## **MERCURY**

(Data in metric tons of mercury content unless otherwise noted)<sup>1</sup>

<u>Domestic Production and Use:</u> Mercury has not been mined as a primary mineral commodity in the United States since 1992, when the McDermitt Mine in Nevada closed. Byproduct mercury was produced primarily from gold-silver precipitates from several mines in Nevada; however, production data have not been reported to the U.S. Geological Survey since 1992. Byproduct mercury is also produced from calomel, a mercury-chlorine compound, obtained from domestic and foreign sources. Calomel is collected from pollution control devices at gold smelters; however, these data are not reported. In the United States, the chlorine-caustic soda industry is the leading end user of mercury. The mercury is used as an electrolyte to separate chlorine from caustic soda. Some of that mercury is recycled in-plant and the Chlorine Institute reports that approximately 100 tons of replacement mercury is purchased yearly. Some of that mercury is recycled in-plant. Mercury-containing chlor-alkali waste, as "amalgam" (not chemically defined), was exported to Canada and landfilled. In the United States, mercury use is declining because of environmental and human health concerns about mercury releases from chlorine-caustic soda plants, coal-fired power plants, and other sources, such as car switches or medical incinerators. Mercury-containing batteries and paints are no longer manufactured in the United States. Mercury is still widely used for chlorine-caustic soda production, small-scale gold mining outside the United States, and in button-type batteries, cleansers, fireworks, folk medicines, pesticides, and skin-lightening creams and soaps in many parts of the world.

Salient Statistics—United States:	2002	2003	2004	2005	2006 <sup>e</sup>
Production:			·	<u> </u>	
Mine	NA	NA	NA	NA	NA
Secondary	NA	NA	NA	NA	NA
Imports for consumption (gross weight)	209	46	50	212	225
Exports (gross weight)	201	287	300	319	350
Price, average value, dollars per flask, free market	155.00	170.00	400.00	775.00	650.00
Net import reliance <sup>2</sup> as a percentage of					
apparent consumption <sup>e</sup>	NA	E	E	Е	E

Recycling: In 2006, approximately 50 companies were listed as mercury recyclers; however, most of these companies collect mercury-containing consumer products, such as dental amalgam or fluorescent lamps, and move them on to larger companies with retorting facilities. Therefore, only five companies account for the majority of secondary reclamation and production. Mercury may be reclaimed and recycled from a variety of sources that primarily include automobile convenience switches, dental amalgam, mercury vapor and fluorescent lamps, and medical equipment. Barometers, computers, gym flooring, manometers, thermometers, thermostats, and toys also contain mercury that may be reclaimed and recycled. This reservoir of mercury-containing products available for recycling is shrinking because of recycling of those products and human health concerns. The availability of nonmercury substitute devices such as digital thermometers, digital thermostats, or devices using mercury substitutes such as galistan indicate that each year, fewer and fewer end-of-life products will be available from which mercury may be recycled.

Import Sources (2002-05): Chile, 30%; Peru, 26%; Australia, 20%; Germany, 12%; and other, 12%.

 Tariff: Item
 Number
 Normal Trade Relations

 Mercury
 2805.40.0000
 1.7% ad val.

Depletion Allowance: 22% (Domestic), 14% (Foreign).

<u>Government Stockpile</u>: An inventory of 4,436 tons of mercury was held at several sites in the United States; however, the Defense Logistics Agency has indicated that consolidated storage is the preferred alternative. Sales of mercury from the National Defense Stockpile remained suspended. An additional 146 tons of mercury was held by the U.S. Department of Energy at Oak Ridge, TN.

## Stockpile Status—9-30-06<sup>3</sup>

	Uncommitted	Committed	<b>Authorized</b>	Disposal plan	Disposals
Material	inventory	inventory	for disposal	FY 2006	FY 2006
Mercury	4.436	<u> </u>	4.436	_	_

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Events, Trends, and Issues: According to trade journals, the average cost of a flask of mercury was \$775.00 in 2005. The average cost of a flask of mercury was \$650.00 in 2006. Mercury prices are tied to global demand for mercury in artisanal gold mining, the diminishing supply of mercury that can be reclaimed and recycled from end-oflife mercury-containing products that were manufactured during past decades, and regional production such as in China. The ultimate closure of mercury-cell chlor-alkali plants in the United States, Europe, and elsewhere will put tons of mercury on the market for recycling, sale, or storage. Governmental regulations and environmental standards are likely to continue as major factors in domestic mercury recycling, supply, and demand. In the United States, legislation such as the Resource Conservation and Recovery Act and the Comprehensive Environmental Response, Compensation, and Liability Act traditionally mandated regulation of production, use, generation, treatment, and disposal of products that contain mercury. In 2006, the Mercury Market Minimization Act (S. 3627) and the Missing Mercury in Manufacturing Monitoring and Mitigation Act (S. 3631) were introduced into the U.S. Senate. Byproduct mercury production is expected to continue from gold-silver processing, as is recycling of mercury from a diminishing supply of mercury-containing consumer products. The U.S. Environmental Protection Agency and several industry sectors have signed an agreement creating a national program for the recovery of mercury switches from scrapped cars before the vehicles are shredded. Domestic mercury consumption will continue to decline as nonmercurycontaining products are substituted for mercury-containing products.

<u>World Mine Production, Reserves, and Reserve Base</u>: Reserves have been revised to zero for Spain because it no longer mines mercury.

	Mine production 2005 2006 <sup>e</sup>		Reserves <sup>4</sup>	Reserve base <sup>4</sup>
United States	<u>2555</u> NA	<u>2300</u> NA	_	7,000
Algeria	_	_	_	3,000
China	1,100	1,100	_	_
Italy	_	_	_	69,000
Kyrgyzstan	200	160	7,500	13,000
Spain	_	_	· —	90,000
Other countries	<u> 125</u>	<u> 125</u>	<u>38,000</u>	61,000
World total (rounded)	1,450	1,400	46,000	240,000

<u>World Resources</u>: There are mercury occurrences in Alaska, Arkansas, California, Nevada, and Texas. China, Kyrgyzstan, Russia, Slovenia, Spain, and Ukraine have most of the world's estimated 600,000 tons of mercury resources. Spain, once a leading producer of mercury from its centuries-old Almaden Mine, stopped mining in 2003, and therefore, its reserves have been revised. Almaden will become a repository for European mercury. In consideration of declining consumption of mercury, these resources are sufficient for another century or more of use. Byproduct mercury and calomel may be produced at copper, gold, lead, and zinc mines worldwide; there are, however, no data on the amount of mercury produced from these sources.

<u>Substitutes</u>: The mercury used in thermometers, perhaps once the most visible consumer use of mercury, has been replaced by "galistan," an alloy of gallium, indium, and tin, or alternatively, digital thermometers. Mercury cells are being replaced by newer diaphragm and membrane cell technology in the global production of chlorine and caustic soda. Light-emitting diodes (LEDs) that contain indium, such as those used at the Thomas Jefferson Memorial in Washington, DC, substitute for mercury-containing fluorescent lamps. Many dentists use ceramic composites as substitutes for mercury-containing dental amalgam. Lithium, nickel-cadmium, and zinc-air batteries replace mercury-zinc batteries in the United States, indium compounds substitute for mercury in alkaline batteries, and organic compounds have been substituted for mercury fungicides in latex paint.

<sup>&</sup>lt;sup>e</sup>Estimated. E Net exporter. NA Not available. — Zero.

<sup>&</sup>lt;sup>1</sup>Some international data and dealer prices are reported in flasks. One metric ton (1,000 kilograms) = 29.0082 flasks, and 1 flask = 76 pounds, or 34.5 kilograms, or 0.034 ton.

<sup>&</sup>lt;sup>2</sup>Defined as imports – exports + adjustments for Government and industry stock changes.

<sup>&</sup>lt;sup>3</sup>See Appendix B for definitions.

<sup>&</sup>lt;sup>4</sup>See Appendix C for definitions.