

IODINE

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

Domestic Production and Use: Iodine produced in 1995 from companies operating in Oklahoma accounted for 100% of the elemental iodine value estimated at \$20 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 production. A third company continued production at Vici, OK, and exported iodine to Germany. Of the consumers that participate in the annual survey, 25 plants reported consumption of iodine in 1994. Major consumers were located in the East. Prices of crude iodine in drums published in October ranged between \$11.50 and \$12.50 per kilogram. Imports of iodine through July averaged \$9.32 per kilogram.

Establishing an accurate end-use pattern for iodine was difficult because intermediate iodine compounds were marketed before reaching their final end uses. The downstream uses of iodine were as animal feed supplements, catalysts, inks and colorants, pharmaceutical, photographic equipment, sanitary and industrial disinfectants, stabilizers, and other uses.

Salient Statistics—United States:	1991	1992	1993	1994	1995^e
Production	2,000	2,000	1,900	1,600	1,800
Imports for consumption, crude content	3,600	3,700	3,600	4,400	4,300
Exports	1,300	1,800	1,200	1,300	1,300
Shipments from Government stockpile excesses	36	115	0.045	218	17
Consumption:					
Apparent	4,300	3,900	4,300	4,800	4,800
Reported	3,200	3,400	3,500	3,600	NA
Price, average c.i.f. value, dollars per kilogram, crude	10.16	9.03	7.98	7.56	9.32
Stocks, producer, yearend	NA	NA	NA	NA	NA
Employment, processing plant	50	50	35	35	35
Net import reliance ¹ as a percent of apparent consumption	54	52	56	66	62

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

Import Sources (1991-94): Japan, 53%; Chile, 46%; and other, 1%.

Tariff: Item	Number	Most favored nation (MFN) 12/31/95	Non-MFN² 12/31/95
Iodine, crude	2801.20.0000	Free	Free.
Iodide, calcium and cuprous	2827.60.1000	Free	25% ad val.
Iodide, potassium	2827.60.2000	2.8% ad val.	7.5% ad val.

Depletion Allowance: 5% on brine wells (Domestic and Foreign); 14% on solid minerals (Domestic), 14% (Foreign).

Government Stockpile:

Stockpile Status—9-30-95

Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposals Jan.-Sept. 95
Stockpile-grade	2,360	18	2,360	17

IODINE

Events, Trends, and Issues: Japan continued to be the largest producer of iodine in the world. Production was primarily from underground brines associated with gas production.

Chile was the second largest producer with three companies producing iodine during the year. Two satellite plants of the world's largest iodine producer based in Chile, that closed during 1994 were reopened in June 1995. The plants are located 100 kilometers from the main iodine mines. Production and sales of iodine derivatives from the largest company were primarily to South America, Africa, and Asia. The company announced plans to increase iodine production by 2,000 metric tons per year to a total of 5,000 metric tons per year. In October the company entered into a joint venture with a U.S. domestic consumer. The U.S. domestic company also had iodine derivatives facilities in France that sold primarily in North America and Europe that were part of the agreement.

The U.S. Government announced sales of stockpiled iodine in March and September; 454,000 kilograms of iodine would be offered for sale during fiscal year 1996.

World Mine Production, Reserves, and Reserve Base:

	Mine production		Reserves ³	Reserve base ³
	1994	1995 ^e		
United States	1,600	1,800	550,000	550,000
Azerbaijan	400	400	NA	NA
Chile	5,600	5,600	900,000	1,200,000
China	500	500	400,000	400,000
Indonesia	15	15	100,000	100,000
Japan	6,400	6,400	4,000,000	7,000,000
Turkmenistan	250	250	170,000	NA
World total (rounded)	14,800	15,000	NA	NA

World Resources: In addition to the fields listed in the reserve base, seawater contains 0.05 parts per million iodine, or approximately 34 billion kilograms. 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 in some catalytic, nutritional, pharmaceutical, animal feed, and photographic uses.

^eEstimated. NA Not available.

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

²See Appendix B.

³See Appendix C for definitions.