

NITROGEN (FIXED)—AMMONIA

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

Domestic Production and Use: Ammonia was produced by 26 companies at 42 plants in the United States for most of 1999. Because of persistent low prices, several producers permanently closed plants during the second half of the year and several were closed for extended shutdowns. As a result, U.S. ammonia producers operated significantly below rated capacity. Fifty-eight 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. The United States remained the world's second largest ammonia producer and consumer following China. Urea, ammonium phosphates, ammonium nitrate, nitric acid, and ammonium sulfate were the major derivatives of ammonia in the United States, in descending order of importance.

Approximately 85% of U.S. 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	1995	1996	1997	1998	1999^e
Production ²	13,000	13,400	13,300	14,700	11,000
Imports for consumption	2,630	3,390	3,530	3,460	4,800
Exports	319	435	395	614	800
Consumption, apparent	15,300	16,400	15,800	18,100	14,900
Stocks, producer, yearend	959	881	1,530	1,050	1,200
Price, dollars per ton, average, f.o.b. Gulf Coast ³	191	190	173	121	110
Employment, plant, number ^a	2,500	2,500	2,500	2,500	2,200
Net import reliance ⁴ as a percent of apparent consumption	15	19	16	18	26

Recycling: None.

Import Sources (1995-98): Trinidad and Tobago, 50%; Canada, 36%; Mexico, 7%; Venezuela, 2%; and other, 5%. In addition, the United States imports significant quantities of ammonia from Russia and Ukraine, but the Bureau of the Census quantity data are suppressed, so these data are not included in the calculation of import sources.

Tariff: Item	Number	Normal Trade Relations 12/31/99
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.

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Events, Trends, and Issues: Continued low ammonia prices, high natural gas prices, and high industry stock levels for the past 2 years led to reduced ammonia production in the United States in 1999. Four ammonia plants were permanently closed during the year in Clinton, IA; Lawrence, KS; Luling, LA; and LaPlatte, NE. In addition, one plant in Donaldsonville, LA, was shut down indefinitely in August. These closures represent about 10% of the total U.S. production capacity. U.S. companies extended maintenance shutdowns for many plants or temporarily closed portions of plants, taking additional capacity off-stream during the year in an attempt to alleviate the oversupply. Firms building new ammonia plants in Coffeyville, KS, and Beaumont, TX, also postponed commissioning of these plants because of the oversupply. As a result of these closures, ammonia prices began to rebound; by the end of October the average U.S. Gulf Coast ammonia price had risen to \$118 per short ton after reaching a low of \$104 per short ton in June.

In spite of the U.S. ammonia oversupply, new ammonia capacity came on-stream in Egypt, Norway, and Pakistan in 1999, and significant new capacity is planned for 2000. Analysts, however, predict that ammonia demand will increase in 2000 because of strong industrial demand in Asia, where the economy is beginning to pick up, and steady demand for ammonia to make upgraded fertilizer products.

At the request of several U.S. producers, the International Trade Commission (ITC) began an investigation of imports of fertilizer-grade ammonium nitrate from Russia. After a preliminary investigation, the ITC concluded that there was reasonable indication that the U.S. industry was materially injured by ammonium nitrate sold at less than fair value. The ITC plans to conduct antidumping and countervailing duty investigations.

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 in 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
	1998	1999 ^e	
United States	14,700	11,000	Available atmospheric nitrogen and sources of natural gas for production of ammonia are considered adequate for all listed countries.
Canada	3,900	4,350	
China	26,500	28,000	
Germany	2,500	2,350	
India	10,000	9,800	
Indonesia	3,600	3,500	
Japan	1,580	1,600	
Mexico	1,450	980	
Netherlands	2,350	2,500	
Pakistan	1,800	1,800	
Russia	6,500	6,000	
Trinidad and Tobago	2,270	2,550	
Ukraine	3,300	3,300	
Other countries	<u>25,100</u>	<u>25,200</u>	
World total (rounded)	106,000	101,000	

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 demand.

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 Bulletins MA28B and MQ28B (DOC).

³Source: Green Markets.

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

⁵See Appendix C for definitions.