	4 876	6 843	28 790	63 748	10 537	7 924	35 663	34 864	1 542	1 853	200 497
	\$	11 701	2 453	15 045	14 387	83 022	209 649	35 203	17 597	106 584	120 708	6 883	8 160	631 391
Stone	t	987	-	4 177	2 770	34 979	37 331	1 693	-	300	3 040	-	508	85 785
	\$	5 015	-	23 576	18 398	206 173	222 374	7 948	-	2 892	22 725	-	3 735	512 837
Uranium (U)	kg	-	-	-	-	-	1 293	-	6 521	-	-	-	-	7 813
	\$	-	-	-	-	-	165 000	-	307 074	-	-	-	-	472 074
Asbestos	t	11	-	-	-	593	-	-	-	-	67	-	-	670
	\$	4 023	-	-	-	223 150	-	-	-	-	47 362	-	-	274 535
Salt	t	-	-	x	x	x	6 906	-	534	1 237	-	-	-	11 585
	\$	-	-	x	x	x	142 614	-	26 759	15 410	-	-	-	258 585
Sulphur, elemental	t	-	-	-	-	-	2	-	64	5 550	413	-	-	6 029
	\$	-	-	-	-	-	153	-	3 032	200 269	40 650	-	-	244 104
Lead	kg	-	-	x	59 019	-	x	2 463	-	-	49 578	95 224	31 403	239 558
	\$	-	-	x	50 225	-	x	2 096	-	-	42 191	81 036	26 724	203 864
Lime	t	-	-	-	x	x	1 402	x	-	219	x	-	-	2 336
	\$	-	-	-	x	x	103 550	7 199	-	20 488	x	-	-	186 287
Silver	kg	x	-	x	153	148	295	47	x	-	490	86	19	1 240
	\$	x	-	x	22 869	22 159	44 070	7 022	x	-	73 240	12 856	2 876	185 261
Platinum group	g	-	-	-	-	-	x	x	-	-	-	-	-	10 955
	\$	-	-	-	-	-	x	x	-	-	-	-	-	141 790
Clay products	\$	x	-	x	x	x	85 279	x	x	x	14 015	-	-	139 411
Peat	t	2	-	x	280	291	-	x	x	76	-	-	-	737
	\$	69	-	x	26 934	38 892	-	x	x	14 237	-	-	-	91 675
Sulphur in smelter gas	t	3	-	1	47	122	501	2	-	-	30	-	20	726
	\$	566	-	144	6 547	16 756	44 115	345	-	-	4 924	-	3 195	76 592
Gypsum	t	x	-	5 717	-	-	835	x	-	-	278	-	-	7 305
	\$	x	-	52 342	-	-	13 900	x	-	-	x	-	-	74 315
Total leading minerals	\$	792 350	2 453	414 308	615 545	2 446 779	4 946 199	1 079 521	2 830 673	16 143 938	3 649 472	346 212	756 458	34 023 910
Total all minerals	\$	793 306	2 453	444 627	617 008	2 934 229	5 062 151	1 107 794	2 852 043	16 147 718	3 749 999	346 215	756 705	34 814 247
Leading minerals as % of all minerals		99.9	100.0	93.2	99.8	83.4	97.7	97.4	99.3	100.0	97.3	100.0	100.0	97.7

Sources: Energy, Mines and Resources Canada; Statistics Canada.

- Nil; P Preliminary; x Confidential.

Note: Certain minerals are not included in the leading minerals due to confidentiality constraints. Confidential values are included in totals. Numbers may not add to totals due to rounding.

TABLE 13. PRODUCTION OF LEADING MINERALS, BY PROVINCE AND TERRITORY IN CANADA, 1990

	Unit of Measure	Nfld.	P.E.I.	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Yukon	N.W.T.	Total Canada
(000)														
Petroleum, crude	m <sup>3</sup>	-	-	-	-	-	247	738	12 431	73 048	1 951	-	1 864	90 279
	\$	-	-	-	-	-	44 375	114 939	1 557 754	10 822 496	316 096	-	247 723	13 103 383
Natural gas	000 m <sup>3</sup>	-	-	-	-	-	449	-	5 648	82 214	10 335	-	124	98 771
	\$	-	-	-	-	-	46 783	-	305 974	4 841 594	491 035	-	6 639	5 692 025
Copper	kg	-	-	x	8 620	99 198	273 448	55 506	x	-	333 883	-	-	771 433
	\$	-	-	x	27 142	312 334	860 979	174 768	x	-	1 051 262	-	-	2 428 935
Gold	g	x	-	x	x	40 675	79 968	2 680	3 374	32	16 105	4 639	15 557	167 373
	\$	x	-	x	x	585 116	1 150 333	38 549	48 537	455	231 667	66 731	223 788	2 407 654
Natural gas by-products	m <sup>3</sup>	-	-	-	-	-	-	9	125	23 047	653	-	29	23 863
	\$	-	-	-	-	-	-	935	13 044	2 297 586	55 349	-	3 853	2 370 767
Zinc	kg	16 463	-	x	233 933	120 599	276 110	77 507	x	-	59 346	168 846	218 241	1 179 372
	\$	31 724	-	x	450 788	232 395	532 064	149 355	x	-	114 359	325 366	420 550	2 272 649
Nickel	kg	-	-	-	-	-	128 828	66 176	-	-	-	-	-	195 004
	\$	-	-	-	-	-	1 345 630	682 286	-	-	-	-	-	2 027 917
Coal	t	-	-	3 416	548	-	-	-	9 407	30 405	24 556	-	-	68 332
	\$	-	-	204 465	37 200	-	-	-	99 420	482 000	1 000 615	-	-	1 823 700
Iron ore	t	18 969	-	-	-	15 306	1 294	-	-	-	100	-	-	35 670
	\$	708 367	-	-	-	x	x	-	-	-	3 676	-	-	1 258 792
Cement	t	x	-	x	-	2 867	5 221	x	x	x	x	-	-	11 745
	\$	x	-	x	-	166 521	475 214	x	x	x	x	-	-	991 442
Potash (K <sub>2</sub> O)	t	-	-	-	x	-	-	-	x	-	-	-	-	7 345
	\$	-	-	-	x	-	-	-	x	-	-	-	-	964 920
Uranium (U)	kg	-	-	-	-	-	4 598	-	5 123	-	-	-	-	9 720
	\$	-	-	-	-	-	627 243	-	260 732	-	-	-	-	887 975
Sand and gravel	t	3 016	1 311	6 890	8 285	29 895	79 970	12 355	12 022	43 905	41 278	2 113	3 274	244 316
	\$	14 456	3 271	22 945	16 405	89 533	286 391	38 384	23 462	158 198	140 585	9 833	13 856	817 317
Stone	t	1 501	-	7 271	2 711	40 634	50 418	3 737	-	313	3 271	-	1 495	111 352
	\$	9 952	-	39 459	18 098	243 573	300 561	15 193	-	2 702	24 327	-	9 079	662 945
Sulphur, elemental	t	-	-	-	-	-	4	-	69	5 330	419	-	-	5 822
	\$	-	-	-	-	-	400	-	5 544	319 736	43 184	-	-	368 864
Lead	kg	-	-	x	56 244	-	x	1 755	-	-	19 312	104 181	46 588	233 372
	\$	-	-	x	67 324	-	x	2 101	-	-	23 117	124 704	55 766	279 346
Asbestos	t	72	-	-	-	524	-	-	-	-	89	-	-	686
	\$	29 005	-	-	-	190 263	-	-	-	-	52 834	-	-	272 102
Silver	kg	x	-	x	145	164	330	41	x	-	598	84	19	1 381
	\$	x	-	x	26 130	29 564	59 627	7 349	x	-	108 112	15 177	3 457	249 746
Salt	t	-	-	x	x	x	6 143	-	603	1 326	-	-	-	11 191
	\$	-	-	x	x	x	116 652	-	29 874	14 809	-	-	-	240 890
Platinum group	g	-	-	-	-	-	x	x	-	-	-	-	-	11 123
	\$	-	-	-	-	-	x	x	-	-	-	-	-	189 423
Lime	t	-	-	-	x	x	1 366	x	-	240	x	-	-	2 341
	\$	-	-	-	x	x	102 338	6 850	-	22 336	x	-	-	188 283
Clay products	\$	x	-	x	x	x	87 063	x	x	x	11 167	-	-	136 029
Peat	t	2	-	x	266	350	-	x	x	72	-	-	-	775
	\$	68	-	x	23 857	41 058	-	x	x	13 268	-	-	-	89 735
Molybdenum	kg	-	-	-	-	-	-	-	-	-	12 188	-	-	12 188
	\$	-	-	-	-	-	-	-	-	-	84 721	-	-	84 721
Sulphur, in smelter gas	t	3	-	1	73	99	570	2	-	-	25	-	17	790
	\$	458	-	89	9 202	13 628	50 914	279	-	-	3 982	-	2 677	81 229
Total leading minerals	\$	858 035	3 271	376 990	876 797	2 461 022	6 317 107	1 287 640	3 157 913	19 104 221	3 918 595	541 811	987 388	39 890 789
Total all minerals	\$	865 987	3 271	459 488	877 926	3 037 007	6 445 825	1 311 466	3 182 501	19 110 448	3 954 393	541 814	987 900	40 778 025
Leading minerals as % of all minerals		99.1	100.0	82.0	99.9	81.0	98.0	98.2	99.2	100.0	99.1	100.0	99.9	97.8

Sources: Energy, Mines and Resources Canada; Statistics Canada.

- Nil; x Confidential.

Note: Certain minerals are not included in the leading minerals due to confidentiality constraints. Confidential values are included in totals. Numbers may not add to totals due to rounding.

**TABLE 14. CANADA, PERCENTAGE CONTRIBUTION OF LEADING MINERALS TO TOTAL VALUE OF MINERAL PRODUCTION, 1985-91**

	1985	1986	1987	1988r	1989r	1990	1991p
Petroleum, crude	41.2	29.6	33.4	24.8	27.6	32.1	30.5
Natural gas	18.0	17.3	12.7	14.1	13.7	14.0	14.9
Gold	2.7	5.2	6.1	6.3	5.9	5.9	6.8
Natural gas by-products	6.3	5.6	5.2	4.3	4.1	5.8	6.1
Copper	3.3	4.4	5.3	6.5	6.1	6.0	6.0
Coal	4.1	5.3	4.5	4.9	4.8	4.5	5.5
Nickel	2.7	3.0	3.5	7.6	7.7	5.0	5.3
Zinc	2.9	3.7	4.1	6.1	7.0	5.6	3.9
Iron ore	3.3	4.1	3.8	3.6	3.5	3.1	3.8
Potash (K <sub>2</sub> O)	1.4	1.8	2.0	3.2	2.6	2.4	2.6
Cement	1.8	2.5	2.7	2.6	2.4	2.4	2.3
Sand and gravel	1.4	2.1	2.1	2.3	2.2	2.0	1.8
Stone	0.9	1.5	1.6	1.7	1.7	1.6	1.5
Uranium (U)	2.2	3.2	3.3	2.8	2.3	2.2	1.4
Asbestos	0.7	0.7	0.7	0.8	0.7	0.7	0.8
Salt	0.5	0.7	0.7	0.7	0.7	0.6	0.7
Sulphur, elemental	2.3	2.6	1.4	1.2	1.1	0.9	0.7
Lead	0.3	0.7	1.1	1.0	0.7	0.7	0.6
Lime	0.4	0.5	0.5	0.5	0.5	0.5	0.5
Silver	0.7	0.8	1.2	1.0	0.7	0.6	0.5
Platinum group	0.3	0.6	0.5	0.5	0.4	0.5	0.4
Clay products	0.3	0.6	0.6	0.5	0.5	0.3	0.4
Peat	0.1	0.2	0.2	0.2	0.3	0.2	0.3
Sulphur in smelter gas	0.2	0.2	0.3	0.2	0.2	0.2	0.2
Gypsum	0.2	0.3	0.2	0.2	0.2	0.2	0.2
Other minerals	1.8	2.8	2.3	2.4	2.3	2.2	2.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Sources: Energy, Mines and Resources Canada; Statistics Canada.

p Preliminary; r Revised.

Note: Numbers may not add to totals due to rounding.

TABLE 15. PRODUCTION OF CANADA'S TEN LEADING<sup>1</sup> MINERAL COMMODITIES, 1984-91

	Unit	1984	1985	1986	1987	1988	1989	1990	1991 <sup>p</sup>
	(000)								
Petroleum	m <sup>3</sup>	83 680	85 564	85 468	89 140	93 806	90 641	90 279	89 703
Natural gas	000 m <sup>3</sup>	78 266	84 344	71 896	78 267	90 911	96 117	98 771	103 393
Gold	g	83 446	87 562	102 899	115 818	134 813	159 494	167 373	176 720
Natural gas by-products	m <sup>3</sup>	19 640	19 682	19 127	21 560	22 556	23 055	23 863	24 705
Copper	kg	721 826	738 637	698 527	794 149	758 478	704 432	771 433	773 640
Coal	t	57 402	60 436	57 811	61 211	70 644	70 527	68 332	71 000
Nickel	kg	173 725	169 971	163 639	189 086	198 744	195 554	195 004	189 161
Zinc	kg	1 062 701	1 049 275	988 173	1 157 936	1 370 000	1 272 854	1 179 372	1 079 912
Iron ore	t	39 930	39 502	36 167	37 702	39 934	39 445	35 670	35 961
Potash (K <sub>2</sub> O)	t	7 527	6 661	6 753	7 668	8 154	7 014	7 345	7 012

Sources: Energy, Mines and Resources Canada; Statistics Canada.

<sup>p</sup> Preliminary.<sup>1</sup> Based on contribution in 1991 to value of mineral production.

TABLE 16. CANADA'S WORLD ROLE AS A PRODUCER OF CERTAIN IMPORTANT MINERALS, 1990p

		World	Rank of Five Leading Countries				
			1	2	3	4	5
Uranium (U concentrates)	t	31 640	Canada	Australia	United States	Namibia	France
	% of Western World total		8 780 <sup>a</sup>	3 530	3 420	3 210	2 830
			27.7	11.2	10.8	10.1	8.9
Zinc (mine production)	000 t	7 319	Canada	Australia	U.S.S.R.	China	Peru
	% of world total		1 203	931	870 <sup>e</sup>	619	585
			16.4	12.7	11.9	8.5	8.0
Gypsum	000 t	97 677	United States	Canada	Iran	China	Japan
	% of world total		14 883	8 790	7 983	7 983	6 350
			15.2	9.0	8.2	8.2	6.5
Potash (K <sub>2</sub> O equivalent)	000 t	27 416	U.S.S.R.	Canada	East Germany	West Germany	United States
	% of world total		9 088	6 989	2 653	2 197	1 654
			33.1	25.5	9.7	8.0	6.0
Nickel (mine production)	000 t	934	U.S.S.R.	Canada	New Caledonia	Australia	Indonesia
	% of world total		280	196	85	67	54
			30.0	21.0	9.1	7.2	5.8
Asbestos	000 t	4 204	U.S.S.R.	Canada	Brazil	Zimbabwe	China
	% of world total		2 568 <sup>e</sup>	725	200	188	165 <sup>e</sup>
			61.1	17.2	4.8	4.5	3.9
Molybdenum (Mo content)	t	110 359	United States	Chile	Canada	U.S.S.R.	Mexico
	% of world total		61 611	13 830	12 188	11 000	4 000
			55.8	12.5	11.0	10.0	3.6
Platinum group metals (mine production)	kg	286 618	South Africa	U.S.S.R.	Canada	United States	Japan
	% of world total		138 500	125 000	11 123	7 740	2 419
			48.3	43.6	3.9	2.7	0.8
Sulphur, elemental	000 t	38 959	United States	U.S.S.R.	Canada	Poland	Mexico
	% of world total		10 262	6 360	5 891	4 426	2 142
			26.3	16.3	15.1	11.4	5.5
Aluminum (primary metal)	000 t	18 182	United States	U.S.S.R.	Canada	Australia	Brazil
	% of world total		4 048	2 220 <sup>a</sup>	1 567	1 233	931
			22.3	12.1	8.6	6.8	5.1
Cobalt (mine production)	t	24 693	Zaire	Zambia	U.S.S.R.	Canada	Cuba
	% of world total		10 033	4 844	2 400 <sup>e</sup>	2 184	1 600 <sup>e</sup>
			40.6	19.6	9.7	8.8	6.5
Titanium concentrates (ilmenite)	000 t	5 988	Australia	Norway	South Africa	Canada	Malaysia
	% of world total		1 845	900	785 <sup>e</sup>	760 <sup>a,b</sup>	502
			30.8	15.0	13.1	12.7	8.4
Copper (mine production)	000 t	9 028	Chile	United States	U.S.S.R.	Canada	Zambia
	% of world total		1 588	1 587	900	794	496
			17.6	17.6	10.0	8.8	5.5
Silver (mine production)	t	15 594	Mexico	United States	Peru	Canada	U.S.S.R.
	% of world total		2 546	2 168	1 781	1 501	1 380
			16.3	13.9	11.4	9.6	8.8
Lead (mine production)	000 t	3 325	Australia	United States	U.S.S.R.	China	Canada
	% of world total		561	495	490 <sup>e</sup>	315 <sup>e</sup>	241
			16.9	14.9	14.7	9.5	7.2
Cadmium (refined production)	t	19 983	Japan	U.S.S.R.	Belgium	United States	Canada
	% of world total		2 451	2 400 <sup>e</sup>	1 956	1 678	1 470
			12.3	12.0	9.8	8.4	7.4
Gold (refined production)	t	2 032	South Africa	United States	U.S.S.R.	Australia	Canada
	% of world total		603	290	250 <sup>e</sup>	243	169
			29.7	14.3	12.3	12.0	8.3

<sup>e</sup> Estimated; <sup>p</sup> Preliminary.

<sup>a</sup> Includes uranium (tU) recovered by Elliot Lake producers from refinery/conversion facility wastes; <sup>b</sup> Titaniferous slag with 80% TiO<sub>2</sub> content.

TABLE 17. CANADA'S WORLD ROLE AS A PRODUCER OF CERTAIN IMPORTANT MINERALS, 1989

			Rank of Five Leading Countries				
		World	1	2	3	4	5
Uranium (U concentrates)	t	34 400	<b>Canada</b>	United States	Australia	France	Namibia
	% of Western World total		11 350 <sup>a</sup>	5 320	3 660	3 240	3 100
Zinc (mine production)	000 t	7 106	<b>Canada</b>	U.S.S.R.	Australia	China	Peru
	% of world total		33.0	15.5	10.6	9.4	9.0
Gypsum	000 t	99 022	<b>Canada</b>	<b>Canada</b>	Iran	China	Japan
	% of world total		17.1	13.2	8.7	8.2	6.3
Potash (K <sub>2</sub> O equivalent)	000 t	29 304	United States	<b>Canada</b>	East Germany	West Germany	United States
	% of world total		15 988	9 179	3 200	2 186	1 595
Nickel (mine production)	000 t	963	U.S.S.R.	<b>Canada</b>	New Caledonia	Australia	Indonesia
	% of world total		10 232	25.0	10.9	7.5	5.4
Titanium concentrates (ilmenite)	000 t	6 455	U.S.S.R.	<b>Canada</b>	Norway	South Africa	Malaysia
	% of world total		280	20.9	10.0	6.7	6.2
Asbestos	000 t	4 347	Australia	<b>Canada</b>	Norway	South Africa	Malaysia
	% of world total		29.1	20.9	10.0	6.7	6.2
Molybdenum (Mo content)	000 t	116 799	U.S.S.R.	<b>Canada</b>	Brazil	Zimbabwe	China
	% of world total		2 600 <sup>e</sup>	732	230	190	160 <sup>e</sup>
Platinum group metals (mine production)	kg	283 158	United States	Chile	<b>Canada</b>	U.S.S.R.	Mexico
	% of world total		63 105	16 550	13 543	11 500	4 189
Sulphur, elemental	000 t	40 368	South Africa	U.S.S.R.	<b>Canada</b>	United States	Japan
	% of world total		48.0	45.0	3.5	2.2	0.7
Aluminum (primary metal)	000 t	18 229	United States	U.S.S.R.	<b>Canada</b>	Poland	Mexico
	% of world total		10 397	6 640	5 815	4 865	2 012
Cobalt (mine production)	t	24 700	United States	U.S.S.R.	<b>Canada</b>	Australia	Brazil
	% of world total		4 030	2 500 <sup>e</sup>	1 555	1 241	888
Copper (mine production)	000 t	9 092	Zaire	Zambia	U.S.S.R.	<b>Canada</b>	Cuba
	% of world total		9 311	4 488	2 850 <sup>e</sup>	2 344	2 000 <sup>e</sup>
Cadmium (refined production)	t	20 778	Chile	United States	U.S.S.R.	<b>Canada</b>	Zambia
	% of world total		1 609	1 498	950	723	510
Lead (mine production)	000 t	3 305	Japan	U.S.S.R.	Belgium	<b>Canada</b>	United States
	% of world total		2 694	2 600 <sup>e</sup>	1 741	1 620	1 550
Silver (mine production)	t	14 610	U.S.S.R.	Australia	United States	China	<b>Canada</b>
	% of world total		500 <sup>e</sup>	495	419	341 <sup>e</sup>	276
Gold (mine production)	t	1 946	Mexico	United States	Peru	U.S.S.R.	<b>Canada</b>
	% of world total		2 306	2 007	1 853	1 500	1 371
			South Africa	U.S.S.R.	United States	Australia	<b>Canada</b>
			605	285 <sup>e</sup>	266	204	160
			31.1	14.6	13.7	10.5	8.2

<sup>e</sup> Estimated.<sup>a</sup> Includes uranium (tU) recovered by Elliot Lake producers from refinery/conversion facility wastes; <sup>b</sup> Titaniferous slag with 80% TiO<sub>2</sub> content.



TABLE 18. EXPORTS OF MINERAL COMMODITIES BY COUNTRY AND BY COMMODITY AS DEFINED BY THE HARMONIZED SYSTEM (H.S.), 1991 (12 MONTH)

H.S. Chapter <sup>1</sup>	Description	United States		EEC <sup>2</sup>		Japan		Mexico		Other		Total	
		(\$000)	(%)	(\$000)	(%)	(\$000)	(%)	(\$000)	(%)	(\$000)	(%)	(\$000)	(%)
25	Salts; sulphur; earths or stone, plastering materials, lime and cement	503 856	37.1	146 720	10.8	67 063	4.9	34 932	2.6	605 820	44.6	1 358 391	100
26	Ores, slag and ash	425 391	17.3	1 039 566	42.2	740 227	30.0	1 155	0.0	259 331	10.5	2 465 670	100
27	Mineral fuels, oils and products of their distillation; bituminous substances; mineral waxes <sup>3</sup>	13 162 207	84.2	433 253	2.8	1 311 983	8.4	18 385	0.1	713 905	4.6	15 639 733	100
28	Inorganic chemicals; compounds of precious metals, radioactive elements, etc.	1 252 767	83.1	125 229	8.3	25 188	1.7	308	0.0	103 594	6.9	1 507 086	100
31	Fertilizers	939 008	60.4	20 006	1.3	65 715	4.2	2 463	0.2	526 956	33.9	1 554 148	100
68	Articles of stone, plaster, cement, asbestos, mica or similar materials	310 632	92.3	14 334	4.3	2 281	0.7	182	0.1	9 201	2.7	336 630	100
69	Ceramic products	35 174	79.9	1 207	2.7	390	0.9	45	0.1	7 201	16.4	44 017	100
70	Glass and glassware	291 244	81.8	40 595	11.4	5 086	1.4	44	0.0	18 879	5.3	355 848	100
71	Natural/cultured pearls, precious stones and metals, coins, etc.	1 627 842	61.4	87 969	3.3	53 343	2.0	711	0.0	879 837	33.2	2 649 702	100
72	Iron and steel	1 449 267	66.9	75 647	3.5	21 887	1.0	43 767	2.0	576 640	26.6	2 167 208	100
73	Articles of iron or steel	1 442 376	87.7	29 228	1.8	2 760	0.2	1 410	0.1	169 129	10.3	1 644 903	100
74	Copper and articles thereof	799 855	55.9	463 764	32.4	12 496	0.9	142	0.0	155 389	10.9	1 431 646	100
75	Nickel and articles thereof	692 257	48.9	257 856	18.2	25 526	1.8	835	0.1	440 511	31.1	1 416 985	100
76	Aluminum and articles thereof	2 383 778	71.5	349 025	10.5	297 958	8.9	480	0.0	302 659	9.1	3 333 900	100
78	Lead and articles thereof	63 280	72.9	9 609	11.1	4 942	5.7	0	0.0	9 025	10.4	86 856	100
79	Zinc and articles thereof	568 046	74.8	21 397	2.8	29 586	3.9	0	0.0	140 101	18.5	759 130	100
80	Tin and articles thereof	6 938	83.5	457	5.5	290	3.5	0	0.0	625	7.5	8 310	100
81	Other base metals; cermets; and articles thereof	131 054	61.6	27 588	13.0	3 735	1.8	245	0.1	50 288	23.6	212 910	100
Total mineral exports		26 084 972	70.6	3 143 450	8.5	2 670 456	7.2	105 104	0.3	4 969 091	13.4	36 973 073	100
Total domestic exports		103 448 740	74.9	11 086 375	8.0	7 111 285	5.2	440 754	0.3	15 991 866	11.6	138 079 020	100
Percentage mineral exports to total domestic exports		25.2		28.4		37.6		23.8		31.1		26.8	

Source: Statistics Canada, Catalogue No. 65-003 (Quarterly).

<sup>1</sup> H.S. Chapter refers to a group of commodities covered in a specified chapter of the "Harmonized Commodity Description and Coding System," as of January 1, 1988. Canadian external trade statistics are classified according to the Harmonized System. <sup>2</sup> EEC - European Economic Community. <sup>3</sup> Value of coal exports included in chapter 27 is \$2235 million.

**TABLE 19. EXPORTS OF MINERAL COMMODITIES BY COUNTRY AND BY COMMODITY AS DEFINED BY THE HARMONIZED SYSTEM (H.S.), 1990 REVISED**

H.S. Chapter <sup>1</sup>	Description	United States		EEC <sup>2</sup>		Japan		Mexico		Other		Total	
		(\$000)	(%)	(\$000)	(%)	(\$000)	(%)	(\$000)	(%)	(\$000)	(%)	(\$000)	(%)
25	Salts; sulphur; earths or stone, plastering material, lime and cement	524 056	35.8	182 702	12.5	61 296	4.2	42 352	2.9	651 934	44.6	1 462 317	100
26	Ores, slag and ash	540 145	17.4	1 217 132	39.3	964 204	31.1	2 486	0.1	371 465	12.0	3 095 432	100
27	Mineral fuels, oils and products of their distillation; bituminous substances; mineral waxes <sup>3</sup>	12 823 788	84.5	236 469	1.6	1 487 316	9.8	5 146	—	631 495	4.2	15 184 214	100
28	Inorganic chemicals; compounds of precious metals, radioactive elements, etc.	1 347 343	83.6	134 873	8.4	28 422	1.8	543	—	100 025	6.2	1 611 206	100
31	Fertilizers	990 137	59.6	56 645	3.4	76 647	4.6	2 015	0.1	536 669	32.3	1 662 113	100
68	Articles of stone, plaster, cement, asbestos, mica or similar materials	307 096	92.2	11 394	3.4	2 775	0.8	275	0.1	11 529	3.5	333 069	100
69	Ceramic products	45 066	78.2	2 175	3.8	780	1.4	26	—	9 596	16.6	57 643	100
70	Glass and glassware	316 532	84.0	39 636	10.5	1 917	0.5	138	—	18 824	5.0	377 047	100
71	Natural/cultured pearls, precious stones and metals, coins, etc.	915 394	34.1	391 540	14.6	237 490	8.8	3 798	0.1	1 136 339	42.3	2 684 561	100
72	Iron and steel	1 564 307	73.9	182 481	8.6	14 356	0.7	56 548	2.7	300 086	14.2	2 117 778	100
73	Articles of iron or steel	1 494 177	89.5	40 202	2.4	6 599	0.4	11 206	0.7	117 522	7.0	1 669 706	100
74	Copper and articles thereof	879 950	62.3	420 665	29.8	6 732	0.5	569	—	105 110	7.4	1 413 026	100
75	Nickel and articles thereof	783 643	53.4	256 234	17.5	27 287	1.9	2 226	0.2	398 301	27.1	1 467 691	100
76	Aluminum and articles thereof	2 478 437	70.9	280 088	8.0	356 175	10.2	849	—	380 237	10.9	3 495 786	100
78	Lead and articles thereof	74 698	62.8	23 671	19.9	8 945	7.5	—	—	11 588	9.7	118 902	100
79	Zinc and articles thereof	737 341	82.6	24 812	2.8	40 215	4.5	474	0.1	89 364	10.0	892 206	100
80	Tin and articles thereof	6 989	78.1	185	2.1	104	1.2	—	—	1 674	18.7	8 952	100
81	Other base metals; cermets; and articles thereof	133 840	69.0	23 768	12.3	4 213	2.2	—	—	32 030	16.5	193 851	100
Total mineral exports		25 962 916	68.6	3 524 672	9.3	3 325 473	8.8	128 651	0.3	4 903 788	13.0	37 845 500	100
Total domestic exports		105 452 876	74.4	11 712 651	8.3	8 186 387	5.8	643 369	0.5	15 724 844	11.1	141 720 127	100
Percentage mineral exports to total domestic exports		24.6		30.1		40.6		20.0		31.2		26.7	

Source: Statistics Canada, Catalogue No. 65-003 (Quarterly).

— Nil.

<sup>1</sup> H.S. Chapter refers to a group of commodities covered in a specified chapter of the "Harmonized Commodity Description and Coding System," as of January 1, 1988. Canadian external trade statistics are classified according to the Harmonized System. <sup>2</sup> EEC - European Economic Community. <sup>3</sup> Value of coal exports included in chapter 27 is \$2276 million.

TABLE 20. IMPORTS OF MINERAL COMMODITIES BY COUNTRY AND BY COMMODITY AS DEFINED BY THE HARMONIZED SYSTEM (H.S.), 1991 (12 MONTH)

H.S. Chapter <sup>1</sup>	Description	United States		EEC <sup>2</sup>		Japan		Mexico		Other		Total	
		(\$000)	(%)	(\$000)	(%)	(\$000)	(%)	(\$000)	(%)	(\$000)	(%)	(\$000)	(%)
25	Salts; sulphur; earths or stone, plastering material, lime and cement	299 144	77.5	10 655	2.8	1 226	0.3	15 570	4.0	59 384	15.4	385 979	100
26	Ores, slag and ash	460 599	63.8	78 220	10.8	45	0.0	703	0.1	182 637	25.3	722 204	100
27	Mineral fuels, oils and products of their distillation; bituminous substances; mineral waxes <sup>3</sup>	1 437 113	21.8	1 733 682	26.3	600	0.0	97 606	1.5	3 311 361	50.3	6 580 362	100
28	Inorganic chemicals; compounds of precious metals, radioactive elements, etc.	794 070	61.1	89 125	6.9	32 483	2.5	735	0.1	383 735	29.5	1 300 148	100
31	Fertilizers	192 283	88.0	22 466	10.3	532	0.2	40	0.0	3 214	1.5	218 535	100
68	Articles of stone, plaster, cement, asbestos, mica or similar materials	237 196	68.9	77 725	22.6	4 698	1.4	2 458	0.7	21 952	6.4	344 029	100
69	Ceramic products	177 322	34.2	195 710	37.7	45 243	8.7	5 267	1.0	95 684	18.4	519 226	100
70	Glass and glassware	782 003	76.8	86 110	8.5	45 219	4.4	33 128	3.3	71 445	7.0	1 017 905	100
71	Natural/cultured pearls, precious stones and metals, coins, etc.	703 487	60.8	135 495	11.7	4 247	0.4	1 320	0.1	312 249	27.0	1 156 798	100
72	Iron and steel	1 116 975	62.2	317 211	17.7	116 509	6.5	4 484	0.2	240 132	13.4	1 795 311	100
73	Articles of iron or steel	1 755 883	69.8	272 425	10.8	168 013	6.7	20 677	0.8	299 799	11.9	2 516 797	100
74	Copper and articles thereof	373 773	83.9	30 925	6.9	5 396	1.2	486	0.1	34 979	7.9	445 559	100
75	Nickel and articles thereof	66 731	25.0	43 949	16.4	345	0.1	82	0.0	156 097	58.4	267 204	100
76	Aluminum and articles thereof	1 158 767	87.0	114 503	8.6	4 531	0.3	1 565	0.1	52 825	4.0	1 332 191	100
78	Lead and articles thereof	18 839	93.1	171	0.8	13	0.1	1 201	5.9	21	0.1	20 245	100
79	Zinc and articles thereof	21 222	87.2	309	1.3	138	0.6	—	0.0	2 657	10.9	24 326	100
80	Tin and articles thereof	8 546	25.6	1 742	5.2	2	0.0	17	0.1	23 043	69.1	33 350	100
81	Other base metals; cermets; and articles thereof	109 952	59.5	27 357	14.8	1 927	1.0	—	0.0	45 566	24.7	184 802	100
Total mineral imports		9 713 905	51.5	3 237 780	17.2	431 167	2.3	185 339	1.0	5 296 780	28.1	18 864 971	100
Total imports		88 235 077	63.7	14 717 285	10.9	10 248 972	7.6	2 573 972	1.9	21 508 641	15.9	135 283 947	100
Percentage mineral imports to total imports		11.3		22.0		4.2		7.2		24.6		13.9	

Source: Statistics Canada, Catalogue No. 65-006 (Quarterly).

— Nil.

<sup>1</sup> H.S. Chapter refers to a group of commodities covered in a specified chapter of the "Harmonized Commodity Description and Coding System," as of January 1, 1988. Canadian external trade statistics are classified according to the Harmonized System. <sup>2</sup> EEC - European Economic Community. <sup>3</sup> Total value of coal imports included in Chapter 27 is \$532 million.

TABLE 21. IMPORTS OF MINERAL COMMODITIES BY COUNTRY AND BY COMMODITY AS DEFINED BY THE HARMONIZED SYSTEM (H.S.), 1990 REVISED

H.S. Chapter <sup>1</sup>	Description	United States		EEC <sup>2</sup>		Japan		Mexico		Other		Total	
		(\$000)	(%)	(\$000)	(%)	(\$000)	(%)	(\$000)	(%)	(\$000)	(%)	(\$000)	(%)
25	Salts; sulphur; earths or stone, plastering material, lime and cement	343 748	76.6	10 036	2.2	2 882	0.6	18 281	4.1	74 061	16.5	449 008	100
26	Ores, slag and ash	423 006	54.9	48 337	6.3	—	—	2 578	0.3	296 693	38.5	770 814	100
27	Mineral fuels, oils and products of their distillation; bituminous substances; mineral waxes <sup>3</sup>	2 454 809	28.4	2 328 223	26.9	336	—	56 800	0.7	3 807 608	44.0	8 647 776	100
28	Inorganic chemicals; compounds of precious metals, radioactive elements, etc.	741 794	57.2	88 561	6.8	35 443	2.7	318	—	430 622	33.2	1 296 738	100
31	Fertilizers	183 751	83.7	20 482	9.3	927	0.4	—	—	14 455	6.6	219 615	100
68	Articles of stone, plaster, cement, asbestos, mica or similar materials	243 678	64.6	101 378	26.9	3 873	1.0	2 371	0.6	25 833	6.8	377 133	100
69	Ceramic products	192 474	35.2	202 697	37.1	50 218	9.2	4 886	0.9	96 102	17.6	546 377	100
70	Glass and glassware	773 629	77.1	93 721	9.3	42 944	4.3	24 092	2.4	68 656	6.8	1 003 042	100
71	Natural/cultured pearls, precious stones and metals, coins, etc.	842 271	63.6	159 831	12.1	6 481	0.5	4 790	0.4	311 519	23.5	1 324 892	100
72	Iron and steel	1 213 561	60.1	406 260	20.1	102 421	5.1	4 980	0.2	291 171	14.4	2 018 393	100
73	Articles of iron or steel	1 742 880	69.4	273 801	10.9	174 201	6.9	17 099	0.7	304 098	12.1	2 512 079	100
74	Copper and articles thereof	408 102	77.6	40 396	7.7	7 536	1.4	1 366	0.3	68 303	13.0	525 703	100
75	Nickel and articles thereof	68 704	36.5	42 239	22.5	878	0.5	6	—	76 185	40.5	188 012	100
76	Aluminum and articles thereof	1 324 840	86.1	129 268	8.4	7 570	0.5	1 100	0.1	75 646	4.9	1 538 424	100
78	Lead and articles thereof	23 833	84.8	486	1.7	28	0.1	3 625	12.9	122	0.4	28 094	100
79	Zinc and articles thereof	25 712	66.3	2 282	5.9	96	0.2	499	1.3	10 180	26.3	38 769	100
80	Tin and articles thereof	11 230	25.7	4 697	10.7	1	—	28	0.1	27 751	63.5	43 707	100
81	Other base metals; cermets; and articles thereof	141 126	73.7	20 394	10.6	5 858	3.1	—	—	24 171	12.6	191 549	100
Total mineral imports		11 159 148	51.4	3 973 089	18.3	441 693	2.0	142 819	0.7	6 003 176	27.6	21 719 925	100
Total imports		87 875 319	64.5	15 667 994	11.5	9 525 225	7.0	1 748 583	1.3	21 427 927	15.7	136 245 048	100
Percentage mineral imports to total imports		12.7		25.4		4.6		8.2		28.0		15.9	

Source: Statistics Canada, Catalogue No. 65-006 (Quarterly).

— Nil.

<sup>1</sup> H.S. Chapter refers to a group of commodities covered in a specified chapter of the "Harmonized Commodity Description and Coding System," as of January 1, 1988. Canadian external trade statistics are classified according to the Harmonized System. <sup>2</sup> EEC - European Economic Community. <sup>3</sup> Total value of coal imports included in Chapter 27 is \$684 million.

TABLE 22. CANADA, PRINCIPAL STATISTICS OF THE MINERAL INDUSTRY, 1 1989

TABLE 12. CANADA, MINERAL STATISTICS OF THE MINERAL INDUSTRY, 1993											
	Establish- ments	Mining Activity							Total Activity <sup>2</sup>		
		Production and Related Workers			Costs				Employees	Salaries and Wages	Value Added
		Employees	Person- Hours Paid	Wages	Fuel and Electricity	Materials and Supplies	Value of Production	Value Added			
	(number)	(number)	(000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(number)	(\$000)	(\$000)
<b>METALS</b>											
Nickel-copper-zinc	27	14 374	31 561	644 216	228 734	1 914 018	6 617 321	4 474 570	19 837	920 213	4 515 629
Gold	70	10 130	22 117	469 884	120 501	530 195	2 079 569	1 428 873	12 631	588 283	1 425 910
Silver-lead-zinc	15	3 105	7 127	138 782	59 653	709 046	1 749 389	980 690	4 487	208 358	989 947
Iron	7	4 786	10 421	220 108	177 860	416 147	1 351 098	757 091	6 303	298 824	741 271
Uranium	5	4 123	8 570	197 028	51 756	155 290	916 419	709 372	4 839	238 520	706 903
Miscellaneous metal mines <sup>3</sup>	6	933	2 035	37 635	14 125	56 319	188 295	117 850	1 308	53 693	123 027
Total	130	37 451	81 830	1 707 653	652 629	3 781 017	12 902 092	8 468 446	49 405	2 307 891	8 502 686
<b>INDUSTRIALS</b>											
Potash	11	2 887	6 361	108 302	98 387	142 716	1 074 242	833 139	3 893	155 976	841 515
Stone	125	2 410	5 652	82 514	36 563	134 571	513 922	342 788	3 145	111 334	351 350
Sand and gravel	139	1 836	4 256	60 228	29 039	94 583	403 824	280 202	2 736	95 190	300 712
Miscellaneous nonmetals <sup>4</sup>	33	1 697	3 775	60 012	28 485	62 756	364 285	273 044	2 343	85 618	272 714
Asbestos	4	2 128	5 021	82 386	34 673	63 208	303 737	205 856	2 800	113 296	208 599
Peat	56	1 355	3 018	27 992	5 721	30 177	120 324	84 427	1 713	38 635	86 872
Gypsum	10	663	1 452	19 316	7 852	20 381	90 768	62 535	965	32 258	66 026
Total	378	12 976	29 534	440 750	240 720	548 391	2 871 102	2 081 991	17 595	632 308	2 127 787
<b>FUELS</b>											
Crude oil and natural gas	725	9 675	19 706	431 989	336 559	1 352 711	16 109 679	14 415 409	33 712	1 793 393	14 610 015
Coal	29	9 541	19 292	425 785	121 342	412 254	1 662 017	1 160 500	11 239	518 304	1 196 695
Total	754	19 216	38 998	857 774	457 901	1 764 965	17 771 696	15 575 909	44 951	2 311 697	15 806 710
Total mineral industry	1 262	69 643	150 362	3 006 177	1 351 250	6 094 373	33 544 890	26 126 346	111 951	5 251 896	26 437 183

Sources: Energy, Mines and Resources Canada; Statistics Canada.

<sup>1</sup> Cement manufacturing, lime manufacturing, clay and clay products (domestic clays) are included in the mineral manufacturing industry. <sup>2</sup> Total activity includes sales and head offices.

<sup>3</sup> Includes molybdenum. <sup>4</sup> Includes salt.

Note: Numbers may not add to totals due to rounding.

**TABLE 23. CANADA, PRINCIPAL STATISTICS OF THE MINERAL INDUSTRY<sup>1</sup> BY REGION, 1989**

	Mines, Quarries and Oil Well Activity								Total Activity <sup>2</sup>		
	Establish- ments	Production and Related Workers			Costs			Value Added	Employees	Salaries and Wages	Value Added
		Employees	Person- Hours Paid	Wages	Fuel and Electricity	Materials and Supplies	Value of Production				
	(number)	(number)	(000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(number)	(\$000)	(\$000)
Atlantic Provinces <sup>3</sup>	87	9 174	19 579	326 695	138 804	665 979	1 778 138	975 114	11 116	412 951	977 783
Quebec <sup>3</sup>	191	11 055	24 356	455 928	200 889	741 327	2 255 701	1 313 484	15 196	643 051	1 353 497
Ontario	158	18 775	41 405	832 217	250 902	1 466 418	6 096 815	4 374 495	25 028	1 140 468	4 411 358
Prairie Provinces	613	17 892	36 928	757 963	512 479	1 927 423	18 575 724	16 144 395	44 584	2 249 883	16 312 645
British Columbia <sup>4</sup>	178	10 525	22 643	505 687	200 002	990 952	3 455 069	2 285 856	12 925	633 762	2 317 522
Yukon and Northwest Territories <sup>5</sup>	35	2 222	5 451	127 687	48 173	302 270	1 383 443	1 032 999	3 102	171 782	1 064 380
Total	1 262	69 643	150 362	3 006 177	1 351 250	6 094 373	33 544 890	26 126 346	111 951	5 251 896	26 437 183

Sources: Energy, Mines and Resources Canada; Statistics Canada.

<sup>1</sup> Cement manufacturing, lime manufacturing, clay and clay products (domestic clays) are included in the mineral manufacturing industry. <sup>2</sup> Total activity includes sales and head offices.

<sup>3</sup> Includes eastern Canada offshore. <sup>4</sup> Includes western Canada offshore. <sup>5</sup> Includes Arctic Islands.

Note: Numbers may not add to totals due to rounding.

**TABLE 24. CANADA, PRINCIPAL STATISTICS OF THE MINERAL INDUSTRY<sup>1</sup> BY REGION, 1988**

	Mines, Quarries and Oil Well Activity								Total Activity <sup>2</sup>		
	Establish- ments	Production and Related Workers			Costs			Value Added	Employees	Salaries and Wages	Value Added
		Employees	Person- Hours Paid	Wages	Fuel and Electricity	Materials and Supplies	Value of Production				
	(number)	(number)	(000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(number)	(\$000)	(\$000)
Atlantic Provinces <sup>3</sup>	94	8 410	17 543	283 993	131 867	622 521	1 694 351	939 962	10 627 <sup>r</sup>	370 665 <sup>r</sup>	943 300
Quebec <sup>3</sup>	190	10 830	23 704	423 694	191 792	671 234	2 069 761	1 206 735	14 581	584 060	1 231 278
Ontario	169	18 264	40 526	750 277	230 470	1 423 250	5 670 115	4 016 395	24 936 <sup>r</sup>	1 051 918 <sup>r</sup>	4 048 410
Prairie Provinces	672	17 352 <sup>r</sup>	35 886 <sup>r</sup>	707 123 <sup>r</sup>	501 102	1 770 983	17 653 414	15 381 357	44 504 <sup>r</sup>	2 123 747 <sup>r</sup>	15 573 006
British Columbia <sup>4</sup>	177	9 915 <sup>r</sup>	20 693 <sup>r</sup>	450 425 <sup>r</sup>	193 139	889 595	3 502 788	2 420 054	12 468 <sup>r</sup>	584 770 <sup>r</sup>	2 446 837
Yukon and Northwest Territories <sup>5</sup>	38	1 949	4 910	102 040	48 384	307 453	1 186 961	831 124	2 979 <sup>r</sup>	149 842 <sup>r</sup>	857 510
Total	1 340	66 720 <sup>r</sup>	143 263 <sup>r</sup>	2 717 554 <sup>r</sup>	1 296 757	5 685 034	31 777 388	24 795 628	110 095 <sup>r</sup>	4 865 003 <sup>r</sup>	25 100 343

Sources: Energy, Mines and Resources Canada; Statistics Canada.

<sup>r</sup> Revised.

<sup>1</sup> Cement manufacturing, lime manufacturing, clay and clay products (domestic clays) are included in the mineral manufacturing industry. <sup>2</sup> Total activity includes sales and head offices.

<sup>3</sup> Includes eastern Canada offshore. <sup>4</sup> Includes western Canada offshore. <sup>5</sup> Includes Arctic Islands.

Note: Numbers may not add to totals due to rounding.

TABLE 25. CANADA, PRINCIPAL STATISTICS OF THE MINERAL INDUSTRY,<sup>1</sup> 1982-89

Mines, Quarries and Oil Well Activity												
Establish- ments	Production and Related Workers								Total Activity <sup>2</sup>			
	Employees			Person- Hours Paid		Wages		Costs		Employees	Salaries and Wages	Value Added
	Employees	Person- Hours Paid	Wages	Fuel and Electricity	Materials and Supplies	Value of Production	Value Added					
(number)	(number)	(000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(number)	(\$000)	(\$000)	
1982	1 247	74 178	141 070	2 008 439	956 296	3 768 771	29 101 618	24 376 549	123 486	3 648 004	24 427 308	
1983	1 407	66 629	131 406	1 963 773	1 022 417	3 756 625	32 771 401	27 992 357	113 831	3 687 911	28 012 167	
1984	1 381	69 650	140 567	2 295 256	1 204 008	4 290 972	37 976 019	32 481 039	115 790	4 106 049	32 545 525	
1985	1 385	67 308	140 780	2 357 868	1 264 619	4 442 358	38 127 807	32 420 830	117 161	4 413 258	32 495 098	
1986	1 507	64 275	134 885	2 366 813	1 240 371	4 649 767	27 785 615	21 895 474	109 974	4 418 118	22 224 015	
1987	1 276	64 276	138 047	2 440 174	1 233 806	4 870 150	30 652 347	24 548 391	107 663	4 458 693	24 803 839	
1988	1 340	66 720 <sup>r</sup>	143 263 <sup>r</sup>	2 717 554 <sup>r</sup>	1 296 757	5 685 034	31 777 388	24 795 628	110 095 <sup>r</sup>	4 865 003 <sup>r</sup>	25 100 343	
1989	1 262	69 643	150 362	3 006 177	1 351 250	6 094 373	33 544 890	26 126 346	111 951	5 251 896	26 437 183	

Sources: Energy, Mines and Resources Canada; Statistics Canada.

<sup>r</sup> Revised.<sup>1</sup> Cement manufacturing, lime manufacturing, clay and clay products (domestic clays) are included in the mineral manufacturing industry. <sup>2</sup> Total activity includes sales and head offices.

