NITROGEN (FIXED)—AMMONIA

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

Domestic Production and Use: Ammonia was produced by 17 companies at 34 plants in the United States during 2003. 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 2003, U.S. producers operated at about 59% 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 90% 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 also was used to produce plastics, synthetic fibers and resins, explosives, and numerous other chemical compounds.

Salient Statistics—United States:[1]	1999	2000	2001	2002	2003[e]
Production[2]	12,900	11,800	9,350	10,800	9,300
Imports for consumption	3,890	3,880	4,550	4,670	7,200
Exports	562	662	647	437	500
Consumption, apparent	16,300	14,900	13,500	15,200	16,000
Stocks, producer, yearend[3]	996	1,120	916	771	800
Price, dollars per ton, average, f.o.b. Gulf Coast[3]	109	169	183	137	240
Employment, plant, number[e]	2,200	2,000	1,800	1,700	1,550
Net import reliance[4] as a percentage of apparent consumption	21	21	31	29	42

Recycling: None.

Import Sources (1999-2002): Trinidad and Tobago, 57%; Canada, 22%; Russia, 9%; and other, 12%.

Tariff: Item	Number	Normal Trade Relations 12/31/03
Ammonia, anhydrous	2814.10.0000	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: A precipitous increase in natural gas prices in the beginning of 2003 resulted in the temporary closure of a significant portion of U.S. nitrogen production capacity. By the end of February, when the Henry Hub spot natural gas price had risen briefly to more than $18 per million British thermal units (Btu), about two-thirds of the U.S. ammonia production capacity was idled. By mid-March, the natural gas price had fallen to less than $6 per million Btu, and by the end of the month, some of the idled capacity had come back onstream. In June and July, more than 20% of the U.S. ammonia production capacity was idled again, responding to a seasonal drop in demand or increasing natural gas prices; natural gas prices were more than $6 per million Btu. Much of this capacity was brought back onstream in October as natural gas prices approached $4 per million Btu. With the drop in domestic production in 2003, imports of ammonia grew, replacing an even larger share of production.

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 in 2002. In 2003, the U.S. International Trade Commission reversed the decision and determined that U.S. producers did not suffer material injury from UAN imports from these three countries. Rather, the UAN was shipped during a period of high U.S natural gas prices, and the high natural gas prices were the main cause of the U.S. industry's declining profitability, not low-cost imports.

Responding to Congressional concerns about the effects of high natural gas prices on U.S. nitrogen fertilizer producers and farmers, the U.S. Government Accounting Office (GAO) undertook a study to determine the effects of natural gas prices on production and availability of nitrogen fertilizer and the role of the Federal Government in mitigating the impact of natural gas prices on the U.S. fertilizer market. GAO concluded that although higher natural gas prices have contributed to higher nitrogen fertilizer prices, supplies have generally been adequate during periods

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of high natural gas prices because of increased imports and that the Federal Government had a limited role in managing the effects of natural gas prices on the fertilizer market. Ammonia production in the United States generally consumes about 3% of the natural gas produced each year.

After the third-largest U.S. ammonia producer filed for bankruptcy in 2002, the company that had been the seventh largest producer (6% of U.S. capacity) purchased the bankrupt producer's plants in Beatrice, NE, Dodge City, KS, Enid, OK, and Fort Dodge, IA, in May 2003 as well as the company's share of a joint-venture plant in Trinidad and Tobago. As a result of this purchase, it became the largest U.S. ammonia producer, with 18% of the total U.S. production capacity. The company's Coffeyville, KS, petroleum coke-to-ammonia plant was sold to a separate company. The sixth largest domestic ammonia producer (10% of total U.S. capacity) filed for Chapter 11 bankruptcy protection in May citing financial losses resulting from the volatility of U.S. natural gas prices as the principal cause for the filing. This company and its subsidiaries operate ammonia plants in Donaldsonville, LA, and Yazoo City, MS, with a total capacity of 1.52 million tons of ammonia per year.

No significant ammonia production capacity additions are planned for 2004. Many of the planned large-scale projects are expected to come onstream from 2005 to 2007; much of this capacity is being built in the Middle East.

According to long-term projections from the U.S. Department of Agriculture, U.S. plantings for eight major field crops rose by about 1.6% from 2002 to 2003. Corn, wheat, and soybeans represent about 85% of the crop total. Corn and wheat acreage each rose in 2003 in response to reduced supplies and high market prices. Plantings were projected to decline during the next 2 years as supplies rebound and prices fall. Because corn is the most nitrogen-intensive of the major field crops, a drop in corn plantings should translate to a decline in ammonia demand in the United States.

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]
	2002	2003[e]	
United States	10,800	9,300	Available atmospheric nitrogen and sources of natural gas for production of ammonia are considered adequate for all listed countries.
Canada	3,600	3,800	
China	30,100	31,000	
Egypt	1,840	1,800	
Germany	2,560	2,850	
India	9,830	9,000	
Indonesia	4,200	4,300	
Netherlands	1,970	1,600	
Pakistan	1,960	2,000	
Poland	1,310	1,400	
Russia	8,600	9,100	
Saudi Arabia	1,740	1,650	
Trinidad and Tobago	3,300	3,400	
Ukraine	3,700	4,100	
Other countries	23,000	23,000	
World total (rounded)	109,000	108,000	

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.

[e]Estimated.

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

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

[3]Source: Green Markets.

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

[5]See Appendix C for definitions.