

NITROGEN (FIXED)—AMMONIA

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

Domestic Production and Use: Ammonia was produced by 23 companies at 39 plants in the United States during 2001. Fifty-five 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. High natural gas prices at the beginning of the year, followed by weather-related decreases in demand and high product inventory levels, resulted in U.S. ammonia producers operating at significantly less than rated capacity in 2001. 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 89% 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	1997	1998	1999	2000	2001^e
Production ²	13,300	13,800	12,900	12,300	9,500
Imports for consumption	3,530	3,460	3,890	3,880	5,000
Exports	395	614	562	662	670
Consumption, apparent	15,800	17,100	16,300	15,400	13,500
Stocks, producer, yearend	1,530	³ 1,050	³ 996	³ 1,120	³ 1,500
Price, dollars per ton, average, f.o.b. Gulf Coast ³	173	121	109	169	150
Employment, plant, number ^e	2,500	2,500	2,200	2,000	1,800
Net import reliance ⁴ as a percentage of apparent consumption	16	19	21	20	29

Recycling: None.

Import Sources (1997-2000): Trinidad and Tobago, 59%; Canada, 31%; Mexico, 5%; and other, 5%. In addition, the United States imports significant quantities of ammonia from Russia and Ukraine, but until 2001, U.S. Census Bureau import quantity data were suppressed, so these data were not included in the calculation of import sources.

Tariff: Item	Number	Normal Trade Relations 12/31/01
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: Because of high natural gas prices at the beginning of the year (about \$10 per million Btu), almost 40% of the U.S. production capacity for ammonia was shut down. By mid-February, however, the price had dropped to about \$5 per million Btu, and most of the closed plants were back on-stream, although some were not operating at full capacity. This restart coincided with the peak season for fertilizer demand. After the spring fertilizer application season, several ammonia plants closed or reduced output because of weather-related decreases in demand and high product inventory levels. Much of this reduction continued throughout the summer, even though natural gas prices continued to decline. By the beginning of October, when natural gas prices had fallen to less than \$2 per million Btu, much of the idled capacity was restarted. A 497,000-ton-per-year (N content) ammonia plant in Beaumont, TX, was permanently closed at the end of June, and a 399,000-ton-per-year (N content) ammonia plant in Avondale, LA, was shut down in July.

Because of low U.S. production levels, imports of ammonia were significantly higher in 2001. Based on partial-year data, Trinidad and Tobago (49%), Ukraine (17%), Canada (12%), and Russia (7%) were the largest source countries.

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Progress continued on new ammonia plants in Australia, Egypt, Oman, Qatar, Trinidad and Tobago, and the United Arab Emirates; one plant in Germany closed.

In July, the International Trade Administration set an antidumping duty of 156.29% ad valorem on imports of ammonium nitrate from Ukraine. U.S. ammonium nitrate producers claimed that ammonium nitrate was being imported from Ukraine to replace material that had been imported from Russia before a suspension agreement signed in 2000 limited U.S. imports of ammonium nitrate from Russia.

In September, the World Trade Organization (WTO) concluded negotiations with China regarding the terms of its full membership. Under the agreement, China will work toward better integration into the world economy and offer a more predictable environment for trade and foreign investment. For fertilizers, the commitments mean that imports of fertilizers by State and non-State purchasers must be allowed. China also must provide nondiscriminatory treatment to all WTO members, eliminate dual pricing practices, eliminate price controls as a means of protecting domestic industries, and not introduce any export subsidies on agricultural products. China's imports of fertilizer products could begin in January 2002.

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 has been theorized 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
	2000	2001 ^e	
United States	12,300	9,500	Available atmospheric nitrogen and sources of natural gas for production of ammonia are considered adequate for all listed countries.
Canada	4,130	3,450	
China	28,000	29,000	
Egypt	1,510	1,850	
France	1,700	1,600	
Germany	2,470	2,600	
India	10,100	9,000	
Indonesia	4,000	3,400	
Netherlands	2,540	2,000	
Pakistan	1,880	1,900	
Poland	1,860	1,900	
Russia	8,740	8,700	
Saudi Arabia	1,740	1,400	
Trinidad and Tobago	2,690	3,000	
Ukraine	3,300	3,600	
Other countries	<u>21,700</u>	<u>22,200</u>	
World total (rounded)	109,000	105,000	

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.