## **ANTIMONY**

(Data in metric tons of antimony content, unless otherwise noted)

<u>Domestic Production and Use</u>: One silver mine in Idaho produced antimony as a byproduct, and an additional very small amount of antimony was recovered as a byproduct of the smelting of lead and silver-copper ores. Primary antimony metal and oxide was produced by five companies at processing plants that used foreign feedstock and a small amount of domestic feed material. Two plants were in Texas, and three other plants were in Idaho, Montana, and New Jersey. The estimated value of primary antimony metal and oxide produced in 1999 was \$54 million. Secondary antimony was recovered, mostly in alloy form, at lead smelters; its value, based on the price of antimony metal, was about \$11 million. The estimated distribution of antimony uses was as follows: flame retardants, 55%; transportation, including batteries, 18%; chemicals, 10%; ceramics and glass, 7%; and other, 10%.

Salient Statistics—United States:	<u> 1995</u>	<u> 1996</u>	<u> 1997</u>	<u> 1998</u>	<u>1999</u> °
Production: Mine (recoverable antimony) <sup>1</sup>	262	242	356	242	480
Smelter: Primary	23,500	25,600	26,400	24,000	24,800
Secondary <sup>2</sup>	10,500	7,780	7,550	7,710	5,000
Imports for consumption	36,600	37,600	39,300	34,600	34,000
Exports of metal, alloys, oxide,					
and waste and scrap <sup>3</sup>	8,200	4,450	3,880	4,170	3,600
Shipments from Government stockpile	1,130	4,300	2,930	4,160	3,000
Consumption, apparent <sup>4</sup>	43,300	45,000	46,600	42,700	36,480
Price, metal, average, cents per pound <sup>5</sup>	228	147	98	72	77
Stocks, yearend	10,600	11,000	10,800	10,600	13,000
Employment, plant, number <sup>e</sup>	100	100	100	80	80
Net import reliance <sup>6</sup> as a percent of					
apparent consumption	75	82	83	81	85

**Recycling:** Traditionally, the bulk of secondary antimony has been recovered as antimonial lead, most of which was generated and then also consumed by the battery industry. However, changing trends in this industry in recent years have caused lesser amounts of secondary antimony to be produced.

Import Sources (1995-98): Metal: China, 79%; Mexico, 7%; Hong Kong, 5%; Kyrgyzstan, 5%; and other, 4%. Ore and concentrate: China, 39%; Bolivia, 27%; Australia, 10%; Canada, 10%; and other, 14%. Oxide: China, 42%; Mexico, 15%; South Africa, 14%; Bolivia, 13%; and other, 16%. Total: China, 57%; Bolivia, 12%; Mexico, 9%; South Africa, 7%; and other, 15%.

<u>Tariff</u> : Item	Number	Normal Trade Relations 12/31/99		
Ore and concentrates	2617.10.0000	Free.		
Antimony and articles thereof, including waste and scrap	8110.00.0000	Free.		
Antimony oxide	2825.80.0000	Free.		

**Depletion Allowance:** 23% (Domestic), 15% (Foreign).

Government Stockpile: Government stockpile sales of antimony continued for the seventh year, after being resumed in 1993 for the first time since 1988. Public Law 103-160 provided the authorization for the sales. During the year, the Defense Logistics Agency (DLA) held sales for antimony on the fourth Tuesday of the month, with the format still being the negotiated bid process. The DLA announced that its Annual Materials Plan for fiscal year 1999 permitted the disposal of up to 5,000 tons of antimony, the same amount allotted in 1998. Antimony was stockpiled in eight DLA depots, with the largest inventories stored in New Haven, IN, and Somerville, NJ.

## Stockpile Status—9-30-99<sup>7</sup>

	Uncommitted	Committed	Authorized	Disposal plan	Disposals
Material	inventory	inventory	for disposal	FY 1999	FY 1999
Antimony	13,853	1,424	13,853	4,536	4,551

## **ANTIMONY**

**Events, Trends, and Issues:** In 1999, antimony production from domestic source materials was derived mainly from the recycling of lead-acid batteries. Recycling plus the small U.S. mine output supplied less than one-fifth of the estimated domestic demand.

The price of antimony metal experienced a slight decline during 1999. The price started the year at \$0.70 per pound; by spring it had declined to \$0.69 per pound, and by fall it had slipped to \$0.67 per pound. Industry observers attributed the price erosion, now in its fifth year, to continuing large supplies from China.

Environmental and ecological problems associated with the treatment of antimony raw materials were minimal, because all domestic processors of raw materials now avoid sulfide-containing materials.

World Mine Production, Reserves, and Reserve Base:

	Mine p	Mine production		Reserve base8
	1998	1999°		
United States	242	480	80,000	90,000
Bolivia	6,000	5,000	310,000	320,000
China	120,000	120,000	900,000	1,900,000
Kyrgyzstan	100	200	120,000	150,000
Russia	4,000	3,000	350,000	370,000
South Africa	3,500	3,000	240,000	250,000
Tajikistan	1,200	1,200	50,000	60,000
Other countries	5,000	5,000	25,000	75,000
World total (may be rounded)	140,000	138,000	2,100,000	3,200,000

<u>World Resources</u>: U.S. resources are mainly in Alaska, Idaho, Montana, and Nevada. Principal identified world resources are in Bolivia, China, Mexico, Russia, and South Africa. Additional antimony resources may occur in "Mississippi Valley Type" lead deposits in the Eastern United States.

<u>Substitutes</u>: Compounds of chromium, tin, titanium, zinc, and zirconium substitute for antimony chemicals in paint, pigments, frits, and enamels. Combinations of cadmium, calcium, copper, selenium, strontium, sulfur and tin can be used as substitutes for hardening lead. Selected organic compounds and hydrated aluminum oxide are widely accepted substitutes as flame-retardants.

<sup>&</sup>lt;sup>e</sup>Estimated

<sup>&</sup>lt;sup>1</sup>Data for 1995-98 from 10-K reports. Estimate for 1999 based on 10-Q reports for the first two quarters.

<sup>&</sup>lt;sup>2</sup>After an intensive review in 1997, secondary antimony figures were revised downward to reflect a changing industry pattern.

<sup>&</sup>lt;sup>3</sup>Gross weight.

<sup>&</sup>lt;sup>4</sup>Domestic mine production + secondary production from old scrap + net import reliance (see footnote 6).

<sup>&</sup>lt;sup>5</sup>New York dealer price for 99.5% to 99.6% metal, c.i.f. U.S. ports.

<sup>&</sup>lt;sup>6</sup>Defined as imports - exports + adjustments for Government and industry stock changes.

<sup>&</sup>lt;sup>7</sup>See Appendix B for definitions.

<sup>&</sup>lt;sup>8</sup>See Appendix C for definitions.