

IODINE

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

Domestic Production and Use: Iodine produced in 2004 from three companies operating in Oklahoma accounted for 100% of the elemental iodine value estimated to be about \$16 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. A third company continued production at Vici, OK, for domestic use and export to Germany. Of the consumers that participate in the annual survey, 20 plants reported consumption of iodine in 2003. Major consumers were located in the Eastern United States. The average value of iodine imports through August was \$12.91 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 25,500 metric tons.

Salient Statistics—United States:	2000	2001	2002	2003	2004^e
Production	1,470	1,290	1,420	1,090	1,340
Imports for consumption, crude content	4,790	5,030	6,200	5,800	5,200
Exports	886	1,460	1,430	1,600	1,330
Shipments from Government stockpile excesses	949	83	25	361	245
Consumption:					
Apparent	5,420	4,730	6,520	5,610	5,210
Reported	3,990	3,560	4,540	3,930	NA
Price, average c.i.f. value, dollars per kilogram, crude	14.59	13.94	12.71	11.87	12.91
Stocks, producer, yearend	NA	NA	NA	NA	NA
Employment, number	30	30	30	30	30
Net import reliance ¹ as a percentage of apparent consumption	77	74	77	81	74

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

Import Sources (2000-03): Chile, 67%; Japan, 22%; Russia, 10%; and other, 1%.

Tariff:	Item	Number	Normal Trade Relations 12-31-04
	Iodine, crude	2801.20.0000	Free.
	Iodide, calcium or 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 2005 Annual Materials Plan would include sales of 454 tons (1,000,000 pounds) of crude iodine.

Stockpile Status—9-30-04²

Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 2004	Disposals FY 2004
Stockpile-grade	1,180	—	1,180	454	245

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Events, Trends, and Issues: Chile was the leading producer of iodine in the world. Iodine was a coproduct from surface mineral deposits used to produce nitrate fertilizer. Two of the leading iodine companies in the world are located in Chile. The leading Chilean company announced an expansion of its iodine and potassium nitrate production of about 30% at a cost of \$145 million. Japan was the second leading producer, and its production was associated with gas brines.

The Defense National Stockpile Center issued a DLA-IODINE-005 Basic Ordering Agreement (BOA) for crude iodine. The BOA solicits offers for the sale of 454 metric tons (1,000,000 pounds) of crude iodine in fiscal year 2005, with quarterly sales of approximately 113,400 kilograms (250,000 pounds). Awards were subject to the certification of the Drug Enforcement Administration. The iodine offered for sale was located at New Haven, IN, and was of Chilean, Japanese, and unknown origin.

The U.S. Environmental Protection Agency approved a wood preservative that contained iodine. The solution can be airless sprayed, brushed, rolled, dip bathed, or pressure treated. Once dry, the treatment provided the same permanent decay protection as chrome-copper-arsenic treated wood.

A major consumer of iodine as a catalyst to produce acetic acid to supply acetyl raw materials used gasified coal (syngas) as its chemical base. The chemicals are used in the production of cellulosic plastics and fibers that are made into photographic film, tool handles, paints, and cigarette filters. The company, 1 of 13 companies that applied for a U.S. Department of Energy Clean Coal Initiative grant, will use its technology to produce methanol from coal-derived synthetic gas. The methanol unit will use coal-derived syngas from the coal gasification facility.

World Mine Production, Reserves, and Reserve Base:

	Mine production		Reserves ³	Reserve base ³
	2003	2004 ^e		
United States	1,090	1,340	250,000	550,000
Azerbaijan	300	300	170,000	340,000
Chile	11,900	16,200	9,000,000	18,000,000
China	500	500	4,000	120,000
Indonesia	75	75	100,000	200,000
Japan	6,500	6,500	4,900,000	7,000,000
Russia	300	300	120,000	240,000
Turkmenistan	200	300	170,000	350,000
Uzbekistan	2	2	NA	NA
World total (rounded)	20,900	25,500	15,000,000	27,000,000

World Resources: In addition to 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, nitrate, and oil, the seaweed industry represented a major source of iodine prior to 1959 and remains a large resource.

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