

IODINE

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

Domestic Production and Use: Iodine produced in 2001 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 Woodward, 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, 25 plants reported consumption of iodine in 2000. Major consumers were located in the Eastern United States. Several consumers of iodine were undergoing organizational changes, sales, and mergers. Prices of crude iodine in drums, published for November, ranged between \$19 and \$21 per kilogram. Imports of iodine through August averaged \$14.28 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:	1997	1998	1999	2000	2001^e
Production	1,320	1,490	1,620	1,470	1,700
Imports for consumption, crude content	6,380	5,960	5,430	4,790	5,200
Exports	2,760	2,790	1,130	900	1,000
Shipments from Government stockpile excesses	204	291	221	949	83
Consumption:					
Apparent	5,140	4,950	5,990	6,320	6,000
Reported	4,500	4,100	4,540	3,990	NA
Price, average c.i.f. value, dollars per kilogram, crude	14.66	16.45	16.15	14.42	14.28
Stocks, producer, yearend	NA	NA	NA	NA	NA
Employment, number	40	40	40	30	30
Net import reliance ¹ as a percentage of apparent consumption	65	70	62	77	72

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

Import Sources (1997-2000): Chile, 67%; Japan, 21%; and Russia, 11%; and other, 1%.

Tariff:	Item	Number	Normal Trade Relations 12/31/01
	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: In October, the Defense National Stockpile Center announced the fiscal year 2002 Annual Materials Plan would include sales of 454 tons (1,000,000 pounds) of crude iodine.

Stockpile Status—9-30-01²

Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 2001	Disposals FY 2001
Stockpile-grade	1,629	42	1,629	454	83

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Events, Trends, and Issues: Chile was the largest producer of iodine in the world, and production was a coproduct from surface mineral deposits used to produce nitrate fertilizer. Japan was the second largest producer, and production was associated with gas brines.

The 4th Symposium on Iodine Utilization was held in November in Chiba, Japan. Lecturers and poster presentations by industry, government and academic representatives addressed the function of iodine in biological organisms and the use of iodine in electrically conductive polymers.

A Canadian company constructed a plant to produce iodine from nitrate deposits in the Atacama Desert of Chile. The plant came on line in April 2001. Total production reached 79 tons by October. Average production after October was reported at 21.5 tons per month; output gradually will be increased to 60 tons per month. Russia was seeking investors to increase production at the Troitsk Iodine Plant.

World Mine Production, Reserves, and Reserve Base:

	Mine production		Reserves ³	Reserve base ³
	2000	2001 ^e		
United States	1,470	1,700	250,000	550,000
Azerbaijan	300	300	170,000	340,000
Chile	10,500	10,500	9,000,000	18,000,000
China	500	500	400,000	400,000
Indonesia	70	70	100,000	200,000
Japan	6,100	6,100	4,900,000	7,000,000
Russia	300	300	120,000	240,000
Turkmenistan	150	150	170,000	350,000
World total (rounded)	19,400	19,600	15,000,000	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.

^eEstimated. NA Not available.

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

²See Appendix B for definitions.

³See Appendix C for definitions.