

## MERCURY

(Data in metric tons of mercury content unless otherwise noted)

**Domestic Production and Use:** Mercury has not been produced as a principal mineral commodity in the United States since 1992. In 2018, mercury was recovered as a byproduct from processing gold-silver ore at several mines in Nevada; however, production data were not reported. Secondary, or recycled, mercury was recovered from batteries, compact and traditional fluorescent lamps, dental amalgam, medical devices, and thermostats, as well as mercury-contaminated soils. It was estimated that less than 40 tons per year of mercury was consumed domestically. The leading domestic end users of mercury were the chlorine-caustic soda (chloralkali), dental, electronics, and fluorescent-lighting manufacturing industries. Only two mercury cell chloralkali plants operated in the United States in 2018. Until December 31, 2012, domestic- and foreign-sourced mercury was refined and then exported for global use, primarily for small-scale gold mining in many parts of the world. Beginning January 1, 2013, export of elemental mercury from the United States was banned, with some exceptions, under the Mercury Export Ban Act of 2008. Effective January 1, 2020, exports of five additional mercury compounds will be banned. The U.S. Environmental Protection Agency (EPA) issued the final rule for mercury reporting requirements for the Toxic Substances Control Act. The requirements applied to anyone who manufactured (including imports) mercury or mercury-added products, or otherwise intentionally used mercury in a manufacturing process. The EPA plans to use the reported information to prepare an inventory of mercury supply, trade, and use in the United States.

<b>Salient Statistics—United States:</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018<sup>e</sup></b>
Production:					
Mine (byproduct)	NA	NA	NA	NA	NA
Secondary	NA	NA	NA	NA	NA
Imports for consumption (gross weight), metal	49	26	24	20	10
Exports (gross weight), metal	—	(1)	—	—	—
Price, average value, dollars per flask 99.99%, European Union <sup>2, 3</sup>	3,037	1,954	1,402	1,041	42,800
Net import reliance <sup>5</sup> as a percentage of apparent consumption	NA	NA	NA	NA	NA

**Recycling:** In 2018, eight facilities operated by six companies in the United States accounted for the majority of secondary mercury produced and were authorized by the U.S. Department of Energy to temporarily store mercury. Mercury-containing automobile convenience switches, barometers, compact and traditional fluorescent bulbs, computers, dental amalgam, medical devices, and thermostats were collected by smaller companies and shipped to the refining companies for retorting to reclaim the mercury. In addition, many collection companies recovered mercury when retorting was not required. With the rapid phasing out of compact and traditional fluorescent lighting for light-emitting-diode (LED) lighting, there has been an increased amount of mercury being recycled.

**Import Sources (2014–17):** Germany, 35%; Canada, 29%; France, 20%; Switzerland, 8%; and other, 8%.

<b>Tariff: Item</b>	<b>Number</b>	<b>Normal Trade Relations 12–31–18</b>
Mercury	2805.40.0000	1.7% ad val.

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

**Government Stockpile:**<sup>6</sup> An inventory of 4,437 tons of mercury was held in storage at the Hawthorne Army Depot, in Hawthorne, NV. The Mercury Export Ban Act of 2008 required the U.S. Department of Energy to establish long-term management and storage capabilities for domestically produced elemental mercury. Sales of mercury from the stockpiles remained suspended.

<b>Material</b>	<b>Inventory As of 9–30–18</b>	<b>FY2018</b>		<b>FY 2019</b>	
		<b>Potential Acquisitions</b>	<b>Potential Disposals<sup>7</sup></b>	<b>Potential Acquisitions</b>	<b>Potential Disposals<sup>7</sup></b>
Mercury	4,437	—	—	—	—

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**Events, Trends, and Issues:** Owing to mercury toxicity and concerns for the environment and human health, overall mercury use has declined in the United States. Mercury continues to be released to the environment from numerous sources, including mercury-containing car switches when automobiles are scrapped without recovering them for recycling, coal-fired powerplant emissions, incineration of mercury-containing medical devices, and from naturally occurring sources. Mercury is no longer used in most batteries and paints manufactured in the United States. Some button-type batteries, cleansers, fireworks, folk medicines, grandfather clocks, pesticides, and skin-lightening creams and soaps may still contain mercury. Mercury compounds were used as catalysts in the coal-based manufacture of vinyl chloride monomer in China. In some parts of the world, mercury was used in the recovery of gold in small-scale mining operations. Conversion to nonmercury technology for chloralkali production and the ultimate closure of the world's mercury-cell chloralkali plants may release a large quantity of mercury to the global market for recycling, sale, or, owing to export bans in Europe and the United States, storage. Because of global export restrictions and decreasing domestic consumption, domestic imports of mercury have continued to decline, and in the first 7 months of 2018, China was the only country from which the United States imported mercury.

Byproduct mercury production is expected to continue from large-scale domestic and foreign gold-silver mining and processing, as is secondary production of mercury from an ever-diminishing supply of mercury-containing products. Domestic mercury consumption will continue to decline owing to increased use of LED lighting and consequent reduced use of conventional fluorescent tubes and compact fluorescent bulbs, and continued substitution of nonmercury-containing products in control, dental, and measuring applications.

### World Mine Production and Reserves:

	Mine production		Reserves <sup>8</sup>
	2017	2018 <sup>e</sup>	
United States	NA	NA	Quantitative estimates of reserves are not available. China, Kyrgyzstan, and Peru are thought to have the largest reserves.
Argentina	25	30	
China	3,380	3,000	
Kyrgyzstan	20	20	
Mexico (net exports)	197	200	
Norway	20	20	
Peru (exports)	40	40	
Tajikistan	100	100	
Other countries	12	10	
World total (rounded)	3,790	3,400	

**World Resources:** China, Kyrgyzstan, Mexico, Peru, Russia, Slovenia, Spain, and Ukraine have most of the world's estimated 600,000 tons of mercury resources. Mexico reclaims mercury from Spanish colonial silver-mining waste. In Spain, once a leading producer of mercury, mining at its centuries-old Almaden Mine stopped in 2003. In the United States, there are mercury occurrences in Alaska, Arkansas, California, Nevada, and Texas; however, mercury has not been mined as a principal mineral commodity since 1992. The declining consumption of mercury, except for small-scale gold mining, indicates that these resources are sufficient for centuries of use.

**Substitutes:** Ceramic composites substitute for the dark-gray mercury-containing dental amalgam. "Galistan," an alloy of gallium, indium, and tin, replaces the mercury used in traditional mercury thermometers, and digital thermometers have replaced traditional thermometers. At chloralkali plants around the world, mercury-cell technology is being replaced by newer diaphragm and membrane cell technology. LEDs that contain indium substitute for mercury-containing fluorescent lamps. 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>e</sup>Estimated. NA Not available. — Zero.

<sup>1</sup>Less than ½ unit.

<sup>2</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 34.47 kilograms, or 0.03447 ton.

<sup>3</sup>For 2014–17, average annual price of minimum 99.99% mercury published by Argus Media group—Argus Metals International.

<sup>4</sup>Estimated 2018 price based on free market mercury in warehouse price published by Metal Bulletin.

<sup>5</sup>Defined as imports – exports + adjustments for Government stock changes.

<sup>6</sup>See Appendix B for definitions.

<sup>7</sup>Disposals are defined as any barter, rotation, sale, or upgrade of National Defense Stockpile stock.

<sup>8</sup>See Appendix C for resource and reserve definitions and information concerning data sources.