

Zinc

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The sharp drop in zinc prices that resulted from slowing demand and higher inventories in the face of increased production left many zinc producers in dire straits in 2001. In the last quarter of 2001 and in the wake of the tragic events in the United States on September 11, all indications were for a continuation of weak zinc prices and red ink on company balance sheets unless significant cuts in production were made and the demand for zinc and zinc products recovered. A number of significant announcements were made towards year-end, resulting in some optimism for 2002.

World zinc usage reached 8.7 Mt in 2001, according to preliminary figures from the International Lead and Zinc Study Group (ILZSG), a total that was 462 000 t less than total world refined zinc metal production of 9.2 Mt. Western World zinc demand exceeded production by 533 000 t. This supply deficit was offset, and indeed exceeded, by net exports of zinc metal totalling some 855 000 t to the West by Eastern countries. Zinc metal stocks held on the London Metal Exchange (LME) rose sharply through the year to end it at 433 000 t, a rise of 238 000 t since the end of 2000. Reported producer stocks were 44 000 t higher than at the end of 2000, totalling 360 000 t by year-end. Cash settlement prices on the LME reflected this oversupply in the market and averaged US\$886.27/t in 2001, down 21% from 2000. Three-month prices averaged \$904.25/t.

CANADIAN DEVELOPMENTS

2001 mine production: \$1.42 billion
World rank: Second (metal production)
Exports: \$1.32 billion

Canada ranked second after China in terms of zinc metal production and third after China and Australia in terms of mine production in 2001 (Figure 3). Significant events in Canada in 2001 included the closure of the Sullivan mine in December, the temporary closure of Myra Falls in British Columbia, and the announcements of closures in 2002 to include the Nanisivik and Polaris mines in Nunavut and the Ruttan mine in Manitoba.

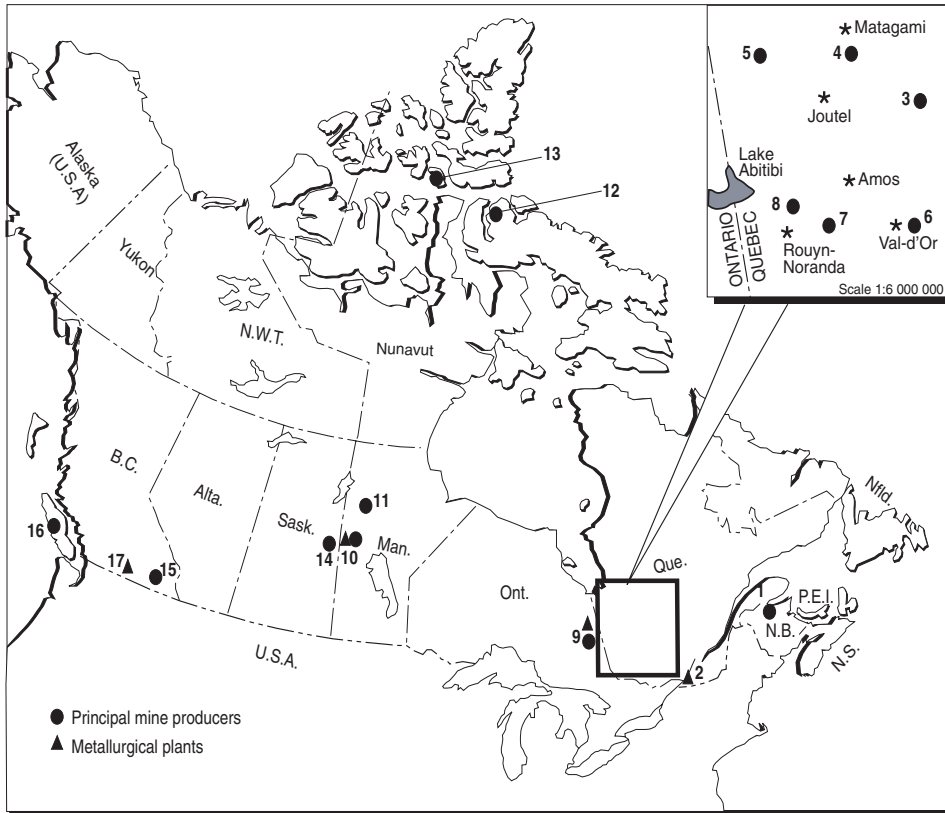
In terms of corporate events, Teck Corporation and Cominco Limited merged to create Teck Cominco Limited in July. Headquartered in Vancouver, it ranks as the fourth largest North American-based base-metals mining and refining company. In November, Boliden Limited shareholders approved the return of the company's headquarters from Toronto back to Stockholm, Sweden. Boliden moved to Toronto from Sweden in 1997.

Canada	1999	2000	2001
	(000 t)		
Mine production	1 021	936	1 009
Metal production	777	780	655
Usage	169	176	181

British Columbia

- Cominco Ltd. began a series of production cutbacks at its Trail smelter in southern British Columbia. Zinc production was reduced by about 100 000 t for the period December 2000 to October 2001. The cutbacks were part of a plan to allow for a fixed price power swap agreement with a major U.S. energy company. Zinc production at Trail resumed in October and reached full capacity of 300 000 t by the end of the month.
- On Friday, December 21, the Sullivan mine was closed after 92 years of active production. The mine produced more than \$20 billion in lead, zinc and silver over its life and provided employment for more than four generations of miners in the

Figure 1
Zinc Producers in Canada, 2001



Numbers refer to locations on map above.

ZINC-PRODUCING MINES

1. Brunswick	Noranda Inc.
3. Langlois	Breakwater Resources Ltd. (on care-and-maintenance)
4. Bell Allard	Noranda Inc.
5. Selbaie	Les Mines Selbaie
6. Louvicourt	Aur Resources Inc./Novicourt Inc.
7. LaRonde	Agnico Eagle Mines Limited
8. Bouchard-Hébert	Breakwater Resources Ltd.
9. Kidd Creek	Falconbridge Limited
10. Callinan	Hudson Bay Mining and Smelting Co., Limited
Trout Lake	Hudson Bay Mining and Smelting Co., Limited
Chisel North	Hudson Bay Mining and Smelting Co., Limited
777	Hudson Bay Mining and Smelting Co., Limited
11. Ruttan	Hudson Bay Mining and Smelting Co., Limited
12. Nanisivik	Breakwater Resources Ltd.
13. Polaris	Teck Cominco Limited
14. Konuto Lake	Hudson Bay Mining and Smelting Co., Limited
15. Sullivan	Teck Cominco Limited (closed December 2001)
16. Myra Falls	Boliden Limited

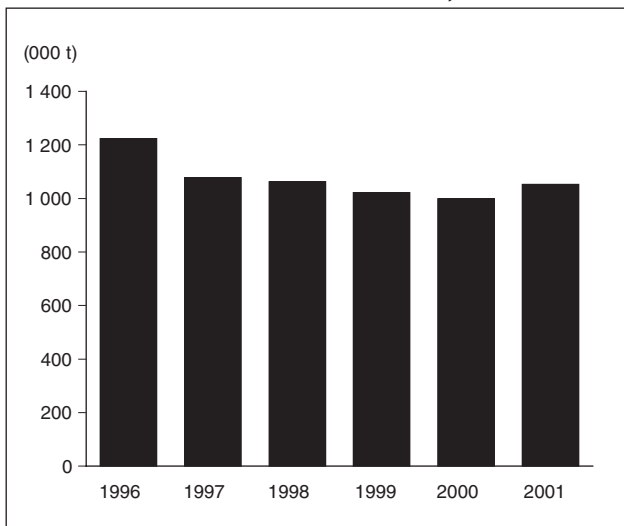
WEB SITE

www.noranda.com
www.breakwater.ca
www.noranda.com
www.bhpbilliton.com
www.aurresources.com
www.agnico-eagle.com
www.breakwater.ca
www.falconbridge.com
www.angloamerican.co.uk
www.angloamerican.co.uk
www.angloamerican.co.uk
www.angloamerican.co.uk
www.angloamerican.co.uk
www.breakwater.ca
www.teckcominco.com
www.angloamerican.co.uk
www.teckcominco.com
www.boliden.ca

ZINC METALLURGICAL PLANTS

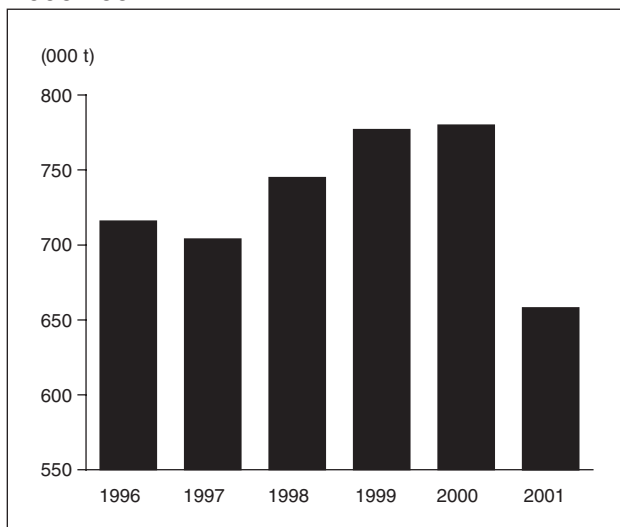
2. Valleyfield	Canadian Electrolytic Zinc Limited	www.noranda.com
9. Kidd Creek	Falconbridge Limited	www.falconbridge.com
10. Flin Flon	Hudson Bay Mining and Smelting Co., Limited	www.angloamerican.co.uk
17. Trail	Teck Cominco Limited	www.teckcominco.com

Figure 2
Canadian Mine Production of Zinc, 1996-2001



Source: Natural Resources Canada.

Figure 3
Canadian Refined Zinc Metal Production, 1996-2001



Source: Natural Resources Canada.

Kimberley region. Teck Cominco started an extensive decommissioning and reclamation process at the site.

- Boliden Limited announced that it would temporarily suspend operations for three months, starting in December, at its Myra Falls mine in British Columbia due to low metal prices. The temporary closure at Myra Falls resulted in the loss of about 30 000 t of zinc in concentrates. In addition to the temporary closure, the company announced that it was exploring the possibility of selling the mine.

Yukon

- In September, Expatriate Resources Ltd. informed Teck Cominco Metals Ltd. that it would not be making the \$1 million payment due under the Asset Sale Agreement for the acquisition of the Kudz Ze Kayah property. Upon termination of the agreement, Expatriate ceased to have any interest in the Kudz Ze Kayah property, located in the Finlayson Lake District of southeastern Yukon. Expatriate maintains its 60% ownership in the adjacent Wolverine joint venture together with Atna Resources Ltd.

Saskatchewan/Manitoba

- Hudson Bay Mining & Smelting Co., Limited (HBMS) completed work on a new zinc tank house at the Flin Flon smelter, increasing capacity by

15% to 115 000 t/y. The project was completed in October, three months ahead of schedule.

- HBMS announced the permanent closure of the Ruttan mine in Manitoba for the end of May 2002. Ruttan supplies concentrates for the Flin Flon smelter.

Nunavut

- In October, Breakwater Resources Limited announced the accelerated closure of the Nani-sivik mine in Nunavut. The mine will be closed in September 2002. The company cited continued weak metal prices as the primary reason for accelerating the mine's closure.
- The Department of Indian Affairs and Northern Development announced that the federal government will provide \$3 million as part of the funding to determine the feasibility of constructing a road and port in the Kitikmeot region of Nunavut. The Government of Nunavut and industry will contribute a further \$3 million. The proposed road would extend approximately 295 km from a port site on the Bathurst Inlet to Inmet Mining Corporation's Izok zinc and copper deposit. The Izok deposit has an indicated resource of 16.5 Mt grading 11.4% zinc, 2.2% copper and 60 g/t silver. The project's isolation from any major transportation routes and the general lack of infrastructure to the area pose significant economic challenges in the further development of the project.

Ontario

- Falconbridge Limited's Kidd Mining Division in Timmins, Ontario, temporarily reduced production in the first quarter of 2001 due to ground movement that occurred at the No. 1 mine in late December 2000.
- At the Kidd Metallurgical Division, zinc production was down slightly due to the lower mine production and the lack of replacement feed in the short term. Falconbridge announced that development of Mine D at Kidd was progressing on budget. Production from Mine D is now expected to start in 2004.

Quebec

- Breakwater Resources Ltd. released the results of its Langlois feasibility study in September. Operations at the Langlois mine, located near Lebel-sur-Quévillon, were suspended in November 2000 when problems associated with the main ore pass system, combined with low metal prices, made it uneconomic to operate. Approximately 18 months of construction and development work is required before the mine can resume full production. The decision to re-open the mine is dependent upon improved zinc prices.

Newfoundland and Labrador

- Aur Resources Inc. entered into an agreement to purchase the Duck Pond copper-zinc project near Buchans in west-central Newfoundland from joint-venture partners Thundermin Resources Inc. and Queenston Mining Inc. Thundermin and Queenston hold their interest in the project under an option agreement with Noranda Mining and Exploration Inc. A detailed feasibility study on the project was completed in May. The project contains combined proven and probable mineral reserves in two deposits totalling 5.2 Mt grading 3.3% copper, 5.8% zinc, 0.9% lead, 59 g/t silver and 0.8 g/t gold.

WORLD DEVELOPMENTS

World	1999	2000	2001
	(000 t)		
Mine production	8 026	8 744	8 876
Metal production	8 369	8 939	9 207
Usage	8 392	8 863	8 745

Despite the low world prices for zinc in 2001, several new or expansion projects came on stream during the year, most notably the new Antamina mine in Peru and the Francisco Madero mine in Mexico. Significant closures announced in 2001 included the temporary shut-down of the Tara mine in Ireland and the Los Frailes mine in Spain. Projects under consideration that were put back on the shelf included the Gamsberg project in South Africa. Mine output in Australia and Ireland continued to expand, mainly as a result of further gains at the Century and Lisheen mines. Further increases were also anticipated in China where production is dependent on a huge number of small mines spread throughout the country.

In terms of significant corporate events, Australia's BHP Limited and London-based Billiton plc announced a merger to create BHP Billiton. Elsewhere, Pasminco Limited was placed into voluntary administration in September in an attempt to restructure the company's debt of over A\$3.4 billion. In addition to operations in Australia, Pasminco owns and operates facilities in the Netherlands and the United States.

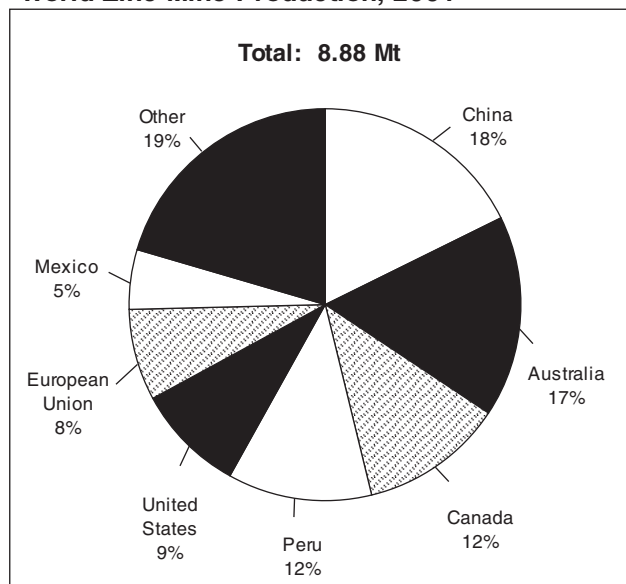
United States

- Asarco Incorporated, a wholly owned subsidiary of Grupo México S.A. de C.V., announced that it would suspend its zinc mining and processing operations in the state of Tennessee in November due to low metal prices.
- Teck Cominco Limited announced further positive drilling results near the Red Dog mine, owned by its wholly owned affiliate, Teck Cominco American Incorporated. The Anarraaq deposit, 10 km north of the Red Dog mine, was discovered by drill-testing a gravity anomaly in 1999. Drilling in 2000 established an inferred resource of 17.2 Mt grading 15.8% zinc, 4.8% lead and 17 g/t silver. A further eight drill holes were completed on this large gravity anomaly during the 2001 field season.

Mexico

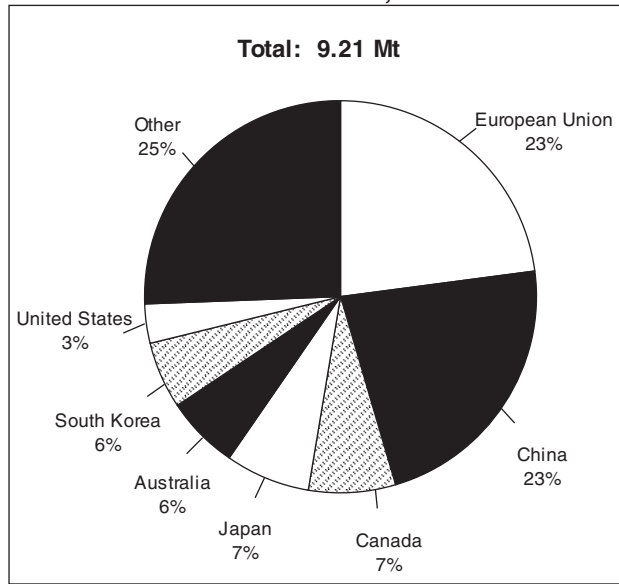
- Industrias Peñoles, S.A. de C.V. opened the Francisco I Madero zinc mine in the Mexican state of Zacatecas in September. The mine will operate with a production capacity of 110 000 t/y of zinc in concentrates. The mine, located in north-central Zacatecas, represents a US\$127 million investment and adds 1.6 Mt to Peñoles' current zinc reserves of 1.8 Mt.
- Elsewhere in Mexico, weak zinc prices and the strength of the Mexican peso led Dowa Mining to temporarily suspend production at the Minera Rey de Plata lead-zinc mine in Guerrero State in

Figure 4
World Zinc Mine Production, 2001



Source: International Lead and Zinc Study Group.

Figure 5
World Zinc Metal Production, 2001



Source: International Lead and Zinc Study Group.

December. Minera Rey de Plata, owned 51% by Mexico's Mina Peñoles SA, 39% by Dowa Mining and 10% by Sumitomo Corp., began operations in 1997 to supply concentrates to the Akita Zinc smelter in Japan. Minera Rey de Plata made its first commercial shipment to Akita Zinc in February.

South America

- Noranda Inc., Teck Cominco Limited, BHP Billiton Plc and Mitsubishi Corporation announced that the Antamina copper-zinc project in northern Peru had achieved commercial production in October, more than four months ahead of the original schedule of February 2002. In December, the first shipments of zinc concentrate were sent to Japan and South Korea. Additional shipments were sent to Europe, Japan and South Korea before year-end.
- In November, Teck Cominco Metals Limited signed a memorandum of understanding providing for exclusive negotiations with Parapanema S.A. of Brazil for the purchase of Parai-buna de Metais, Brazil's second largest zinc producer. Parai-buna de Metais operates a 90 000-t/y zinc refinery near Juiz de Fora, north-west of Rio de Janeiro. The refinery's production capacity was reduced earlier in 2001 to a rate of 47 000 t/y as a result of Brazil's electricity rationing scheme. The company reduced output to

sell energy from its Sobragi hydro-electric plant onto the Brazilian market. Full production resumed in December.

Europe

- In November, Finland's Outokumpu Oyj announced that it was getting out of the base-metal mining business. The company will focus its efforts on metal production, fabrication and technology. At the same time, the company announced that it was placing its Tara zinc mine in Ireland on care and maintenance, pending better zinc prices. Tara is the largest zinc mine in Europe and produces nearly 200 000 t/y of zinc in concentrate.
- Outokumpu commissioned the €31 million expansion of its zinc plant in Kokkola, Finland, raising the refinery's capacity by 35 000 t to 260 000 t/y. Together with the acquisition of the Norzink AS refinery in April and the completion of the Kokkola expansion, Outokumpu now has a 15% share of zinc production capacity in Europe.
- In December, Toronto-based Inmet Mining Corporation and Outokumpu entered into an alliance agreement. As part of the agreement, Inmet will purchase Outokumpu's Pyhäsalmi copper-zinc mine in Finland for €4 million in cash, a €14 million, 10-year, 6% promissory note, and four million Inmet common shares. Inmet will also receive a number of Outokumpu's exploration properties in

Finland. The companies also entered into a life-of-mine off-take agreement for copper and zinc concentrates from Pyhäsalmi. The mine produces 30 000 t/y of zinc in concentrate and is expected to operate until 2015.

- Vancouver-based EuroZinc Mining Corporation signed an agreement with the Portuguese-owned mining company, Empresa de Desenvolvimento Mineiro, SGPS, S.A., to buy the company's controlling interest in Pirites Alentejanas, S.A., the operating company that owns the Aljustrel zinc project. EuroZinc will pay a total of US\$5.4 million to acquire the company's 75% stake in Pirites Alentejanas. The purchase includes operating permits, mill facilities, underground development, offices, machine shops, stocked warehouses, and a dedicated port facility.
- In October, Boliden Apirsa, the Spanish mining division of Boliden Ltd., announced the closure of its Los Frailes lead-zinc mine in Aznalcollar, Spain. In November, a judicial investigation cleared Boliden Apirsa of responsibility for a major tailings dam failure that occurred in April 1998. The accident was caused by mistakes in the design and erroneous conclusions of the geological studies that were carried out prior to construction of the tailings dam and were not attributed to the Apirsa operations.
- Australian-based MIM Holdings Limited announced that it was seeking opportunities to sell its zinc smelting operations in the United Kingdom and Germany. MIM owns the Britannia Zinc Limited zinc-lead smelter/refinery complex at Avonmouth, U.K., and the M.I.M. Huttenwerke Duisburg GmbH zinc-lead smelter/refinery at Duisburg, Germany. Britannia Zinc produced 78 000 t of zinc in 2000/01 from a variety of mine sources and recycling feedstock, including mixed lead-zinc concentrate from MIM's McArthur River mine in Australia. The Duisburg plant also processes feedstock from a variety of mines and increasingly from recycled sources. It produced 90 000 t of zinc in 2000/01.

Asia

- Inmet entered into an agreement with Gama Endüstri to purchase its 6% interest in the Çayeli copper-zinc mine in Turkey for approximately \$13 million. The purchase of Gama's interest will increase Inmet's ownership in Çayeli to 55% and is subject to government approval. The Çayeli mine is located in Rize Province in eastern Turkey and produces approximately 40 000 t of zinc metal annually.

Africa

- In July, Anglo American plc postponed development of its Gamsberg zinc deposit in South Africa due to economic uncertainty and low zinc prices.
- In December, the European Investment Bank announced that it is lending €35 million to state-owned Namibia Power Corp. for the construction of power transmission lines to the new Skorpion zinc mine in the southwestern part of the country. Skorpion is the largest private-sector investment in the country and the project will improve the reliability of electricity supply to the mine.
- Toronto-based Breakwater Resources withdrew from a plan to develop the Oued Amiziour zinc project in Algeria. Breakwater signed a letter of intent with the Algerian government in April 2000, but cited a new law that spells the end to a five-year tax-free period and preferential transport rates as the reason for withdrawing from the project.

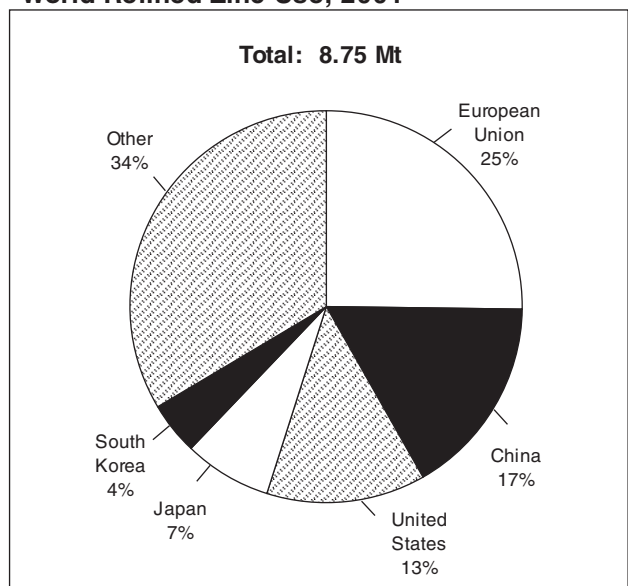
Australia

- Pasminco Limited was placed into voluntary administration in September in an attempt to restructure the company's debt of over A\$3.4 billion. As part of the restructuring, the new Century zinc mine in Queensland was put up for sale. By year-end, however, the administrator applied for and received permission from the Australian Federal Court to reschedule the next meeting of creditors from January 7, 2002, to April 7, 2002, deferring the sale of the mine.
- On June 29, 2001, Melbourne-based BHP Limited and London-based Billiton Plc merged to form BHP Billiton. The new company is a significant producer of aluminum, metallurgical coal, seaborne steaming coal, copper, ferro-alloys, iron ore, and titanium minerals. The group also has substantial worldwide interests in oil, gas, liquefied natural gas, nickel, diamonds and silver. BHP Billiton maintains its headquarters in Melbourne, Australia, with a significant corporate management centre in London. In terms of Canadian zinc assets, the new company owns a 100% interest in the Selbaie copper-zinc mine in northern Quebec and a 25% interest in the Polaris mine in Nunavut.

ZINC DEMAND

World zinc demand fell in 2001 by about 1.3% after eight consecutive years of growth to 8.7 Mt. Preliminary figures from ILZSG for 2001 indicate that Western World demand decreased from 7.0 Mt in 2000 to

Figure 6
World Refined Zinc Use, 2001



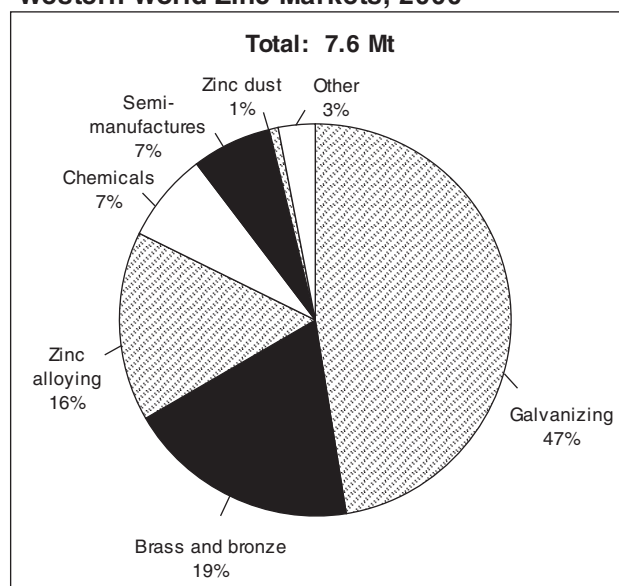
Source: International Lead and Zinc Study Group.

just over 6.7 Mt in 2001 (Figure 6). The main reason for the decline in world demand came from a 13.5% decline in the United States. European demand fell by just under 1%. In contrast to the decline elsewhere in the world, zinc demand in China grew by some 9.6% to over 1.4 Mt in 2001. In Canada, zinc use from both primary and recycled sources rose from a reported 143 000 t in 2000 to just under 148 000 t in 2001.

In terms of zinc markets, the galvanic protection of steel continues to represent the predominant end use of zinc, accounting for some 47% of zinc usage in 2000. Zinc is used extensively in the automotive and construction industries for corrosion protection and remains one of the most cost-effective means of protecting steel against corrosion. The manufacture of brass and bronze is the second most important use of zinc, accounting for 19% of usage followed by zinc-based alloys for die-cast products at 16% of all uses in 2000.

The remaining zinc is used for oxides and other chemicals and zinc dust. Zinc oxide has a variety of applications, the most important of which is as an accelerator in the curing of rubber. High-purity zinc oxide is used in the pharmaceutical industry and zinc oxide-based salves and ointments have long been known for their healing properties. Other grades are used in the zinc plating industry, as an anti-corrosion agent in lubricants, and in paints, animal feeds and a variety of chemicals (Figure 7).

Figure 7
Western World Zinc Markets, 2000



Source: International Lead and Zinc Study Group.

Recycled zinc includes high-purity zinc refined from the treatment of electric arc furnace (EAF) dusts, remelted zinc with a purity less than 98.5% zinc, and scrap zinc used in the production of zinc alloys. According to ILZSG, the amount of recycled zinc recovered in the Western World has risen steadily in recent years, reaching 2.1 Mt in 2001.

INTERNATIONAL LEAD AND ZINC STUDY GROUP

The International Lead and Zinc Study Group was formed in 1959 to improve market information and to provide opportunities for regular intergovernmental consultations on issues related to lead and zinc markets. Particular attention is given to providing regular and frequent information on the supply, demand and outlook for lead and zinc.

The Study Group, headquartered in London, England, comprises 28 countries representing most of the world's major lead- and zinc-producing and using nations. The Group has an extensive information-gathering and dissemination role and acts as an effective mechanism for increasing market transparency related to the production, use and trade of lead and zinc. The Group is also an important forum for communication among governments, among industry, and between governments and industry. It holds a general session each year in October. Canada has been an active member of the Group since its inception.

The 46th Session of the Study Group was held in New Delhi, India, in October 2001 and was attended by some 85 registered participants, including representatives of 23 member countries and observers from several invited nations, industry and non-governmental organizations. As part of the work of the Group's Economic and Environment Committee, two new reports will be published in 2002: *The Use of Zinc in Construction and Public Works* and *The Use of Lead and Zinc in Chemicals*. Work is also continuing on a joint Study Group (Lead and Zinc, Copper, and Nickel) workshop on recycling to be held sometime in 2003.

The Group continues to work on updating its capacity to deliver, through electronic means, its monthly statistical bulletin. The monthly bulletin is now available to member countries and subscribers on-line through the Group's web site. The development of an interactive version of the bulletin and other improvements to the site continue. The Study Group will hold its next Annual Session and meetings of its Committees and Industry Advisory Panel in Stockholm, Sweden, from October 4 to 6, 2002.

More information about the Group's activities and the availability of a wide range of publications pertaining to lead and zinc can be obtained from its web site at www.ilzsg.org. For information on the Group's activities in partnership with the International Copper Study Group and the International Nickel

Study Group related to the contribution nonferrous metals make to sustainable development and the Non-Ferrous Metals Consultative Forum, visit the joint web site at www.nfmsd.org.

PRICES AND STOCKS

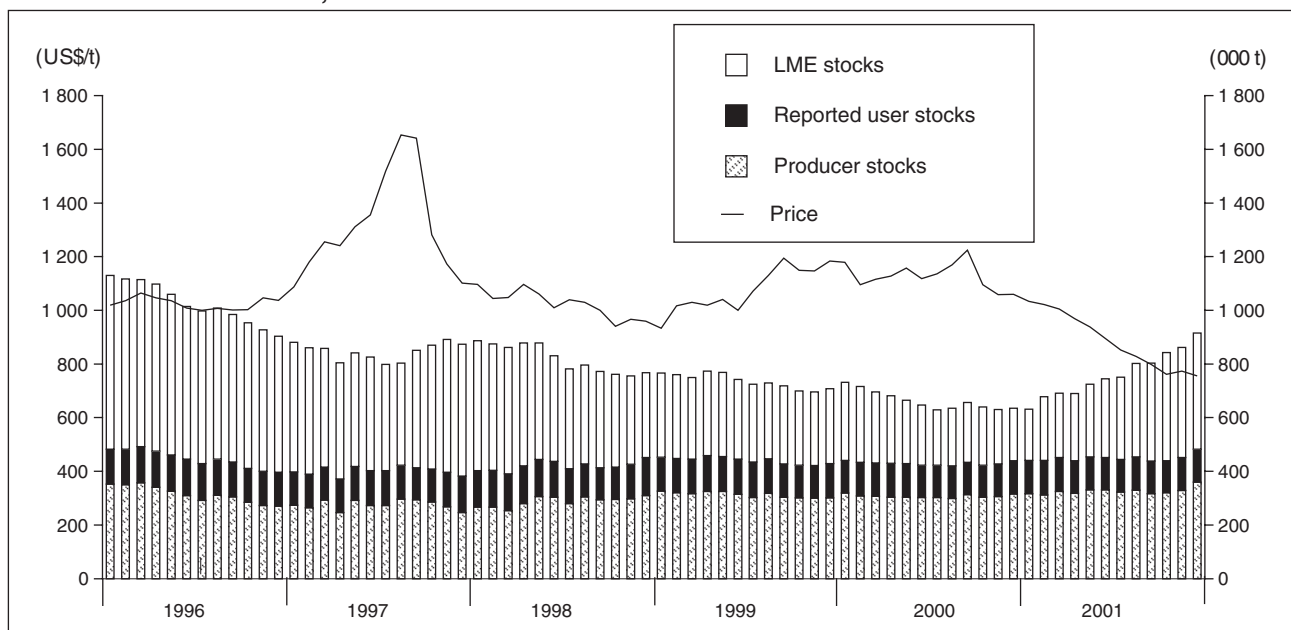
After maintaining a cash settlement price of around US\$1050/t on the London Metal Exchange (LME) in the first quarter of 2001, zinc prices followed a steady downward trend, reaching record lows of \$732.50/t in mid-December. Prices bounced back slightly to end the year at \$767.50/t. As a result of this sharp decline in prices, a number of zinc producers fell under severe financial pressure with no near-term relief for price increases expected.

While user stocks remained relatively constant over the year, stocks on the LME rose sharply at the start of the year from just over 300 000 t and continued a steady climb to end the year at 433 350 t. Prices reflected the oversupply in the market and averaged US\$886.27/t in 2001 (Figures 8 and 9).

OUTLOOK

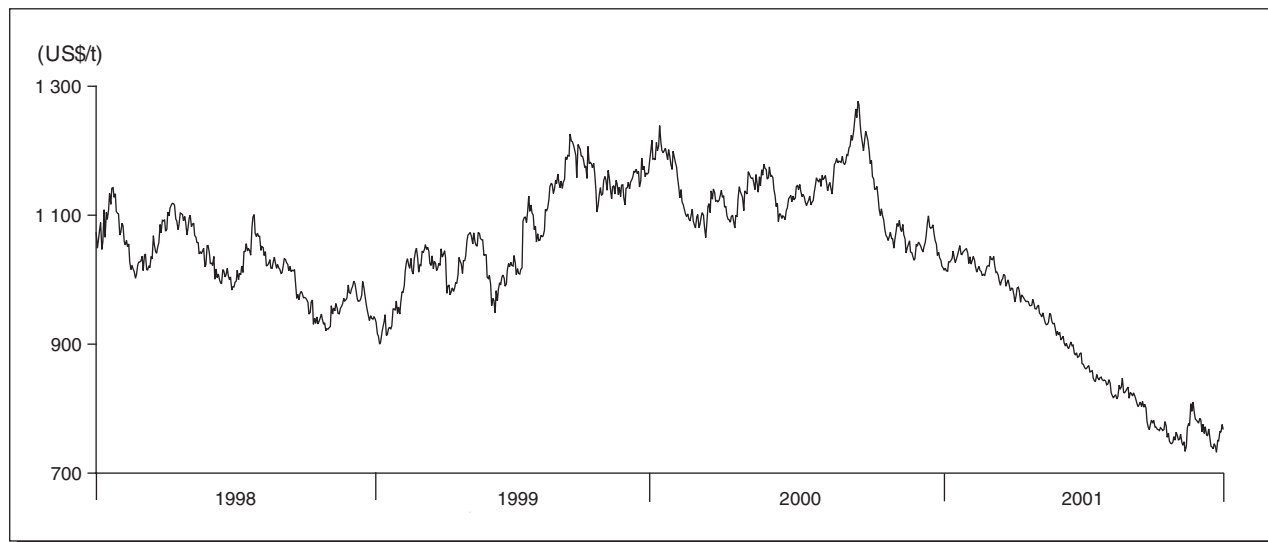
Canadian mine production of zinc overall is expected to decrease by about 13% in 2002 as a result of the closure of the Sullivan mine and the suspension of operation at Myra Falls mines in December 2001 and

Figure 8
Zinc Prices and Stocks, 1996-2001



Source: International Lead and Zinc Study Group.

Figure 9
LME Daily Official Cash Settlement Prices, 1998-2001



Source: London Metal Exchange.

the scheduled closure of the Polaris, Nanisivik and Ruttan mines in the second half of 2002. No new mine capacity is due to come on stream to replace these closures.

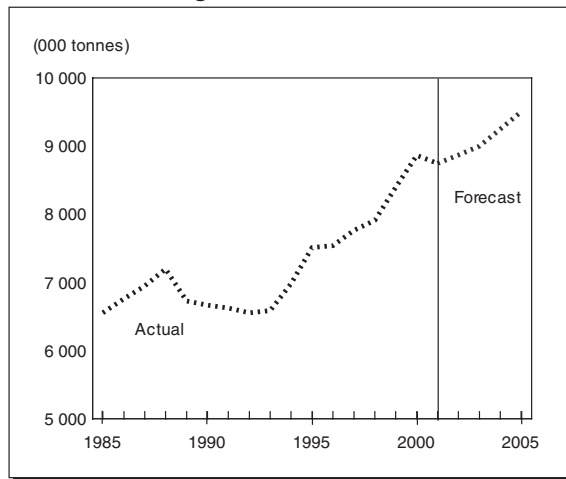
For 2002, the zinc market, according to information gathered by the member countries of the ILZSG, is expected to result in a substantial Western World market surplus if ambitious production targets are achieved. Overall, after taking into consideration releases from the U.S. Defense National Stockpile, the ILZSG envisaged a substantial surplus of refined metal supply over demand in 2002. The Group acknowledged that the scale of the surplus, estimated at about 500 000 t, could be reduced if present production plans are curtailed as a consequence of low market price levels. These concerns related to a large surplus in 2002 were, however, allayed somewhat by production cuts announced late in 2001. Prices are expected to remain weak, averaging about \$850/t in 2002. Continued growth in galvanizing markets, combined with a gradual recovery in overall markets, is expected, with zinc prices rising to US\$1000-\$1100/t by 2005 (Figures 10 and 11).

Notes: (1) For definitions and valuation of mineral production, shipments and trade, please refer to Chapter 64. (2) Information in this review was current as of May 31, 2002. (3) This and other reviews, including previous editions, are available on the internet at www.nrcan.gc.ca/mms/cmy/index_e.html.

NOTE TO READERS

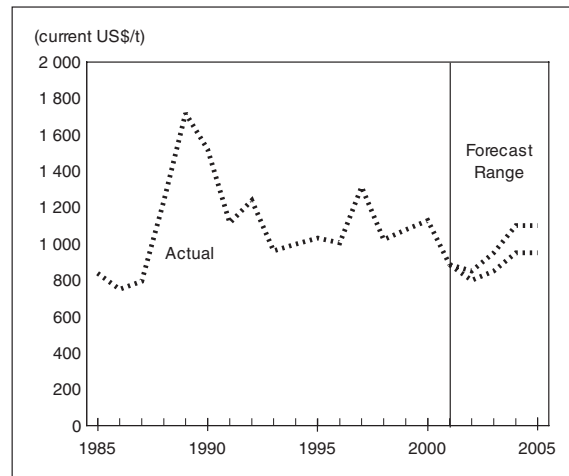
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Figure 10
World Zinc Usage, 1985-2005



Sources: Natural Resources Canada; International Lead and Zinc Study Group.

Figure 11
Average Cash Settlement Zinc Prices,
1985-2005
Annual LME Settlement



Source: Natural Resources Canada.

TARIFFS

Item No.	Description	Canada			United States	EU (1)	Japan (2)
		MFN	GPT	USA	Canada	MFN	WTO
2603.00	Copper ores and concentrates						
2603.00.00.30	Zinc content	Free	Free	Free	Free	Free	Free
2607.00	Lead ores and concentrates						
2607.00.00.30	Zinc content	Free	Free	Free	Free	Free	Free
2608.00	Zinc ores and concentrates						
2608.00.00.30	Zinc content	Free	Free	Free	Free	Free	Free
2616.10	Silver ores and concentrates						
2616.10.00.30	Zinc content	Free	Free	Free	Free	Free	Free
26.20	Ash and residues (other than from the manufacture of iron or steel) containing metals or metal compounds containing mainly zinc						
2620.11	Hard zinc spelter	Free	Free	Free	Free	Free	Free
2817.00	Zinc oxide; zinc peroxide	Free-6.5%	Free	Free	Free	7.2%	4.3%
28.33	Sulphates; alums; peroxosulphates (persulphates)						
2833.26	Of zinc	Free	Free	Free	Free	5.5%	3.9%
79.01	Unwrought zinc						
	Zinc, not alloyed:						
7901.11	Containing by weight 99.99% or more of zinc	Free	Free	Free	Free	2.5%	4.30 yen/kg
7901.12	Containing by weight less than 99.99% of zinc	Free	Free	Free	Free	2.5%	Free-4.30 yen/kg
7901.20	Zinc alloys:						
7901.20.00.10	Containing by weight 90% or more but less than 97.5% of zinc	Free	Free	Free	Free	2.5%	4.30 yen/kg
7901.20.00.20	Containing by weight less than 90% of zinc	Free	Free	Free	Free	2.5%	Free-4.30 yen/kg
7902.00	Zinc waste and scrap	Free	Free	Free	Free	Free	Free
79.03	Zinc dust, powders and flakes						
7903.10	Zinc dust	Free	Free	Free	Free	2.5%	3%
7903.90	Other:	Free	Free	Free	Free	2.5%	3%
7904.00	Zinc bars, rods, profiles and wires	Free	Free	Free	Free	5%	3%
7905.00	Zinc plates, sheets, strip and foil	Free	Free	Free	Free	5%	3%
7906.00	Zinc tubes, pipes, and tube or pipe fittings (for example, couplings, elbows, sleeves)	3%	Free	Free	Free	5%	3%
7907.00	Other articles of zinc						
7907.00.10	Anodes for electroplating	Free	Free	Free	Free	5%	3%
7907.00.20	Discs or slugs, containing by weight 90% or more of zinc; gutters, roof capping, skylight frames and other fabricated building components	3%	Free	Free	Free	5%	3%
7907.00.90	Other	3%	3%	Free	Free	5%	3%

Sources: *Customs Tariff*, effective January 2001, Canada Customs and Revenue Agency; *Harmonized Tariff Schedule of the United States*, 2001; *Worldtariff Guidebook on Customs Tariff Schedules of Import Duties of the European Union* (41st Annual Edition: 2001); *Customs Tariff Schedules of Japan*, 2000.

(1) Duty suspension may apply for certain goods. (2) WTO rate is shown; lower tariff rates may apply circumstantially.

Note: Where there is a tariff "range," a complete match of the HS code was not available; therefore, the high and low for the product in question are shown.

TABLE 1. CANADA, ZINC PRODUCTION AND TRADE, 2000 AND 2001, AND USE, 1998-2000

Item No.	2000		2001 (p)	
	(tonnes)	(\$000)	(tonnes)	(\$000)
PRODUCTION				
All forms (1)				
New Brunswick	237 535	397 871	305 874	429 141
Quebec	214 876	359 917	258 045	362 037
Ontario	71 594	119 919	74 439	104 437
Manitoba	79 904	133 839	93 500	131 180
Saskatchewan	1 104	1 849	1 198	1 680
British Columbia	145 516	243 740	110 161	154 556
Nunavut	185 185	166 355	166 355	233 395
Total	935 713	1 567 320	1 009 571	1 416 428
Mine output (2)	1 002 242	...	1 070 294	...
Refined (3)	779 892	...	654 562	...
EXPORTS				
2603.00.30	Zinc content in copper			
	Belgium	-	-	-
	Italy	2 029	1 319	-
	Japan	5 728	4 280	-
	Total	7 757	5 599	-
2608.00.30	Zinc content in zinc ores and concentrates			
	Belgium	62 540	66 942	116 414
	Finland	45 797	65 902	55 279
	Spain	31 398	35 453	67 622
	Sweden	40 084	69 482	41 342
	Norway	12 836	21 429	25 844
	Germany	21 337	31 780	22 275
	Italy	14 492	22 590	18 302
	South Korea	-	-	27 468
	Japan	45 278	38 782	31 964
	Poland	3 657	3 010	13 188
	Bulgaria	-	-	5 243
	Other countries	41 731	45 165	29 914
	Total	319 150	400 534	454 855
2620.11	Ash and residues containing hard zinc			
	United States	-	-	161
	India	21	15	-
	Total	21	15	161
2620.19	Ash and residues containing mainly zinc, n.e.s.			
	United States	7 838	7 277	7 728
	India	84	82	256
	Japan	40	42	21
	Greece	-	-	-
	South Africa	102	124	-
	Total	8 064	7 525	8 005
2817.00	Zinc oxide; zinc peroxide			
	United States	44 007	72 848	47 548
	Norway	238	410	531
	Italy	331	423	502
	Australia	625	333	440
	France	73	442	281
	Other countries	412	770	508
	Total	45 686	75 226	49 810
2833.26	Zinc sulphate			
	United States	23	41	208
	Total	23	41	208

TABLE 1 (cont'd)

Item No.	2000		2001 (p)		
	(tonnes)	(\$000)	(tonnes)	(\$000)	
EXPORTS (cont'd)					
7901.11	Zinc, not alloyed, unwrought, containing by weight 99.99% or more of zinc				
	United States	350 279	631 763	304 103	474 992
	Netherlands	—	—	10 503	14 725
	Taiwan	6 287	10 871	2 772	6 435
	Indonesia	2 985	5 201	3 920	6 164
	Hong Kong	4 174	7 397	3 830	5 578
	Singapore	3 386	5 969	1 469	2 379
	Malaysia	4 864	8 651	1 171	1 605
	Philippines	3 675	6 267	420	566
	Other countries	1 052	1 821	81	106
	Total	376 702	677 908	328 269	512 550
7901.12	Zinc, not alloyed, unwrought, containing by weight less than 99.99% of zinc				
	United States	187 224	332 981	146 183	226 684
	Hong Kong	9 064	17 491	6 550	11 451
	Indonesia	4 799	8 772	4 702	7 598
	Japan	4 544	8 230	4 493	6 914
	New Zealand	4 658	7 608	1 198	4 443
	Philippines	3 429	5 643	1 793	2 924
	Sri Lanka	645	1 162	567	939
	Malaysia	3 289	5 814	457	672
	Other countries	8 272	14 864	993	1 648
	Total	225 924	402 565	166 936	263 273
7901.20	Zinc alloys, unwrought				
	United States	1 734	3 345	1 823	2 709
	Total	1 734	3 345	1 823	2 709
7902.00	Zinc waste and scrap				
	United States	33 547	22 705	37 446	16 844
	Hong Kong	—	—	2 025	2 100
	Taiwan	2 400	2 366	410	418
	Other countries	461	367	469	366
	Total	36 408	25 438	40 350	19 728
7903.10	Zinc dust				
	United States	5 287	12 915	6 086	6 086
	Other countries	62	99	19	19
	Total	5 349	13 014	6 105	6 105
7903.90	Zinc powders and flakes				
	United States	8 339	24 466	8 016	19 463
	Other countries	587	1 038	763	1 103
	Total	8 926	25 504	8 779	20 566
7904.00	Zinc bars, rods, profiles and wire				
	United States	152	679	190	1 058
	Other countries	—	—	2	6
	Total	152	679	192	1 064
7905.00	Zinc plates, sheets, strip and foil				
	France	—	—	32	174
	United States	10	99	6	64
	Spain	—	—	—	—
	Total	10	99	38	238
7906.00	Zinc tubes, pipes and tube or pipe fittings (for example, couplings, elbows, sleeves)				
	United States	1 176	8 084	1 097	8 509
	Other countries	2	36	—	—
	Total	1 178	8 120	1 097	8 509
Total exports		1 037 084	1 645 612	1 066 628	1 284 189

TABLE 1 (cont'd)

Item No.	2000		2001 (p)																												
	(tonnes)	(\$000)	(tonnes)	(\$000)																											
IMPORTS																															
2603.00.00.30	Zinc content in copper ores and concentrates	3	3	–	–																										
2607.00.00.30	Zinc content in lead ores and concentrates	3 149	2 614	5 031	4 904																										
2608.00.00.30	Zinc content in zinc ores and concentrates	207 676	128 115	140 465	91 534																										
2616.10.00.30	Silver ores and concentrates	20 889	17 275	8 514	6 494																										
2620.11	Ash and residues containing hard zinc	25	46	–	–																										
2620.19	Ash and residues containing mainly zinc, n.e.s.	1 518	1 767	572	338																										
2817.00	Zinc oxide; zinc peroxide	7 519	10 525	11 290	15 237																										
2833.26	Zinc sulphate	5 659	3 954	6 245	4 426																										
7901.11	Zinc, not alloyed, unwrought, containing by weight 99.99% or more of zinc	3 155	5 267	6 121	8 990																										
7901.12	Zinc, not alloyed, unwrought, containing by weight less than 99.99% of zinc	3 484	5 516	336	495																										
7901.20	Zinc alloys, unwrought	7 870	15 194	4 844	9 562																										
7902.00	Zinc waste and scrap	408	393	302	244																										
7903.10	Zinc dust	5 020	10 308	5 536	10 388																										
7903.90	Zinc powders and flakes	588	1 191	428	723																										
7904.00	Zinc bars, rods, profiles and wire	8 664	15 315	2 607	5 252																										
7905.00	Zinc plates, sheets, strip and foil	1 124	4 701	1 697	6 214																										
7906.00	Zinc tubes, pipes and tube or pipe fittings (for example, couplings, elbows, sleeves)	1 764	12 363	1 149	8 222																										
7907.00	Other articles of zinc	7 195	28 445	4 944	19 309																										
	Total imports	285 710	262 992	200 081	192 332																										
		<table border="1"> <thead> <tr> <th colspan="3">1998</th> <th colspan="3">1999 (a)</th> <th colspan="3">2000 (p) (a)</th> </tr> <tr> <th>Primary</th> <th>Recycled</th> <th>Total</th> <th>Primary</th> <th>Recycled</th> <th>Total</th> <th>Primary</th> <th>Recycled</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td colspan="9" style="text-align: center;">(tonnes)</td> </tr> </tbody> </table>			1998			1999 (a)			2000 (p) (a)			Primary	Recycled	Total	Primary	Recycled	Total	Primary	Recycled	Total	(tonnes)								
1998			1999 (a)			2000 (p) (a)																									
Primary	Recycled	Total	Primary	Recycled	Total	Primary	Recycled	Total																							
(tonnes)																															
	QUANTITY USED (5) (6)																														
	Zinc used for or in the production of:																														
	Copper alloys (brass, bronze, etc.)	x	x	2 987	x	x	2 395	x	x	2 847																					
	Galvanizing: electro	x	x	2 662	x	x	2 472	x	x	2 335																					
	hot dip	x	x	76 208	x	x	75 716	x	x	73 568																					
	Zinc die-cast alloys	x	x	27 402	x	x	29 550	x	x	31 105																					
	Other products (including rolled and ribbon zinc, zinc oxides, electroplating)	x	x	29 164	x	x	33 055	x	x	38 057																					
	Total	137 610	814	138 424	142 451	737	143 188	136 544	11 369	147 913																					
	User stocks, year-end	8 994	59	9 053	12 175	89	12 264	7 834	938	8 772																					

Sources: Natural Resources Canada; Statistics Canada.

– Nil; . . Not available; n.e.s. Not elsewhere specified; (p) Preliminary; x Confidential.

(a) Increase in number of companies being surveyed.

(1) New refined zinc produced from domestic primary materials (concentrates, slags, residues, etc.) plus estimated recoverable zinc in ores and concentrates shipped for export. (2) Zinc content of ores and concentrates produced. (3) Refined zinc produced from domestic and imported ores. (4) Includes HS classes 2603.00.30, 2607.00.30 and 2616.10.30. (5) User survey does not represent all Canadian users and is therefore consistently less than the apparent quantity used. (6) Due to confidentiality in some end-use categories, a breakdown of primary and recycled sources is not provided in order to be consistent.

TABLE 2. CANADA, ZINC PRODUCTION AND EXPORTS,⁽¹⁾ 1975, 1980 AND 1986-2000

	Production		Exports		
	All Forms (2)	Refined (3)	In Ores and Concentrates	Refined	Total
	(tonnes)				
1975	1 055 151	426 902	705 088	247 474	952 562
1980	883 697	591 565	434 178	471 949	906 127
1986	988 173	570 981	450 249	427 176	877 425
1987	1 157 936	609 909	613 185	441 227	1 054 412
1988	1 370 000	703 206	816 885	551 521	1 368 406
1989	1 272 854	669 677	614 223	495 061	1 109 284
1990	1 179 372	591 786	716 185	452 251	1 168 436
1991	1 083 008	660 552	566 815	520 508	1 087 323
1992	1 195 736	671 702	678 172	509 744	1 187 916
1993	990 727	659 881	455 953	493 264	949 217
1994	976 309	690 965	450 320	551 168	1 001 488
1995	1 094 703	720 346	609 575	533 179	1 142 754
1996	1 162 720	716 467	(r) 670 789	581 604	(r) 1 252 393
1997	(r) 1 026 864	(r) 703 798	(r) 489 697	(r) 546 964	(r) 1 036 661
1998	991 584	745 131	425 341	576 926	1 002 267
1999	963 321	776 927	327 662	610 793	938 455
2000 (p)	935 686	787 527	311 490	602 588	914 078

Sources: Natural Resources Canada; Statistics Canada.

(p) Preliminary; (r) Revised.

(1) Beginning in 1988, exports are based on the new Harmonized System and may not be in complete accordance with previous method of reporting. Ores and concentrates include HS classes 2608.00.30, 2603.00.30, 2607.00.30 and 2616.10.30. Refined production includes HS classes 7901.11 and 7901.12. (2) New refined zinc produced from domestic primary materials (concentrates, slags, residues, etc.) plus estimated recoverable zinc in ores and concentrates shipped for export. (3) Refined zinc produced from domestic and imported ores.

TABLE 3. WESTERN WORLD, PRIMARY ZINC STATISTICS, 1997-2001

	1997	1998	1999	2000	2001 (p)
	(000 tonnes)				
Mine production (zinc content)	5 495	5 694	5 858	6 299	6 572
Metal production	5 582	5 713	5 832	6 130	6 241
Metal used	6 429	6 531	6 737	7 010	6 774

Source: International Lead and Zinc Study Group.

(p) Preliminary.

TABLE 4. WORLD MINE PRODUCTION OF ZINC, 1997-2001

	1997	1998	1999	2000	2001 (p)
	(000 tonnes)				
EUROPE					
Finland	32	31	20	16	20
Ireland	193	180	200	263	298
Poland	158	158	154	157	145
Russia	121	114	161	163	164
Spain	147	128	154	204	161
Sweden	155	161	175	177	159
Others	119	104	82	83	97
Subtotal	925	880	946	1 063	1 044
AFRICA					
Morocco	90	112	112	104	107
Namibia	37	42	35	40	38
South Africa	71	70	70	63	62
Others	10	33	51	48	48
Subtotal	208	257	268	255	255
OCEANIA					
Australia	972	1 020	1 110	1 379	1 476
AMERICAS					
Bolivia	154	151	145	149	149
Brazil	124	88	96	93	93
Canada	1 077	1 062	1 021	1002	1 052
Mexico	379	395	363	393	435
Peru	868	869	900	910	1 056
United States	632	755	813	837	798
Others	107	88	107	110	121
Subtotal	3 341	3 408	3 445	3 494	3 704
ASIA					
China	1 210	1 273	1 476	1 710	1 572
India	142	195	185	208	222
Iran	77	86	98	102	105
Japan	72	68	64	64	45
Kazakhstan	223	224	283	322	320
North Korea	60	44	37	34	28
Thailand	15	25	24	27	24
Turkey	64	58	57	48	36
Others	28	32	34	38	46
Subtotal	1 890	2 005	2 258	2 553	2 398
Total world	7 337	7 569	8 026	8 744	8 876
Total Western World	5 495	5 694	5 858	6 299	6 572

Source: International Lead and Zinc Study Group.
(p) Preliminary.

TABLE 5. WORLD ZINC METAL PRODUCTION,⁽¹⁾ 1997-2001

	1997	1998	1999	2000	2001 (p)
	(000 tonnes)				
EUROPE					
Belgium	203	205	232	264	256
Finland	176	199	225	223	249
France	317	320	318	318	329
Germany	348	361	361	357	357
Italy	268	232	145	170	179
Netherlands	203	217	221	217	206
Norway	136	138	144	138	145
Poland	171	175	179	179	175
Russia	189	197	232	242	250
Spain	378	385	383	391	443
Others	289	262	252	277	287
Subtotal	2 678	2 691	2 692	2 776	2 876
AFRICA					
Algeria	30	27	27	26	26
South Africa	110	108	108	103	109
Others	–	–	–	–	–
Subtotal	140	135	135	129	135
AMERICAS					
Argentina	39	39	40	36	40
Brazil	186	177	187	192	193
Canada	704	745	777	780	658
Mexico	230	229	219	233	300
Peru	173	184	191	200	190
United States	366	368	372	363	299
Subtotal	1 698	1 741	1 785	1 804	1 679
ASIA					
China	1 434	1 486	1 703	1 919	2 078
India	166	180	189	204	234
Japan	603	608	633	654	644
Kazakhstan	185	240	243	262	260
South Korea	335	390	430	477	508
Thailand	84	89	95	101	105
Others	152	150	119	119	132
Subtotal	2 959	3 143	3 412	3 736	3 961
OCEANIA					
Australia	307	311	344	494	556
Total world	7 783	8 021	8 369	8 939	9 207
Total Western World	5 583	5 713	5 832	6 130	6 241

Source: International Lead and Zinc Study Group.
– Nil; (p) Preliminary.

TABLE 6. ZINC USE,⁽¹⁾ BY COUNTRY AND BY REGION, 1997-2001

	1997	1998	1999	2000	2001 (p)
	(000 tonnes)				
EUROPE					
Belgium	260	260	275	285	265
France	271	285	298	310	329
Germany	530	573	561	532	549
Italy	354	373	336	385	365
Russia	146	111	120	137	150
Spain	160	197	190	203	228
United Kingdom	224	219	220	210	191
Others	628	632	610	653	658
Subtotal	2 573	2 650	2 610	2 715	2 735
AFRICA					
South Africa	98	91	87	92	89
Others	57	62	70	77	76
Subtotal	155	153	157	169	165
OCEANIA					
Australia	183	192	210	217	222
New Zealand	18	17	15	14	16
Subtotal	201	209	226	231	238
AMERICAS					
Brazil	190	177	187	188	198
Canada	161	170	169	176	181
Mexico	178	186	200	212	210
United States	1 243	1 307	1 342	1 340	1 147
Others	150	157	163	164	166
Subtotal	1 922	1 997	2 061	2 080	1 902
ASIA					
China	830	920	1 200	1 350	1 450
India	220	232	254	270	286
Japan	742	659	634	676	633
South Korea	343	318	389	438	381
Taiwan	225	241	273	294	276
Others	556	532	588	641	680
Subtotal	2 916	2 902	3 338	3 669	3 706
Total world	7 767	7 911	8 392	8 863	8 745
Total Western World	6 429	6 531	6 737	7 010	6 774

Source: International Lead and Zinc Study Group.

(p) Preliminary.

(1) Total refined zinc use, including zinc used directly for the production of zinc alloys, regardless of the type of source material from which it is produced, i.e., ores, concentrates, residues, slags or scrap. Remelted zinc and zinc dusts are excluded.

TABLE 7. CANADA, ZINC METAL CAPACITY, 2001

Company and Location	Annual Rated Capacity
	(000 tonnes of slab zinc)
PRIMARY	
Canadian Electrolytic Zinc Limited Valleyfield, Quebec	260
Falconbridge Limited Timmins, Ontario	145
Hudson Bay Mining and Smelting Co., Limited Flin Flon, Manitoba	115
Teck Cominco Ltd. Trail, British Columbia	290
Total primary, Canada	810

Source: Natural Resources Canada.

TABLE 8. MONTHLY AVERAGE ZINC PRICES, 2000 AND 2001

	LME Special High Grade Settlement
	(US\$/t)
2000	
January	1 178.8
February	1 094.2
March	1 116.4
April	1 127.6
May	1 156.8
June	1 117.9
July	1 136.2
August	1 169.8
September	1 224.4
October	1 095.9
November	1 059.1
December	1 059.8
Yearly average	1 128.1
2001	
January	1 033.4
February	1 020.9
March	1 004.7
April	969.5
May	937.9
June	894.9
July	852.4
August	828.1
September	798.6
October	761.5
November	772.9
December	754.7
Yearly average	886.3

Source: International Lead and Zinc Study Group.