MERCURY

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Canadian Developments

Since the closure of Cominco Limited's Pinchi lake mine in 1975, Canada no longer produces mercury metal. Mercury has been primarily an imported commodity in Canada. In 1994, Canada consumed a total of 6.4 t of metallic mercury. Canadian consumption of mercury is primarily for applications in electrical apparatus, industrial and control instruments, and for the electrolytic preparation of chlorine at one remaining chlor-alkali plant for use in the pulp and paper industry. Consumption for applications such as gold recovery, industrial chemicals, and paints and pigments has been phased out. Canada exported 107.4 t of mercury valued at $349 000 in 1995, compared to 4.9 t worth $11 042 in 1994. Imports were 6.2 t valued at $49 000 in 1995, compared to 5.6 t worth $56 696 in 1994.

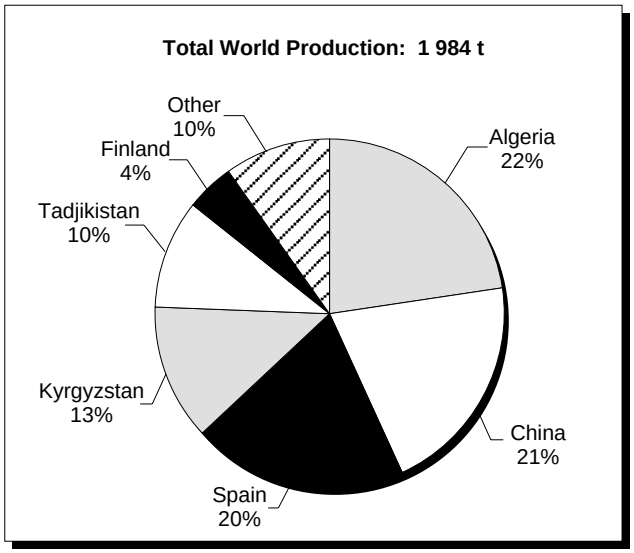
World Developments

World production of mercury has been steadily declining over the past number of years. Total world production was 1983 t in 1994, compared to 2384 t in 1993. The world's largest producers are Algeria, China, Spain and Kyrgyzstan. Together these four countries account for over 75% of the world's production.

In the United States, mercury is recovered as a by-product of gold mining in Nevada, California and Utah. Secondary production greatly outweighs production from primary sources. According to the U.S. Bureau of Mines, the United States produced some 400 t of secondary mercury, which accounted for 62% of domestic consumption of mercury in the United States. The Defense Logistics Agency (DLA) temporarily suspended mercury sales from the National Defense Stockpile in July 1994 after the U.S. Environmental Protection Agency expressed concern about the government selling mercury at the same time as it is trying to eliminate releases to the environment. The suspended sales helped reduce the availability of mercury in U.S. markets, resulting in higher prices.

In December Mexico hosted a workshop to discuss the "Sound Management of Chemicals" initiative established by the North American Commission for Environmental Cooperation (CEC). Under the initiative, government officials from Canada, Mexico and the United States will develop regional action plans for selected chemicals, including mercury, in 1996. A separate task group will be established to develop criteria for adding additional substances to the initiative.

Figure 1
World Production of Mercury, 1994



Source: International Consultative Group on Nonferrous Metal Statistics.

Consumption and Uses

Until the 1960s, mercury was used primarily as a flowing mercury cathode for the electrolysis of an aqueous sodium chloride to yield chlorine and caustic soda. Process losses to the environment became a concern and many chlor-alkali plants were either closed or converted to diaphragm cell or ion exchange technologies. Demand continues for this application worldwide, but is declining as older facilities are closed and replaced with mercury-free technology.

Batteries are another major market for mercury that is experiencing a decline as manufacturers switch to alternative metals. The third major use for mercury is in electrical applications. Uses range from metallic mercury switches in thermostats to mercury-vapour discharge lamps. Other uses include mildew-proofing paint additives, dental amalgams, temperature and pressure measuring devices, detonators, pigments and pharmaceuticals. Increased concerns related to the risks of exposure on human health and the environment have led to increased restrictions on the uses of mercury; however, its unique properties will likely guarantee its use in some key sectors for the foreseeable future.

Mercury is a naturally occurring element that is unique amongst the metals in that it is liquid at ambient temperature. At room temperature, mercury is a silvery white colour. Below its melting

point of -38.9°C it is solid white; above its boiling point of 356.9°C it is a colourless gas. Mercury exists in nature in some 25 different minerals but is most commonly recovered from the red sulphide mineral known as cinnabar (HgS).

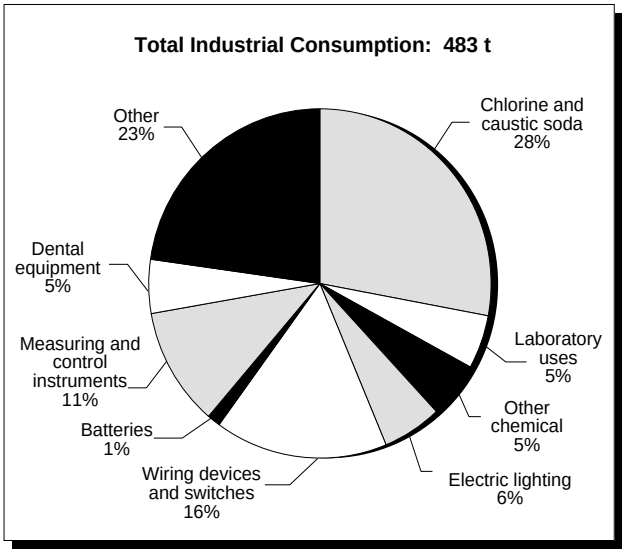
Other common mercury ores include corderoite and livingstonite. Native mercury metal exists in nature but is rare. Mercury deposits are generally formed at relatively low temperatures in the world's major orogenic belts.

Price and Outlook

The commercial unit for handling mercury is the "flask," which weighs 34.47 kg (76 lb). Prices for mercury peaked in 1988 at US$335.52/flask and have since declined. Mercury prices reached their lowest level in September 1991 at US$85/flask. Prices averaged US$247/flask in 1995 and are expected to remain in the $230-$250/flask range in 1996. In the longer term, prices are expected to remain relatively stable as demand in mercury's remaining markets stabilizes.

Note: Information in this review was current as of February 23, 1996.

Figure 2
U.S. Industrial Consumption of Mercury Metal, 1994



Source: U.S. Bureau of Mines.

TABLE 1. CANADA, MERCURY TRADE, 1993-95, AND CONSUMPTION, 1992-94

Item No.		1993		1994		1995p	
		(kilograms)	($000)	(kilograms)	($000)	(kilograms)	($000)
EXPORTS							
2805.40	Mercury						
	United States	34 474	63	4 911	11	107 394	349
	France	140	1	–	–	–	–
	Total	34 614	64	4 911	11	107 394	349
IMPORTS							
2617.90.00.20	Mercury ores and concentrates	–	–	–	–	–	–
	Total	–	–	–	–	–	–
2805.40	Mercury						
	United States	2 932	30	5 524	55	6 130	48
	Ireland	5 819	170	–	–	–	–
	Other countries	–	–	101	1	49	1
	Total	8 751	200	5 625	56	6 179	49
2825.90.10.20	Mercury oxides						
	United States	519	10	102	1	192	3
	Germany	–	–	20	. . .	49	. . .
	Total	519	10	122	2	241	4

	1992	1993	1994p
		(kilograms)	
CONSUMPTION[1] (metal)			
Electrical apparatus, industrial and control instruments	4 515[a]	8 020[a]	6 376[a]
Electrolytic preparation of chlorine and caustic soda and other uses	x	x	x
Total	4 515	8 020	6 376

Sources: Natural Resources Canada; Statistics Canada.
– Nil; . . . Amount too small to be expressed; p Preliminary; x Confidential.
a Includes electrolytic preparation of chlorine and caustic soda in order to avoid disclosing confidential data.
1 Available data as reported by consumers.
Note: Numbers may not add to totals due to rounding.

TABLE 2. AVERAGE MERCURY PRICES, 1991-95

	1991	1992	1993	1994	1995
	(US$/flask, 99.99% purity)				
January	177	165	195	175	236
February	159	167	195	175	240
March	143	168	195	180	243
April	122	153	197	180	250
May	115	183	197	184	250
June	111	202	192	186	250
July	101	202	186	194	250
August	98	201	185	200	250
September	85	205	175	205	250
October	91	205	175	205	250
November	119	200	172	222	250
December	148	195	173	228	250
Average	119	201	187	194	247

Source: *Metals Week*.

TABLE 3. WORLD PRODUCTION OF MERCURY, 1991-94

Country	1991	1992	1993	1994p
	(tonnes)			
Algeria	431.0	476.0	459.1	448.6
Chile	1.0	58.9	127.0	70.1
China, People's Republic of e	1 000.0	391.6	467.5	408.0
Czechoslovakia e	75.0	50.0	..	..
Finland	73.5	85.0	98.0	89.0
Kazakstan e	..	..	..	10.0
Kyrgyzstan e	..	300.0	250.0	250.0
Mexico	340.0	21.0	12.0	–
Russia e	..	70.0	60.0	–
Slovakia p	..	..	60.0	50.0
Slovenia	..	30.0 e	–	–
Spain	52.1	36.0	661.0	393.0
Tadjikistan e	..	100.0	80.0	200.0
Turkey	25.0	–	–	–
Ukraine e	..	100.0	80.0	50.0
United States	58.0	64.0	29.0	15.0
Ex-U.S.S.R. e	750.0	..	..	..
Ex-Yugoslavia	35.0 e	–	–	–
World Total	2 840.6	1 782.5	2 383.6	1 983.7

Sources: Natural Resources Canada; International Consultative Group on Nonferrous Metal Statistics.
– Nil; .. Not available; e Estimated; p Preliminary.