HELIUM

(Data in million cubic meters of contained helium gas,[1] unless otherwise noted)

Domestic Production and Use: During 2003, the estimated value of Grade-A helium (99.995% or better) extracted domestically by private industry was about $285 million. Eleven industry plants (seven in Kansas and four in Texas) extracted helium from natural gas and produced only a crude helium product that varied from 50% to 80% helium. Ten industry plants (four in Kansas, one in Texas, and one each in Colorado, New Mexico, Oklahoma, Utah, and Wyoming) extracted helium from natural gas and produced an intermediate process stream of crude helium (about 70% helium and 30% nitrogen) and continued processing the stream to produce a Grade-A helium product. Six industry plants (four in Kansas, one in Oklahoma, and one in Texas) accepted a crude helium product from other producers and the Bureau of Land Management (BLM) pipeline and purified it to a Grade-A helium product. Estimated 2003 domestic consumption of 80 million cubic meters (2.9 billion cubic feet) was used for cryogenic applications, 24%; for pressurizing and purging, 20%; for welding cover gas, 18%; for controlled atmospheres, 16%; leak detection, 6%; breathing mixtures, 3%; and other, 13%.

Salient Statistics—United States:	1999	2000	2001	2002	2003[e]
Helium extracted from natural gas[2]	114	98	87	87	87
Withdrawn from storage[3]	3	29	45	40	37
Grade-A helium sales	117	127	132	127	124
Imports for consumption	—	—	—	—	—
Exports[4]	26.8	37.0	43.0	40.0	41.0
Consumption, apparent[4]	90.3	89.6	88.9	87.6	79.9
Employment, plant, number[e]	500	320	325	325	325
Net import reliance[5] as a percentage of apparent consumption	E	E	E	E	E

Price: The Government price for crude helium was $1.893 per cubic meter ($52.50 per thousand cubic feet) in fiscal year (FY) 2003. The price for the Government-owned helium is mandated by the Helium Privatization Act of 1996 (Public Law 104-273). The estimated price range for private industry's Grade-A gaseous helium was about $2.16 to $2.34 per cubic meter ($60 to $65 per thousand cubic feet), with some producers posting surcharges to this price. This price includes price increases of 10% to18% that were implemented by the major helium producers in 2001 and 2002.

Recycling: In the United States, helium used in large-volume applications is seldom recycled. Some low-volume or liquid boil-off recovery systems are used. In Western Europe and Japan, helium recycling is practiced when economically feasible.

Import Sources (1999-2002): None.

Tariff: Item	Number	Normal Trade Relations 12/31/03
Helium	2804.29.0010	3.7% ad val.

Depletion Allowance: Allowances are applicable to natural gas from which helium is extracted, but no allowance is granted directly to helium.

Government Stockpile: Under the Public Law 104-273, the BLM manages the Federal Helium Program, which includes all operations of the Cliffside helium storage reservoir and the Government's crude helium pipeline system. The BLM no longer supplies Federal agencies with Grade-A helium. Private firms that sell Grade-A helium to Federal agencies are required to purchase a like amount of crude helium (in-kind) from the BLM.

In FY 2003, privately owned companies purchased nearly 5.63 million cubic meters (203 million cubic feet) of in-kind crude helium. In addition to this, the privately owned companies also purchased 46.2 million cubic meters (1,666 million cubic feet) of open market sales helium. During FY 2003, BLM's Amarillo Field Office, Helium Operations (AMFO) accepted more than 18.1 million cubic meters (652 million cubic feet) of private helium for storage and redelivered nearly 55.1 million cubic meters (1,987 million cubic feet). As of September 30, 2003, 56.5 million cubic meters (2.0 billion cubic feet) of helium was owned by private firms.

	Stockpile Status—9-30-03[6]				
Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 2003	Disposals FY 2003
Helium	766.6	16.6	766.6	64.30	51.83

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Events, Trends, and Issues: At the end of FY 2003, the major helium producers again announced helium price increases averaging 10% to 12%. Helium producers stated that the pricing initiatives are needed to address continued production, feedstock, and distribution cost increases. It is anticipated that the trend toward higher costs will continue as the potential for helium shortages increases with the continued depletion of U.S. helium reserves. It is anticipated that helium demand will grow at a rate of about 5% per year through 2004 and potentially into 2005; Helium demand has risen at this rate for the past 10 years. During 2003, there was a 4.3% increase in helium exports, which recovered part of the 8% decrease during 2002. AMFO continued the drafting of helium regulations to provide guidance for the Federal helium program. In early 2003, the AMFO conducted the first open market helium sale. During FY 2003, two overseas helium projects were initiated, one in Algeria and one in Qatar. Contracts were awarded for an expansion of the existing helium production facility in Algeria and for a new helium extraction facility in Qatar. The expansion of the Algerian facility will increase helium production capability by 16.6 million cubic meters (600 million cubic feet) per year, while the new facility at Qatar will have a production capacity of 8.3 million cubic meters (300 million cubic feet) per year. The Algerian facility expansion is scheduled to come onstream sometime during 2005, while the Qatar project is scheduled to be in operation by 2006.

World Production, Reserves, and Reserve Base:

	Production		Reserves[8]	Reserve base[8]
	2002	2003[e]		
United States	87	87	4,100	[9] 8,900
Algeria	17	17	2,000	3,000
Canada	NA	NA	NA	2,000
China	NA	NA	NA	1,100
Poland	1	1	40	280
Russia	4	4	1,700	6,700
Other countries	NA	NA	NA	2,800
World total (rounded)	109	109	NA	25,000

World Resources: The identified helium resources of the United States were estimated to be about 8.9 billion cubic meters (323 billion cubic feet) as of January 1, 2001. This includes 0.95 billion cubic meter (34.3 billion cubic feet) of helium stored in the Cliffside Field, 4.1 billion cubic meters (147 billion cubic feet) of helium in helium-rich natural gas (0.30% helium or more) from which helium is currently being extracted, and 3.1 billion cubic meters (111 billion cubic feet) in helium-lean natural gas (less than 0.30% helium). The Hugoton (Kansas, Texas, and Oklahoma), Panhandle West, Panoma, Riley Ridge, and Cliffside Fields are currently depleting gasfields and contain an estimated 4.0 billion cubic meters (143 billion cubic feet) of helium. Future supplies will probably come from known helium-rich natural gas with little fuel value and from helium-lean resources.

Helium resources of the world exclusive of the United States were estimated to be about 16 billion cubic meters (580 billion cubic feet). The locations and volumes of the principal deposits, in billion cubic meters, are Russia, 7; Algeria, 3; Canada, 2; China, 1; Poland, 0.3. As of December 31, 2003, AMFO had analyzed about 21,400 gas samples from 26 countries and the United States in a program to identify world helium resources.

Substitutes: There is no substitute for helium in cryogenic applications if temperatures below –429º F are required. Argon can be substituted for helium in welding, and hydrogen can be substituted for helium in some lighter-than-air applications in which the flammable nature of hydrogen is not objectionable. Hydrogen is also being investigated as a substitute for helium in deep-sea diving applications below 1,000 feet.

[e]Estimated. E Net exporter. NA Not available. — Zero.

[1]Measured at 101.325 kilopascals absolute (14.696 psia) and 15º C, 27.737 cubic meters of helium = 1 Mcf of helium at 70º F and 14.7 psia.

[2]Helium from both Grade-A and crude helium.

[3]Extracted from natural gas in prior years (injected in parentheses).

[4]Grade-A helium.

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

[6] See Appendix B for definitions.

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[8]See Appendix C for definitions.

[9]All domestic measured and indicated helium resources in the United States.