IODINE

(Data in thousand kilograms elemental iodine unless otherwise noted)

Domestic Production and Use: Iodine produced in 2006 by three companies operating in Oklahoma accounted for 100% of the elemental iodine value, estimated to be about $23 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. Of the consumers that participate in the annual survey, 18 plants reported consumption of iodine in 2005. Major consumers were located in the Eastern United States. Strong demand increased the price of iodine as demand increased for liquid crystal display screens for computers and televisions. The average value of iodine imports through September was $16.79 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 25,300 metric tons.

Salient Statistics—United States:	2002	2003	2004	2005	2006[e]
Production	1,420	1,090	1,130	1,570	1,220
Imports for consumption, crude content	6,200	5,800	5,700	6,250	5,200
Exports	1,580	1,600	1,270	2,660	2,700
Shipments from Government stockpile excesses	25	361	245	444	465
Apparent	6,520	5,240	5,560	5,600	4,190
Reported	4,540	3,930	4,070	4,680	NA
Price, average c.i.f. value, dollars per kilogram, crude	12.70	11.81	13.38	16.11	18.69
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	81	81	72	71

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

Import Sources (2002-05): Chile, 71%; Japan, 27%; and other, 2%.

Tariff: Item	Number	Normal Trade Relations 12-31-06
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 that the fiscal year 2007 Annual Materials Plan would include sales of 454 tons (1,000,000 pounds) of crude iodine.

Stockpile Status—9-30-06[2]

Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 2006	Disposals FY 2006
Stockpile-grade	456	—	456	454	457

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IODINE

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. Japan was the second leading producer, and its production was associated with gas brines.

The Defense National Stockpile Center issued amendments 1, 2, 3, and 5 during 2006 to 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 2007, 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, located at New Haven, IN, and Somerville, NJ, was of Chilean, Japanese, and unknown origin.

Atacama Minerals Corp. announced the closure of a private stock placement with gross proceeds of Canadian $27.5 million, the net proceeds of which were to be used towards the ongoing development of the Aguas Blancas Mine in Chile. An agitated leach pilot plant was commissioned in April 2006, and a full-sized plant was expected in 2007 with a minimum capacity of 1,500 tons per year.[3]

Sociedad Química y Minera de Chile S.A. (SQM) acquired the iodine business of DSM Minera for $72 million in cash. The assets include mining and water rights, annual capacity for 2,200 metric tons per year of iodine, and an iodine derivatives plant. DSM Minera was part of the unit of the DSM Fine Chemicals business group and consisted of two companies: DSM Minera S.C.M. in Chile and DSM Minera B.V. in the Netherlands. DSM Minera S.C.M. was a producer of iodine and iodine derivatives. The company owned and operated iodine mining facilities and derivative production facilities in Iquique, Chile. DSM Minera B.V. marketed iodine and iodine derivatives through DSM's worldwide sales network and managed other iodine derivative production with toll manufacturers in Europe. DSM Minera employed 120 people, excluding 300 contractor employees.[4]

The production of iodocompounds from photosynthesis in the Atlantic and Indian Oceans reportedly would increase during global warming, resulting in a net cooling of the earth system and a negative climate feedback mechanism, mitigating global warming.[5]

World Mine Production, Reserves, and Reserve Base:

	Mine production		Reserves[6]	Reserve base[6]
	2005	2006[e]		
United States	1,570	1,220	250,000	550,000
Azerbaijan	300	300	170,000	340,000
Chile	15,000	15,300	9,000,000	18,000,000
China	550	550	4,000	120,000
Indonesia	75	75	100,000	200,000
Japan	7,300	7,300	4,900,000	7,000,000
Russia	300	300	120,000	240,000
Turkmenistan	270	270	170,000	350,000
Uzbekistan	2	2	NA	NA
World total (rounded)	25,400	25,300	15,000,000	27,000,000

World Resources: In addition to the reserve base shown above, 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.

[e]Estimated. NA Not available.

[1]Defined as imports – exports + adjustments for Government and industry stock changes.

[2]See Appendix B for definitions.

[3]Posey, E.F., 2006, Atacama announces cdn$27.5 million private placement: Vancouver, British Columbia, Canada, Atacama Minerals Corp. press release, June 30, 1 p.

[4]Pave, C., 2006, SQM informs the acquisition of the iodine business of DSM company: Santiago, Chile, Sociedad Química y Minera de Chile S.A. press release, January 19, 1 p.

[5]Smythe-Wright, D., Boswell, S.M., Breithaupt, P., Davidson, R.D., Dimmer, D.H., and Eiras Diaz, L.B., 2006, Methyl iodide production in the ocean—Implications for climate change. Global Biogeochemical Cycles, v. 20, no. 10, p. 1029.

[6]See Appendix C for definitions.