

IODINE

(Data in thousand kilograms, elemental iodine, unless otherwise noted)

Domestic Production and Use: Iodine produced in 2000 from three companies operating in Oklahoma accounted for 100% of the elemental iodine value estimated at \$21 million. The operation at Woodward, OK, continued production of iodine from subterranean brines. A second company operated a miniplant in Kingfisher County, OK, using waste brine associated with oil and a plant in Woodard, OK. A third company continued production at Vici, OK, for domestic use and export to Germany. Of the consumers that participate in the annual survey, 26 plants reported consumption of iodine in 1999. Major consumers were located in the Eastern United States. Prices of crude iodine in drums, published for November, ranged between \$19 and \$21 per kilogram. Imports of iodine through September averaged \$14.42 per kilogram.

Establishing an accurate end-use pattern for iodine was difficult because intermediate iodine compounds were marketed before reaching their final end uses. Estimated world consumption of iodine was 19,000 metric tons.

Salient Statistics—United States:	1996	1997	1998	1999	2000^e
Production	1,270	1,320	1,490	1,620	1,440
Imports for consumption, crude content	4,860	6,380	5,960	5,430	4,700
Exports	2,410	2,760	2,790	1,130	1,450
Shipments from Government stockpile excesses	—	204	291	221	104
Consumption:					
Apparent	3,700	5,140	4,950	5,650	4,690
Reported	3,920	4,500	4,100	4,540	NA
Price, average c.i.f. value, dollars per kilogram, crude	12.90	14.66	16.45	16.15	14.42
Stocks, producer, yearend	NA	NA	NA	NA	NA
Employment, number	40	40	40	40	30
Net import reliance ¹ as a percent of apparent consumption	66	65	70	62	69

Recycling: Small amounts of iodine were recycled, but no data are reported.

Import Sources (1996-99): Chile, 64%; Japan, 27%; and Russia, 9%.

Tariff:	Item	Number	Normal Trade Relations 12/31/00
	Iodine, crude	2801.20.0000	Free.
	Iodide, calcium or of copper	2827.60.1000	Free.
	Iodide, potassium	2827.60.2000	2.8% ad val.
	Iodides and iodide oxides, other	2827.60.5000	4.2% ad val.

Depletion Allowance: 14% (Domestic and foreign).

Government Stockpile:

Material	Stockpile Status—9-30-00²				
	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 2000	Disposals FY 2000
Stockpile-grade	1,782	14	1,782	454	9

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Events, Trends, and Issues: Chile was the largest producer of iodine in the world; Japan was the second largest producer. Production was primarily from underground brines associated with natural gas production. Six companies operated 17 plants with a total capacity of 9,000 tons per year. Production capacity of the plants was dependent upon the availability of brines with high concentrations of iodine.

Three scientists, one from Japan and two from the United States, shared the Nobel Prize in Chemistry for making plastics conduct electricity using polyacetylene with iodine. Conducting polymers are being used as antistatic coatings and corrosion inhibitors; one of the polymers is used in the radar-absorbing screen coating of Stealth bombers.

A Canadian company began construction of a plant to produce iodine from nitrate deposits in the Atacama Desert of Chile. The plant is planned to be on stream in 2001.

World Mine Production, Reserves, and Reserve Base:

	Mine production		Reserves ³	Reserve base ³
	1999	2000 ^o		
United States	1,620	1,440	250,000	550,000
Azerbaijan	300	300	170,000	340,000
Chile	9,720	9,800	9,000,000	18,000,000
China	500	500	400,000	400,000
Indonesia	70	70	100,000	200,000
Japan	6,750	6,760	4,900,000	7,000,000
Russia	120	120	120,000	240,000
Turkmenistan	150	150	170,000	350,000
World total (rounded)	19,300	19,100	⁴ 15,000,000	⁴ 27,000,000

World Resources: In addition to the fields listed in the reserve base, seawater contains 0.05 part per million iodine, or approximately 34 million tons. Seaweeds of the Laminaria family are able to extract and accumulate up to 0.45% iodine on a dry basis. Although not as economical as the production of iodine as a byproduct of gas, oil, and nitrate, the seaweed industry represented a major source of iodine prior to 1959 and is a large resource.

Substitutes: Bromine and chlorine could be substituted for most of the biocide, ink, and colorant uses of iodine, although they are usually considered less desirable than iodine. Antibiotics and mercurochrome also substitute for iodine as biocides. Salt crystals and finely divided carbon may be used for cloud seeding. There are no substitutes for iodine in some catalytic, nutritional, pharmaceutical, animal feed, and photographic uses.

^oEstimated. NA Not available.

¹Defined as imports - exports + adjustments for Government and industry stock changes.

²See Appendix B for definitions.

³See Appendix C for definitions.

⁴Sum excludes countries for which data were not available.