NITROGEN (FIXED)—AMMONIA

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

<u>Domestic Production and Use</u>: Ammonia was produced by 13 companies at 22 plants in 16 States in the United States during 2008; 5 additional plants were idle for the entire year. Sixty 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 2008, U.S. producers operated at about 78% of their rated capacity. The United States was one of the world's leading producers and consumers of ammonia. 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 also was used to produce plastics, synthetic fibers and resins, explosives, and numerous other chemical compounds.

Salient Statistics—United States:1	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	2008 ^e
Production ²	8,990	8,340	8,190	8,840	8,240
Imports for consumption	5,900	6,520	5,920	6,530	7,720
Exports	381	525	194	145	166
Consumption, apparent	14,400	14,400	14,000	15,200	15,800
Stocks, producer, yearend	298	254	170	155	188
Price, dollars per ton, average, f.o.b. Gulf Coast ³	274	304	302	309	500
Employment, plant, number ^e	1,300	1,150	1,150	1,050	1,100
Net import reliance⁴ as a percentage					
of apparent consumption	38	42	41	42	48

Recycling: None.

Import Sources (2004-07): Trinidad and Tobago, 56%; Canada, 15%; Russia, 12%; Ukraine, 10%; and other, 7%.

<u>Tariff</u> : Item	Number	Normal Trade Relations <u>12-31-08</u>
Ammonia, anhydrous	2814.10.0000	Free.
Urea	3102.10.0000	Free.
Ammonium sulfate	3102.21.0000	Free.
Ammonium nitrate	3102.30.0000	Free.

<u>Depletion Allowance</u>: Not applicable.

Government Stockpile: None.

Events, Trends, and Issues: The Henry Hub spot natural gas price ranged between \$7 and \$13 per million British thermal units for most of the year. The natural gas prices started to decrease in July as a result of mild temperatures, increase in natural gas production, and lower crude oil prices. The average Gulf Coast ammonia price continued to increase from \$438 per short ton at the beginning of 2008 to a high of around \$880 per short ton in September. The average ammonia price for the year likely will be above \$500 per short ton. The U.S. Department of Energy, Energy Information Administration, projected that Henry Hub natural gas spot prices would average \$8.74 per million British thermal units in 2009.

Increased demand for fertilizers in the United States allowed Terra Industries Inc. of Sioux City, IA, to restart annual production of 363,000 tons of ammonia in a \$10 million expansion at its Donaldsonville, LA, plant. Terra will make ammonia fertilizer at this plant for the first time since late 2004.⁵

Rising natural gas prices in developed countries are causing a shift of gas-based industries, such as nitrogen production, to developing countries. Several companies have announced plans to build new ammonia plants in Algeria, China, Libya, and Peru, which would add 5.6 million tons of annual capacity within the next 2 to 3 years. A series of coal gasification projects in China were brought online, including three plants with ammonia capacities of 500,000 tons per year.

NITROGEN (FIXED)—AMMONIA

According to the U.S. Department of Agriculture, U.S. corn growers planted 35.2 million hectares of corn in the 2008 crop year (July 1, 2007, through June 30, 2008), which was a 7% decrease from hectares planted in 2007. The decrease in plantings was principally in response to favorable prices for other crops, high input costs for corn, and crop rotation considerations that motivated some farmers to plant fewer acres of corn. Corn plantings for the 2009 crop year, however, were expected to increase to 36.8 million hectares. Corn acreage is expected to remain at historically high levels owing to the continued expansion of U.S. ethanol production.

Nitrogen compounds also are 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		
	<u>2007</u>	2008 ^e	
United States	8,840	8,240	
Bangladesh	1,300	1,300	
Canada	4,100	4,100	
China	42,480	44,600	
Egypt	1,750	1,900	
Germany	2,746	2,800	
India	11,000	11,000	
Indonesia	4,400	4,400	
Iran	2,000	2,000	
Japan	1,090	1,360	
Netherlands	1,800	1,800	
Pakistan	2,250	2,250	
Poland	1,900	1,900	
Qatar	1,800	1,800	
Romania	1,300	1,300	
Russia	10,500	11,000	
Saudi Arabia	2,600	2,500	
Trinidad and Tobago	5,100	5,100	
Ukraine	4,200	4,200	
Other countries	20,300	22,000	
World total (rounded)	131,000	136,000	

Reserves and reserve base⁶

Available atmospheric nitrogen and sources of natural gas for production of ammonia are considered adequate for all listed countries.

<u>World Resources</u>: 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.

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

eFstimated

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

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

³Source: Green Markets.

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

⁵Green Markets, 2008, Terra Donaldsonville plant in startup mode: Green Markets, v. 32, no. 31, August 4, p. 10-11.

⁶See Appendix C for definitions.