

Mercury

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Named after the Roman god of commerce, travel and thievery, mercury has been used for more than 3000 years. Its chemical symbol, Hg, comes from the Latin word *hydrargyrum* meaning “liquid silver.” Also known to many as quicksilver, mercury was known to the ancient Chinese and Hindus before 2000 B.C. It has also been found in tubes in Egyptian tombs dating from about 1500 B.C. The first recorded mention of the metal was by Aristotle in the fourth century B.C. when the heavy, silvery-white metal was used to form amalgams with other metals. It was also used in ointments and cosmetics.

Until the 1960s, mercury was used primarily as a flowing mercury cathode for the electrolysis of an aqueous sodium chloride solution 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. Worldwide demand for this application continues to be the single largest use for mercury, but it is declining as older facilities are being 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 but also shrinking market for mercury is in electrical applications. Uses range from metallic mercury switches in thermostats to mercury-vapour discharge lamps. Other uses include dental amalgams, temperature- and pressure-measuring devices, detonators, pigments, and pharmaceuticals. Increased concerns related to the risks of exposure to 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, such as energy-efficient fluorescent lamps, 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. It is solid white below its melting point of -38.9°C and is a colourless gas above its boiling point of 356.9°C . 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.

MERCURY IN CANADA

Since the closure of the Pinchi Lake mine in 1975, Canada no longer produces primary mercury metal. Mercury has been primarily an imported commodity in Canada. With the increase in concern related to environmental releases of mercury, the use of mercury in Canada continues to decline. Canada uses primary mercury for the manufacture of fluorescent lamps and for the electrolytic preparation of chlorine at the one remaining chlor-alkali plant for use in the pulp and paper industry in New Brunswick. The use of mercury for applications such as gold recovery, industrial chemicals, and paints and pigments has been phased out.

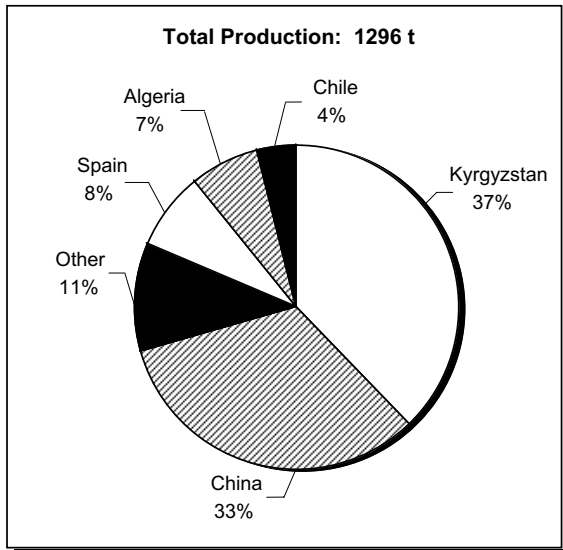
WORLD DEVELOPMENTS

World mine production of mercury was 1296 t in 2004, compared to 2096 t in 2003. Kyrgyzstan is the world's largest producer followed by China, Spain and Algeria. Together these four countries accounted for just over 85% of the world's total production of mercury in 2004. With the closure of the mines at Almadén in 2004, Spanish mine production declined rapidly from 745 t in 2003 to about 100 t in 2004 as stockpiled ore was processed.

In the United States, an estimated 15 t of mercury are recovered as a by-product of gold mining in Nevada, California and Utah. Recycled production greatly outweighs production from primary sources in the United States. The principal sources of recycled mercury are from automobile convenience switches, dental amalgams, mercury vapour and fluorescent lamps, and medical equipment. However, this supply of mercury is declining as fewer and fewer products that contain mercury are made available to the marketplace.

Elsewhere in the world, mines in Slovenia, Turkey and the Ukraine remained closed. By-product production from mining continues in Finland, Tajikistan, Mexico, the United States and Chile (Figure 1). Overall, mine production in 2004 declined to one of its lowest levels ever (Figure 2).

Figure 1
World Production of Mercury, 2004



Source: International Consultative Group on Nonferrous Metals Statistics.

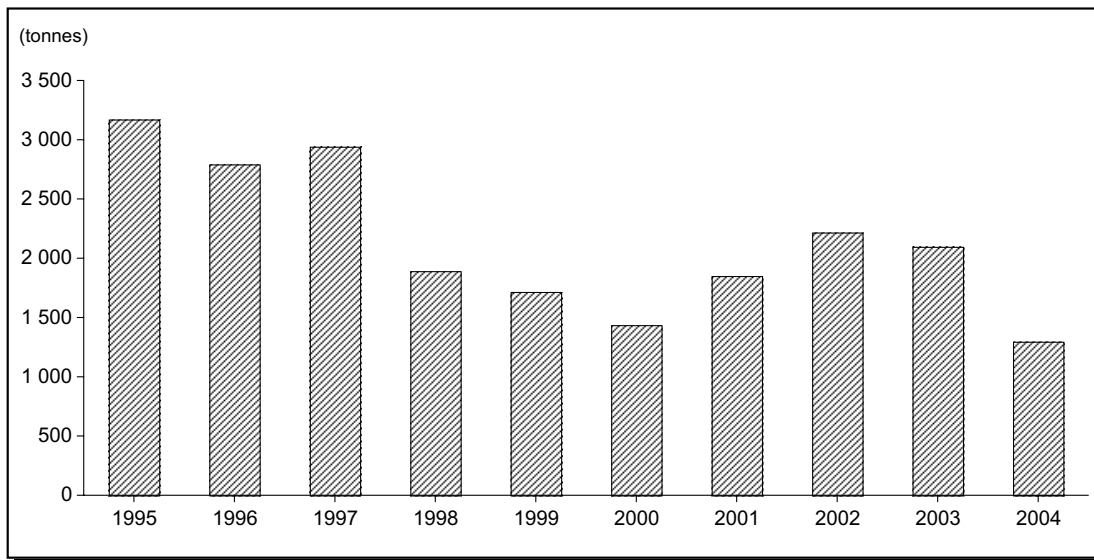
The Governing Council of the United Nations Environment Programme (UNEP) discussed the need for further measures to address the global adverse impacts of mercury on health and the environment at its 23rd session in February 2005. The Council requested UNEP to develop a report on the supply, trade and demand for mercury in the global market for consideration at the next session of the Governing Council in 2007. It also called for the creation of partnerships between governments and other stakeholders to reduce risks to human health and the environment from the release of mercury and its compounds into the environment.

PRICE AND OUTLOOK

The commercial unit for handling mercury is the “flask,” which weighs 34.47 kg (76 lb). Prices increased in 2004 to levels not seen since mercury last peaked in 1988 when it reached US\$335.52/flask and then declined. Mercury prices reached their lowest level in September 1991 at US\$85/flask. The tightness in the mercury market that began in late 2003 continued through 2004 and into the first quarter of 2005. Mines in Spain and Algeria, two significant world producers, have closed permanently.

Metal Bulletin’s reported free market prices for mercury jumped from the US\$600-\$700/flask range (per flask in warehouse market for lots sold containing 50 flasks or more) at the start of the year to over \$900/flask by the end of March, and then started a slow decline back to the US\$650/flask range by year-end as more metal became available to the market.

Figure 2
World Production of Mercury, 1995-2004



Source: International Consultative Group on Nonferrous Metals Statistics.

In January, the European Commission put forward a proposal to ban the export of mercury by 2011 as part of its strategy to deal with mercury pollution. The European Union is the largest global exporter of mercury. The Commission is also hoping to reduce pollution by cutting demand through restricting the marketing of mercury-containing products such as thermometers, while further investigating potential substitutes for remaining uses like dental amalgam. While the plan is not expected to affect prices in the short term, it could spark renewed investments elsewhere, particularly in Asia. Prices are forecast to remain in the US\$600-\$700/flask range in 2006 and could spike higher if the few remaining sources of supply experience any production problems.

Notes: (1) For definitions and valuation of mineral production, shipments and trade, please refer to Chapter 65. (2) Information in this review was current as of January 31, 2006. (3) This and other reviews, including previous editions, are available on the Internet at www.nrcan.gc.ca/mms/cmy/com_e.html.

NOTE TO READERS

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TARIFFS

| Item No. | Description | Canada | | USA | United States | EU | Japan |
|------------|--|--------|------|------|---------------|-----------------------|---------|
| | | MFN | GPT | | Canada | Conventional Rate (1) | WTO (2) |
| 28.05 | Alkali or alkaline - earth metals; rare-earth metals, scandium and yttrium, whether or not intermixed or interalloyed; mercury | | | | | | |
| 2805.40 | Mercury | Free | Free | Free | Free | Free-3% | 5.4% |
| 28.25 | Hydrozine and hydroxalamine and their inorganic salt; other inorganic bases; other metal oxides, hydroxides and peroxides | | | | | | |
| 2825.90.10 | Other: mercury oxides | 4% | Free | Free | Free | 4.1% | 4.8% |

Sources: Canadian Customs Tariff, effective January 2006, Canada Border Services Agency; Harmonized Tariff Schedule of the United States, 2006; Official Journal of the European Union (October 27, 2005 Edition); Customs Tariff Schedules of Japan, 2006.

(1) The customs duties applicable to imported goods originating in countries that are Contracting Parties to the General Agreement on Tariffs and Trade or with which the European Community has concluded agreements containing the most-favoured-nation tariff clause shall be the conventional duties shown in column 3 of the Schedule of Duties. (2) WTO rate is shown; lower tariff rates may apply circumstantially.

TABLE 1. CANADA, MERCURY TRADE, 2003-05

| Item No. | | 2003 | | 2004 | | 2005 (p) | |
|----------------|-----------------|-------|---------|-------|---------|----------|---------|
| | | (kg) | (\$000) | (kg) | (\$000) | (kg) | (\$000) |
| EXPORTS | | | | | | | |
| 2805.40 | Mercury | | | | | | |
| | United States | 6 420 | 13 | 2 335 | 19 | 12 859 | 77 |
| | Other countries | - | - | 9 | - | 16 | - |
| | Total exports | 6 420 | 13 | 2 344 | 19 | 12 875 | 77 |
| IMPORTS | | | | | | | |
| 2805.40 | Mercury | | | | | | |
| | United States | 8 086 | 79 | 7 239 | 61 | 9 892 | 115 |
| | Sweden | 290 | 3 | - | - | - | - |
| | Other countries | 15 | - | 46 | - | 136 | - |
| | Total | 8 391 | 82 | 7 285 | 61 | 10 028 | 115 |
| 2825.90.10.20 | Mercury oxides | | | | | | |
| | United States | 252 | 4 | 89 | 2 | 158 | 3 |
| | Other countries | 21 | - | 32 | - | 44 | 1 |
| | Total | 273 | 4 | 121 | 2 | 202 | 4 |
| | Total imports | 8 664 | 86 | 7 406 | 63 | 10 230 | 119 |

Sources: Natural Resources Canada; Statistics Canada.

- Nil; (p) Preliminary.

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

TABLE 2. CANADA, MERCURY USE, 1988-2004

| | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|--|---------------|---------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|----------|--------------|----------|----------|--------------|--------------|--------------|----------|
| | (kilograms) | | | | | | | | | | | | | | | | |
| Use (1) (Metal) | | | | | | | | | | | | | | | | | |
| Electrical apparatus, industrial and control instruments | 16 084 | 18 104 | 15 584 | 3 948 | x | x | x | x | x | x | x | x | x | x | x | x | x |
| Electrolytic preparation of chlorine and caustic soda and other uses | 10 955 | 13 810 | 18 323 | 5 351 | x | x | x | x | x | x | x | x | x | x | x | x | x |
| Total | 27 039 | 31 914 | 33 907 | 9 299 | 4 515 | 8 020 | 6 376 | 2 985 | 6 327 | x | 2 803 | x | x | 5 605 | 2 131 | 4 865 | x |

Source: Natural Resources Canada.

x Confidential.

(1) Available data reported by users.

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

TABLE 3. WORLD PRODUCTION OF MERCURY, 1999-2004

| Country | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|---------------|----------------|----------------|----------------|----------------|----------------|----------------|
| | (tonnes) | | | | | |
| Algeria | 240.3 | 215.6 | 320.1 | 307.1 | 175.6 | 89.7 |
| Chile | 25.0 | 25.0 | 37.4 | 50.0 | 50.0 | 50.0 |
| China | 195.0 | 203.0 | 193.0 | 495.0 | 610.0 | 425.0 |
| Finland | 51.1 | 76.1 | 71.2 | 50.6 | 25.0 | 23.5 |
| Kyrgyzstan | 645.9 | 550.0 | 574.4 | 478.0 | 370.0 | 488.1 |
| Mexico | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 |
| Morocco | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| Russia | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| Spain | 433.0 | 236.6 | 524.0 | 726.1 | 745.0 | 100.0 |
| Tajikistan | 35.0 | 40.0 | 40.0 | 20.0 | 30.0 | 30.0 |
| United States | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 |
| Total | 1 715.3 | 1 436.3 | 1 850.1 | 2 216.8 | 2 095.6 | 1 296.3 |

Sources: Natural Resources Canada; International Consultative Group on Nonferrous Metals Statistics.