

Lead

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1996 mine production: \$273 million
World rank: Fourth
Exports: \$328 million
 (concentrate and unwrought)

Canada	1996	1997 ^e	1998 ^f
	(000 tonnes)		
Mine production	257	195	280
Metal production	309	287	350
Consumption (refined)	95	90	95
Exports (concentrate)	155	94	170
Exports (unwrought)	214	210	265
Imports (concentrate)	90	55	90
Imports (unwrought)	7	10	10

^e Estimated; ^f Forecast.

Lead-acid batteries for automotive, industrial and consumer purposes account for 70% of the world's demand for lead. Lead's corrosion-resistant nature also lends itself for applications in sheeting for roofing purposes, while its radiation attenuation properties prevent the emission of harmful radiation from television, video and computer monitors. Certain dispersive or readily bio-available uses, such as lead in gasoline, in piping for drinking water systems, and in household paints, have been or are being phased out in Canada and certain other countries due to health concerns.

ANNUAL AVERAGE PRICES, LONDON METAL EXCHANGE

1993	1994	1995	1996	1997 ^e
(US\$/lb)				
18.1	24.8	28.6	35.1	28.5

^e Estimated.

CANADIAN OVERVIEW

- Anvil Range Mining Corporation suspended mining at its Faro operation in the Yukon, partly due to weak metal prices and stripping delays, on December 20, 1996. Milling of stockpiled material ceased in March 1997. Cominco Ltd. completed the acquisition of approximately a 28% interest in Anvil in February. Milling is expected to re-start in late 1997 after stripping of the nearby open-pit Grum orebody is completed. Faro's annual production capacity of lead in concentrate is 98 000 t.
- Breakwater Resources opened the underground Caribou and open-pit Restigouche mines located 50 km and 80 km west of Bathurst, respectively. Breakwater suspended mining at Caribou in 1990. A new reagent scheme will reportedly boost recoveries while the milling capacity has been increased to 3000 t/d. Together the mines will produce 32 000 t/y of lead in concentrate.
- Cominco closed its ageing 100 000-t/y lead smelter in April to coincide with the opening of the new 120 000-t/y Kivcet lead smelter and slag fuming furnace at Trail, British Columbia. The plants are reportedly not yet running steadily at design production rates. A two-week shut-down for feed system modifications to achieve consistent operating output is planned for November.
- In Quebec, Nova Pb added a second rotary kiln and auxiliary technology to increase its lead smelting capacity from 60 000 t/y to 90 000 t/y by 2000.
- In October, Cominco and the Liard First Nation (the local Aboriginal people) signed a socio-economic participation agreement related to the Sa Dena Hes mine in the southeast Yukon. The mine, which closed in 1992 during a period of weak metal prices, could re-open as early as the second quarter of 1998 and produce 10 000 t/y of lead in concentrate. Cominco Ltd. (25%), Teck Corporation (25%) and Korea Zinc Co. Ltd. (50%) are joint owners.
- Redfern Resources is seeking a project approval certificate for mining the Tulsequah Chief deposit in northwestern British Columbia. The proposed production rate is 4000 t/y of lead in concentrate.

WORLD OVERVIEW

- In mid-1997, BHP Minerals commissioned the Cannington underground mine in Australia. At full capacity it will be the world's largest lead mine producing 170 000 t/y of lead in concentrate with estimated reserves of 45 Mt grading 11.1% lead, 4.4% zinc and 500 g/t silver.
- Hindustan Zinc expanded production capacity by 3500 t to 11 500 t/y of lead in concentrate at the Rampura Agucha open-pit mine in Rajasthan, India.
- Production capacity was also expanded from 1800 t/y to 9700 t/y of lead in concentrate at the state-owned Changba lead-zinc mine in Gansu Province, China.
- Cie Minière de Guemassa increased capacity by 7000 t to 27 000 t/y of lead in concentrate at the Hajar mine in Morocco.
- In the United States, ASARCO's Leadville mine re-opened at a rate of 5000 t/y of lead in concentrate, while three secondary lead smelters at Lyons Station (East Penn), Baton Rouge (Exide, Schuylkill), and Middletown (RSR Corp.) expanded capacity by 15 000 t to 75 000 t/y, by 20 000 t to 80 000 t/y, and by 10 000 t to 90 000 t/y, respectively.
- Pasmenco expanded lead smelting capacity at the Cackle Creek plant in Australia by 13 000 t to 48 000 t/y. The company will also expand primary lead smelting and refining capacity at Port Pirie from 215 000 t/y to 250 000 t/y during 1998.
- In Japan, Toho Zinc expanded primary smelting and refining capacity at the Chigrishima facility to 120 000 t/y, an increase of 12% and 27%, respectively.

LEADING WORLD LEAD PRODUCERS

Producers Lead in Concentrate		1997 ^e	Producers Lead Metal		1997 ^e
		(000 tonnes)			(000 tonnes)
China	650	United States	1 460		
Australia	456	China	710		
United States	450	United Kingdom	425		
Peru	253	Germany	338		
Canada	195	Japan	297		
Mexico	174	France	296		
Sweden	119	Canada	287		

^e Estimated.

- A 30 000-t/y secondary lead plant and 50 000-t/y primary smelter were brought on stream in Krasnyarsk District, Russia.
- In the United Kingdom, the Northfleet primary refinery and Avonmouth ISF smelter expanded capacity by 40 000 t to 280 000 t/y, and by 7000 t to 52 000 t/y, respectively.

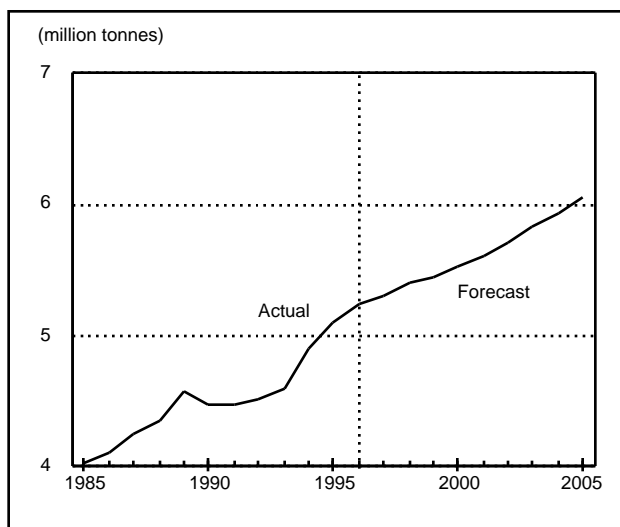
CONSUMPTION OUTLOOK

Western World lead consumption is predicted to increase by 1.0% in 1997, with over a 2% rise in 1998. Growth in demand is expected to slow in North America, but to recover in Western Europe and to continue to grow in Asia, with the exception of Japan where consumption is expected to fall to a 20-year low of 326 000 t. However, consumption may soften in Southeast Asia because of recent weak markets and sinking currencies.

Increased lead demand during recent years has been, in part, related to weather patterns. Hotter summers and colder winters in North America and Europe have contributed to a greater number of battery failures and increased replacement battery demand. Lead demand may soften in the short to medium term given that fewer batteries may need replacement, and if temperatures return to normal levels.

Over the long term, lead demand is expected to maintain an average growth rate of 1.0-1.5%/y into the early part of the next century. The battery sector will account for most of the growth, with the newly industrialized nations of Southeast Asia expected to continue to record the most rapid growth as the vehicle population expands.

Figure 1
Western World Lead Consumption, 1985-2005

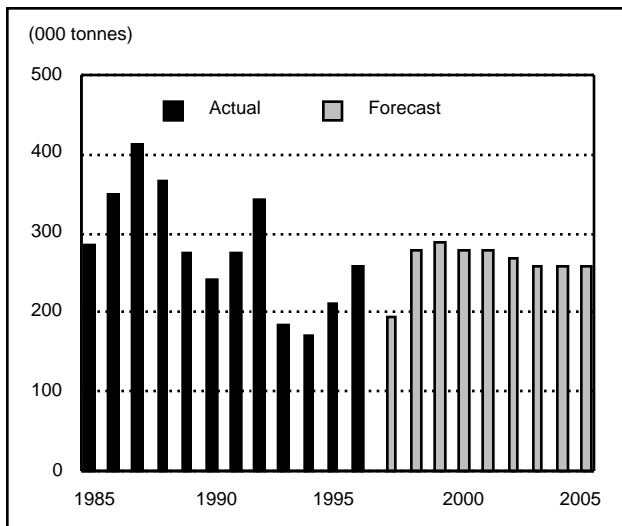


Source: Natural Resources Canada.

CANADIAN PRODUCTION OUTLOOK

In 1997, Canadian mine production of lead is predicted to be 195 000 t, down 24% from 1996. The decrease primarily reflects the loss in production from Faro, where operations were suspended and milling ceased three months later in March. Mine output is forecast to recover and grow in 1998 to 280 000 t with the re-opening of Faro and the completion of a full year's production from the Caribou and Restigouche mines. In the medium to long term, it is expected that production will continue to rise as new mines, such as Cominco's Kudz Ze Kayah project, and previously closed operations (e.g., Sa Dena Hes) come on stream. However, output is expected to fall early in the next century unless additional reserves are found at existing mines or through new discoveries. Lead metal production is expected to decline by about 7% in 1997 from 309 000 t in 1996, partly due to start-up difficulties at Cominco's new Kivcet smelter. Metal output is forecast to climb to a record high 350 000 t in 1998, largely as a result of new smelting capacity at Nova Pb and Cominco.

Figure 2
Canadian Mine Production of Lead, 1985-2005



Source: Natural Resources Canada.

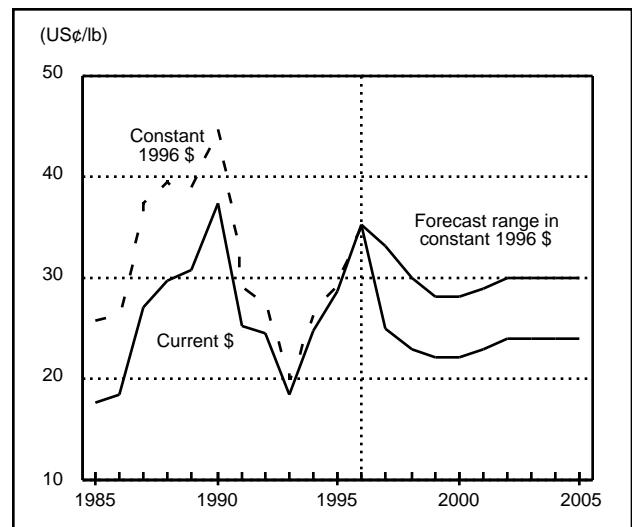
PRICE OUTLOOK

With the expansion of secondary and primary smelter capacity, and continued net exports from Eastern countries, the Western World's lead market is expected to move from a 114 000-t supply deficit in 1996 to a surplus of 25 000 t in 1997. The annual average LME price for lead is predicted to be US28.5¢/lb, a 6.6¢ decline from the six-year high reached in 1996.

In 1998, continued growth in Western World demand will likely again be outstripped by rising production and net exports from Eastern countries. In the absence of unforeseen production cuts or disruptions, such as start-up difficulties at new or expanding mines or smelters, it is expected that rising stocks will place downward pressure on prices, which could range between US23¢ and 30¢/lb in 1998. Prices may be further suppressed if demand softens as the result of a weak replacement battery market or sluggish economic growth in Southeast Asia (see Consumption Outlook).

Greater secondary output and primary production (from new and re-opened mines) will likely continue to surpass demand and place downward pressure on prices in the medium to long term. The price of lead is expected to range between US22¢ and 29¢/lb in constant 1996 dollars.

Figure 3
Lead Prices, 1985-2005
Annual LME Settlement



Source: Natural Resources Canada.