

NITROGEN (FIXED)—AMMONIA

(Data in thousand metric tons of nitrogen, unless otherwise noted)

Domestic Production and Use: Ammonia was produced by 19 companies at 37 plants in the United States during 2002. Fifty-three percent of total U.S. ammonia production capacity was centered in Louisiana, Oklahoma, and Texas because of their large reserves of natural gas, the dominant domestic feedstock. In 2002, U.S. producers operated at about 57% of their rated capacity. The United States remained the world's second largest ammonia producer and consumer following China. Urea, ammonium nitrate, ammonium phosphates, nitric acid, and ammonium sulfate were the major derivatives of ammonia in the United States, in descending order of importance.

Approximately 88% of apparent domestic ammonia consumption was for fertilizer use, including anhydrous ammonia for direct application, urea, ammonium nitrates, ammonium phosphates, and other nitrogen compounds. Ammonia was also used to produce plastics, synthetic fibers and resins, explosives, and numerous other chemical compounds.

Salient Statistics—United States: ¹	1998	1999	2000	2001	2002 ^e
Production ²	13,800	12,900	12,500	9,730	9,500
Imports for consumption	3,460	3,890	3,880	4,550	4,600
Exports	614	562	662	647	650
Consumption, apparent	17,100	16,300	15,600	13,800	13,500
Stocks, producer, yearend ³	1,050	996	1,120	916	900
Price, dollars per ton, average, f.o.b. Gulf Coast ³	121	109	169	183	140
Employment, plant, number ^e	2,500	2,200	2,000	1,800	1,700
Net import reliance ⁴ as a percentage of apparent consumption	19	21	20	30	29

Recycling: None.

Import Sources (1998-2001): Trinidad and Tobago, 59%; Canada, 24%; Ukraine, 5%; and other, 12%. U.S. Census Bureau data for Russia and Ukraine were included only in 2001.

Tariff: Item	Number	Normal Trade Relations 12/31/02
Ammonia, anhydrous	2814.10.0000	Free.
Ammonia, aqueous	2814.20.0000	Free.
Urea	3102.10.0000	Free.
Ammonium sulfate	3102.21.0000	Free.
Ammonium nitrate	3102.30.0000	Free.

Depletion Allowance: Not applicable.

Government Stockpile: None.

Events, Trends, and Issues: Low ammonia prices and high inventory levels in the first part of the year led some ammonia producers to temporarily idle a significant portion of their ammonia production capacity. One company closed its 93,000-ton-per-year ammonia plant in Pocatello, ID, in August, citing global competition as the reason for the closure. In order to remain competitive, the company either would have had to upgrade its existing plant or construct a new plant. By the fourth quarter, much of the idled capacity came back on-stream as ammonia prices began to climb, reflecting an increase in natural gas prices. The largest ammonia producer in the United States filed for Chapter 11 bankruptcy protection in June, citing adverse market conditions in the nitrogen fertilizer market and cash demands. The producer, a co-op, operates seven ammonia plants in Iowa, Kansas, Louisiana, Nebraska, and Oklahoma, with a total capacity of 3,040,000 tons per year of ammonia; two plants, with a total capacity of 890,000 tons per year, were closed throughout 2002.

Ammonia imports continued to increase to replace declining U.S. production, but less dramatically than in 2001 because the drop in domestic production was not as large. Based on partial-year data, Trinidad and Tobago (50%), Canada (18%), and Ukraine (11%) were the largest source countries.

In October, the International Trade Administration, U.S. Department of Commerce, announced preliminary antidumping duties on urea ammonium nitrate (UAN) solutions imported into the United States from Belarus, Russia, and Ukraine. For Belarus, the duty was 190.34% ad val.; for Russia, 138.95% to 233.85% ad val.; and for Ukraine, 193.58% ad val. The investigation of UAN imports began in April when U.S. producers claimed that unusually high levels of low-cost imports from the three countries began in 2000 and were damaging domestic UAN operating rates.

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According to the U.S. Department of Agriculture, for the eight major U.S. field crops (corn, soybeans, wheat, cotton, sorghum, barley, oats, and rice), planting intentions for the 2002-03 crop year are nearly identical to the actual planted acreage in the 2001-02 crop year. Corn growers intend to plant 4% more than last year's planted acreage, primarily because of lower per-acre costs of fertilizer and fuel for corn production than last year and a switch from cotton acres in the south as cotton's producer incentive prices declined. Because corn is the most nitrogen-intensive of the major field crops, an increase in corn plantings should translate to an increase in ammonia demand in the United States.

A new 645,000-ton-per-year ammonia plant began operating on a commercial scale in Trinidad and Tobago in July. Much of this plant's output was targeted to the U.S. market. Progress continued on planned ammonia plants in Australia, Egypt, Oman, and Trinidad and Tobago. The following were closed in 2002: a 140,000-ton-per-year plant in France, a 120,000-ton-per-year plant in India, a 530,000-ton-per-year plant in Ireland, and two plants totaling 660,000 tons per year of capacity in the Republic of Korea. New ammonia plants were proposed in Bangladesh, Iran, Saudi Arabia, Trinidad and Tobago, and Turkmenistan.

After its acceptance into the World Trade Organization (WTO) in December 2001, China delayed implementation of its tariff rate quota system (TRQ) for fertilizers until April 2002; publication of a draft regulation was supposed to have been completed by mid-October 2001. By mid-2002, the United States, Japan, and Canada had complained to the WTO that China was adopting tax policies that were inconsistent with its TRQ commitments and it was not reallocating unused TRQs. China contended that actual imports should depend on market demand; therefore, imports may not reach the totals specified under the TRQs. Although fertilizer imports were estimated to have increased by 1 million tons from 2001 to 2002, the total quantity permitted under the TRQs was 5.67 million tons.

Nitrogen compounds are also an environmental concern. Overfertilization and the subsequent runoff of excess fertilizer may contribute to nitrogen accumulation in watersheds. Nitrogen in excess fertilizer runoff is suspected to be a cause of the hypoxic zone that occurs in the Gulf of Mexico during the summer. Scientists continue to study the effects of fertilization on the Nation's environmental health.

World Ammonia Production, Reserves, and Reserve Base:

	Plant production		Reserves and reserve base ⁵
	2001	2002 ^e	
United States	9,730	9,500	Available atmospheric nitrogen and sources of natural gas for production of ammonia are considered adequate for all listed countries.
Canada	3,440	3,300	
China	28,100	30,000	
Egypt	1,800	1,950	
France	1,580	1,600	
Germany	2,730	2,520	
India	10,100	9,220	
Indonesia	3,700	4,150	
Netherlands	1,940	1,980	
Pakistan	1,970	2,000	
Poland	1,740	1,900	
Russia	8,690	8,700	
Saudi Arabia	1,770	1,400	
Trinidad and Tobago	3,040	3,000	
Ukraine	3,700	3,700	
Other countries	<u>22,000</u>	<u>22,000</u>	
World total (rounded)	106,000	107,000	

World Resources: The availability of nitrogen from the atmosphere for fixed nitrogen production is unlimited. Mineralized occurrences of sodium and potassium nitrates, found in the Atacama Desert of Chile, contribute minimally to global nitrogen supply.

Substitutes: Nitrogen is an essential plant nutrient that has no substitute. Also, there are no known practical substitutes for nitrogen explosives and blasting agents.

^eEstimated.

¹U.S. Department of Commerce (DOC) data unless otherwise noted.

²Annual and preliminary data as reported in Current Industrial Reports MA325B and MQ325B (DOC).

³Source: Green Markets.

⁴Defined as imports - exports + adjustments for Government and industry stock changes.

⁵See Appendix C for definitions.