



2005 Minerals Yearbook

POTASH

POTASH

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Potash production declined in quantity by 7% in 2005, but the total value of sales increased by 21% compared with that of 2004. In 2005, 2.5 million metric tons (Mt) of minerals was mined to produce 1.2 Mt of potassium oxide (K_2O) equivalent.¹ Imports for consumption decreased slightly; however, the customs value increased by 56%. Total exports were 11% lower in 2005 (table 1).

Potash denotes a variety of mined and manufactured salts, all of which contain the element potassium in water-soluble form. More than 85% of the domestic production of potash is near Carlsbad, NM, with most of the potash coming from the mineral sylvite. At the end of the 19th century, potash production came from hardwood trees and was a mixture of potassium carbonate and potassium hydroxide, both of which are caustic. Lye denoted sodium hydroxide, and potash lye was potassium hydroxide, a higher grade product that resulted in better grade of soap than the lye soap being used for laundry. The 1942 Webster's dictionary defined potash as potassium carbonate. Since approximately 1950, the term potash has been used to indicate potassic fertilizers, which are potassium chloride (KCl or sylvite), potassium sulfate [K_2SO_4 or sulfate of potash (SOP), usually a manufactured product], and potassium-magnesium sulfate [$K_2SO_4 \cdot 2MgSO_4$ or langbeinite or double sulfate of potash magnesia (SOPM or K-Mag)]. Muriate of potash (MOP) is an agriculturally acceptable mix of KCl (95% pure or greater) and sodium chloride (halite) for fertilizer use that includes minor amounts of other nontoxic minerals from the mined ore and is neither the crude ore sylvite nor pure sylvite.

This publication has historically included potassium nitrate [KNO_3 or saltpeter or nitrate of potash (NOP), a mostly manufactured product] and mixed sodium nitrate and potassium nitrate ($NaNO_3$ and KNO_3 or Chilean saltpeter, a natural product) because it functions as a potassic plus nitrogenous fertilizer. Saltpeter and Chilean saltpeter are still noted in the import tables (tables 8, 9). Alunite, feldspar, and muscovite are potassium-bearing minerals that have a very low solubility in water and are considered to be neither potassic fertilizers nor ores for price-competitive potassic fertilizers.

Legislative and Government Programs

Foreign competition and rising domestic energy costs were factors presented by Intrepid Mining LLC (the leading U.S. potash producer) in its appeal to reduce the Federal royalty rate to 1% from 2% for 5 years. The Carlsbad potash industry has been affected the most since the early 1980s when there were seven mining operations; now there

¹"Because the amount of potassium in the common salts of potassium varies, the industry has established a common standard of measurement of defining a product's potassium content [or purity], in terms of equivalent percentages of potassium oxide (K_2O). A K_2O equivalent of 60 percent, 51 percent, and 22 percent is the customary minimum standard for muriate of potash, sulfate of potash, and double sulfate of potash magnesia products, respectively" (IMC Global, Inc., 2004, p. 8). All tonnages are reported in metric tons, K_2O equivalent, unless otherwise specified. All percentages are computed on unrounded K_2O equivalent values.

are only two. The Potash Royalty Reduction Act of 2004 (H.R. 4984) was introduced in the U.S. Congress to provide some financial relief for the New Mexico potash industry (Industrial Minerals, 2005b). A successor bill, the Potash Royalty Reduction Act of 2005 (H.R. 485), was passed by the U.S. House of Representatives on May 16, 2005 (Library of Congress, The, undated §²).

Production

Domestic production data were developed by the U.S. Geological Survey (USGS) from a semiannual voluntary canvass of U.S. operations. All seven of the operations canvassed for both semiannual surveys responded, representing 100% of the total production listed in table 1. Three companies produced potash from seven operations in three States. Most domestic production was from southeastern New Mexico where one company operated two mines and a second company operated one mine with multiple products. The second company also operated a deep-solution mine in Michigan. The third State with potash production was Utah where two companies produced potash from three operations.

Potash producers in the United States produced MOP, SOP, and SOPM. Published production data of all types and grades of potash in the United States have been adjusted since mid-1997 to avoid disclosing the proprietary data of companies that produce SOP and SOPM, which together are known as sulfates.

North American fertilizer producers posed higher earnings in 2005 despite a weak fertilizer application season in North America in fall 2004. High energy feedstock prices for ammonia and phosphate coupled with a weak demand for these fertilizers did not affect the potash industry. Although U.S. potash production and sales decreased in 2005, potash prices increased partially because of a tight North American supply market brought on because a Canadian potash producer signed an agreement to supply more than 2 Mt of potash each year to a Chinese potash importer.

Ashta Chemicals Incorporated announced it would construct a chloralkali plant to produce chlorine and coproduct potassium hydroxide (KOH), also known as caustic potash, in El Dorado, AR (Chemical Week, 2005c). The chlorine would supply Great Lakes Chemicals Corporation's adjacent facility that manufactures flame retardants. Construction of the plant was scheduled for late 2005 with completion slated for mid-2007. Ashta Chemicals has a KOH plant in Ashtabula, OH, that has capacity of 70,000 metric tons per year (t/yr) (Chemical Market Reporter, 2005b).

Consumption

Consumption of K_2O equivalent in 2005 was comparable to that of 2004. Decreases in production and imports coupled with a decrease

²References that include a section mark (§) are found in the Internet References Cited section.

in exports led to flat apparent consumption. The principal use of potash is as an agricultural fertilizer (plant nutrient) because it is a source of soluble potassium, which is one of the three primary plant nutrients required for plant growth and maturation; the others are fixed nitrogen and soluble phosphorus. Potash and phosphorus are mined products, and fixed nitrogen is produced from the atmosphere using industrial processes. Modern agricultural practice uses large amounts of these primary nutrients and additional nutrients, such as boron, calcium, chlorine, copper, iron, magnesium, manganese, molybdenum, sulfur, and zinc, to ensure plant health and proper maturation. The three major plant nutrients have no cost-effective substitutes. Low-nutrient-content alternative sources, such as animal manure and guano, bone meal, compost, glauconite, and “tankage” from slaughterhouses, are available, but the cost of transportation per metric ton of nutrient can reduce their desirability beyond relatively short distances. In addition to its use as a fertilizer, potassium chloride is important in industrialized economies where it is used in aluminum recycling, by the chloralkali industry to produce potassium hydroxide, in metal electroplating, oil-well drilling mud, snow and ice melting, steel heat-treating, and water softening.

Potassium hydroxide is used for industrial water treatment and is the precursor of potassium carbonate, several forms of potassium phosphate, many other potassic chemicals, and soap manufacturing. The glass industry uses potassium carbonate for television and computer monitor production. Potassium carbonate is used to produce animal feed supplements, cement, some types of fire extinguishers, food products, photographic chemicals, and textiles. It is also used in brewing beer, pharmaceutical preparations, and as a catalyst for synthetic rubber manufacturing. Generally, these nonfertilizer uses have accounted for 15% of annual potash consumption in the United States.

According to the Potash and Phosphate Institute, agricultural MOP shipments to the 10 leading consuming States represented 67% of the combined Canadian and United States producers' total sales to the United States in 2005 (table 3). In decreasing order of tonnage, the States were Illinois, Iowa, Indiana, Minnesota, Ohio, Missouri, Wisconsin, Michigan, Georgia, and Florida. Nonagricultural MOP shipments by State for 2005 were not available; however, total nonagricultural potash sales increased by 5% in 2005 compared with those in 2004.

Foreign Trade

U.S. exports of potash have been decreasing during the past several years. In 2005, 200,000 metric tons (t) was exported, of which 42% was MOP, 39% was SOPM, 18% was SOP, and 1% was NOP (table 6). Mexico, Canada, Japan, and Costa Rica, in declining order, received 51% of the total exports of potash from the United States and all decreased their shipments, except Costa Rica, compared with those in 2004 (table 7). Of the total quantity of exports by world region, 35% went to North America, 22% went to South America, 18% went to Central America, 14% went to Asia, 5% went to the Caribbean, 4% went to Oceania, and the remainder went to Africa, Europe, and the Middle East. Exports of MOP to all regions declined by 26%, SOP increased by 6%, SOPM declined by 7%, and NOP decreased by 27% (table 6). Total potash exports decreased by 11% in 2005 compared with those of 2004.

Potash imports into the United States for 2005 remained flat at 4.92 Mt compared with those in 2004 (table 8). MOP imports were unchanged at 4.81 Mt, and mixed potassium salts declined by 86% to 798 t. SOP imports decreased slightly, whereas NOP imports increased slightly. The largest increase in MOP imports was from Russia, which shipped 317% more potash to the United States in 2005 than in 2004. Total potash imports from Canada for 2005 were down by 4% compared with those in 2004. Canada supplied 89% of the MOP imports to the United States and 87% of all potash imports (table 9). Chile was the leading supplier of NOP with 68% of the imports, followed by Israel with 29%. Imports of mixed potassium salts declined by 86% in 2005 from those in 2004.

World Industry Structure

Estimated 2005 world potash production increased slightly to 31 Mt (table 10). Western European production was estimated to have decreased by 3%, and production in all countries in the area declined slightly. The potash-producing countries of Eastern Europe—Belarus, Russia, and Ukraine—were estimated to have increased their combined total production by 8% to 9.65 Mt of K_2O equivalent compared with that of 2004. North American production decreased slightly to 11.3 Mt of K_2O equivalent.

World Review

Canada.—Canpotex Ltd. was established in 1970 by the producers of potash in Canada for the exclusive purpose of exporting potash for sale to nonproducing countries in Asia, Latin America, and Oceania. Canpotex competes for business with Belarus, Germany, Israel, Jordan, Russia, and Ukraine, supplying 30% of the potash requirements to the international markets it serves. Its members include Agrium Inc., Mosaic Canada ULC, and Potash Corp. of Saskatchewan Inc. (PCS).

In November 2004, Canpotex announced that Sinochem Corp. of China had signed a contract for 2005 to purchase 2.1 Mt of potash, including 1.5 Mt of red standard-grade potash, 300,000 t of granular-grade potash, and 300,000 t of white standard-grade potash. The quantity is 27% more than the sale in 2004. The contract includes a 10% additional volume provision with a price increase of at least \$40 per metric ton compared with the past contract price. Because Sinochem purchases the product at the Vancouver port, it will be responsible for all shipping charges (Chemical Market Reporter, 2005c). This transaction should reduce North American potash supplies and provide an opportunity for the U.S. potash industry to increase its production.

The Provincial Government of Saskatchewan announced in April a 10-year tax relief from base payments on mine expansions of more than 200,000 t/yr of potassium chloride. The province also issued a capital investment incentive to promote greater production that would result in a pretax savings of \$6.25 per ton. In response to this announcement, PCS planned to spend \$275 million to restart 1.9 Mt of idled capacity at its Lanigan and Allan mines in Saskatchewan (Chemical Market Reporter, 2005c). Concurrently, Mosaic Company (the parent company of Mosaic Canada) announced it would add 400,000 t of new capacity at its Esterhazy, Saskatchewan mine (Mosaic Company, 2005§). Agrium also took advantage

of this opportunity and announced plans to invest \$65 million to increase capacity by 310,000 t/yr at its Vanscoy, Saskatchewan, potash mine. Construction began in July and would be completed by late 2006. When finished, the plant would have a total annual capacity of 2.1 million metric tons per year (Mt/yr) (Agrium Inc., 2005§). Agrium produced 1.7 Mt of potash valued at \$200 million in 2004 (Chemical Week, 2005b). All three companies stated that they were evaluating further expansions or exploring new projects at other locations in the province. Agrium also purchased the fertilizer distribution business of Imperial Oil Company (a subsidiary of ExxonMobil Corporation) for \$22 million in cash. Imperial had long-term leases for land at 190 independently operated retail outlets and exclusive fertilizer agreements with many independent operators that market more than 500,000 t/yr of fertilizer in western Canada (Chemical Week, 2005a).

Anglo Minerals Ltd. completed a feasibility study to mine potash in central Saskatchewan. The study indicated there was an inferred resource of 394 Mt of recoverable sylvinitic grading 22.3% K₂O in the Upper Patience Lake stratigraphic submember and an inferred resource of 243 Mt of recoverable sylvinitic grading 24.7% K₂O in the Lower Patience Lake submember. The company was seeking a partner to join the project. Additional drilling, coring, and seismic surveying were recommended in the study (Chemical Market Reporter, 2005a).

Germany.—K+S Kali GmbH finalized the acquisition the distribution and production activities of Société Commercial des Potasses et de l'Azote (SCPA) of France. The new company will be called K+S Kali & SCPA France S.A.S. One of the objectives of the merger was to strengthen the supply of potash and magnesium products and other fertilizer specialty products to French farmers (Industrial Minerals, 2005a).

Outlook

World demand for grain is expected to continue to increase in 2006. Factors affecting world economic growth include interest rates in the United States, China's foreign exchange policy, and global inflation. The world economic growth had been forecast to increase by 4.3% in 2005 compared with 5% in 2004 (Potash Corp. of Saskatchewan Inc., 2005, p. 46). The main driver in the growth of the potash market is expected to be rapid economic growth in many Asian, Central American, and South American nations. These increases, which are expected to continue into 2006, are projected to support expenditures on fertilizer.

After harvesting the best crop in years in 2004, the world's farmers had an improved financial position entering 2005, which supported increased fertilizer consumption to replace nutrients drawn from the soil by the large crop and helped farmers achieve their production goals (Potash Corp. of Saskatchewan, Inc., 2005, p. 46). The global consumption is projected to be 30.3 Mt of potash in 2009, equating to a growth rate of 2% per year (International Fertilizer Industry Association, 2005, p. 22). This growth rate suggests that 7 Mt of potash will be required worldwide.

Even though there was a small amount of remaining excess capacity worldwide at yearend, significant growth in production capacity is still needed to meet the anticipated increase in demand. In the period from 2005 to 2009, potash capacity

expansions will come online but will be localized in established producing countries. Triggered by strong demand projections, limited spare capacity, and firming international prices, most suppliers have announced expansion plans. There could be future potash developments in Argentina, Canada, Congo (Kinshasa), Russia, and Thailand, and most of the new capacity will be located in exporting countries. These projects have the possibility of adding more than 9.8 Mt of MOP capacity in the longer term (International Fertilizer Industry Association, 2005, p. 17-22).

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TABLE 1
SALIENT POTASH STATISTICS^{1,2}

(Thousand metric tons and thousand dollars unless otherwise specified)

	2001	2002	2003	2004	2005	
United States:						
Production:³						
Gross weight	2,500	2,600	2,400	2,700	2,500	
K ₂ O equivalent	1,200	1,200	1,100	1,300	1,200	
Sales by producers:						
Quantity:						
Gross weight ³	2,400	2,500	2,500	2,700	2,500	
K ₂ O equivalent ³	1,100	1,200	1,200	1,300	1,200	
Value ^{4,5}	260,000	280,000	280,000	340,000	410,000	
Average value:⁶						
Gross weight	dollars per metric ton	\$110	\$110	\$110	\$125	\$165
K ₂ O equivalent	do.	\$230	\$230	\$230	\$270 ^r	\$350
Exports:						
Gross weight	883	894	801	640 ^r	569	
K ₂ O equivalent	366	371	329	233 ^r	200	
Imports for consumption:^{7,8}						
Quantity:						
Gross weight	7,480	7,630	7,810	8,140	8,110	
K ₂ O equivalent	4,540	4,620	4,720	4,920	4,920	
Value, customs	537,000	615,000	646,000	751,000 ^r	1,170,000	
Consumption, apparent:⁹						
Gross weight ¹⁰	9,000	9,200	9,500	10,000	10,000	
K ₂ O equivalent ¹⁰	5,300	5,300	5,400	6,000	6,000	
World, production, marketable K ₂ O equivalent	26,400	26,800 ^r	28,400	30,400 ^r	31,100 ^e	

^eEstimated. ^rRevised. NA Not available.

¹Includes muriate of potash, sulfate of potash, potassium magnesium sulfate, and some parent salts. Excludes other chemical compounds that contain potassium.

²Data are rounded to no more than three significant digits unless otherwise specified.

³Data rounded to within 100,000 metric tons (t) to avoid disclosing proprietary data.

⁴Free on board mine.

⁵Data are rounded to no more than two significant digits.

⁶Rounded to the nearest \$5 to avoid disclosing proprietary data.

⁷Excludes potassium chemicals and mixed fertilizers.

⁸Includes nitrate of potash.

⁹Calculated from sales plus imports minus exports.

¹⁰Data rounded to within 200,000 t to avoid disclosing proprietary data.

TABLE 2
PRODUCTION OF CRUDE ORE IN NEW MEXICO

(Thousand metric tons)

Period	Crude salts, ¹ mine production ²	
	Gross weight	K ₂ O equivalent
2004:		
January-June	6,000	700
July-December	5,000	600
Total	11,000	1,300

See footnotes at end of table.

TABLE 2—Continued
 PRODUCTION OF CRUDE ORE IN NEW MEXICO

(Thousand metric tons)

Period	Crude salts, ¹ mine production ²	
	Gross weight	K ₂ O equivalent
2005:		
January-June	6,000	700
July-December	5,000	600
Total	11,000	1,300

¹Sylvinite and langbeinite.

²Data are rounded to the nearest 1,000 metric tons to avoid disclosing company proprietary data.

TABLE 3
 SALES OF NORTH AMERICAN MURIATE OF POTASH, BY STATE OF DESTINATION¹

(Metric tons of K₂O equivalent)

State	Agricultural potash		Nonagricultural potash	
	2004	2005	2004	2005
Alabama	76,500	53,800	236,000	NA
Alaska	1,250	1,230	2,360	NA
Arizona	2,730	4,340	3,020	NA
Arkansas	73,200	43,000	56	NA
California	78,100	66,800	17,600	NA
Colorado	13,600	13,800	19,400	NA
Connecticut	966	603	1,380	NA
Delaware	22,100	20,300	47,200	NA
Florida	141,000	118,000	13,400	NA
Georgia	127,000	120,000	1,040	NA
Idaho	46,200	40,000	1,620	NA
Illinois	646,000	552,000	28,500	NA
Indiana	361,000	295,000	14,800	NA
Iowa	479,000	429,000	4,160	NA
Kansas	32,300	25,400	9,120	NA
Kentucky	138,000	109,000	8,780	NA
Louisiana	83,500	71,000	6,920	NA
Maine	4,880	3,450	347	NA
Maryland	24,100	21,300	1,530	NA
Massachusetts	2,350	12,600	8,010	NA
Michigan	189,000	155,000	9,110	NA
Minnesota	345,000	272,000	9,330	NA
Mississippi	46,100	23,500	254	NA
Missouri	320,000	240,000	2,630	NA
Montana	20,400	17,900	96	NA
Nebraska	60,800	48,400	1,960	NA
Nevada	558	424	158	NA
New Hampshire	357	497	108	NA
New Jersey	7,770	6,370	1,290	NA
New Mexico	18,800	9,130	35,600	NA
New York	56,800	47,000	3,700	NA
North Carolina	130,000	100,000	837	NA
North Dakota	38,100	37,600	24	NA
Ohio	315,000	262,000	105,000	NA
Oklahoma	36,400	32,200	5,640	NA
Oregon	43,900	34,100	201	NA
Pennsylvania	59,600	52,000	8,290	NA
Rhode Island	--	--	24	NA

See footnotes at end of table.

TABLE 3—Continued
SALES OF NORTH AMERICAN MURIATE OF POTASH, BY STATE OF DESTINATION¹

(Metric tons of K₂O equivalent)

State	Agricultural potash		Nonagricultural potash	
	2004	2005	2004	2005
South Carolina	61,000	52,700	98	NA
South Dakota	23,100	30,300	200	NA
Tennessee	148,000	116,000	10,600	NA
Texas	114,000	102,000	67,400	NA
Utah	2,620	2,670	82,200	NA
Vermont	2,870	2,200	30	NA
Virginia	87,600	77,200	1,320	NA
Washington	46,200	37,800	565	NA
West Virginia	1,670	1,360	970	NA
Wisconsin	205,000	225,000	97,200	NA
Wyoming	2,570	2,250	5,010	NA
Total	4,740,000	3,990,000	875,000	923,000

NA Not available. -- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

Source: Potash and Phosphate Institute.

TABLE 4
SALES OF NORTH AMERICAN MURIATE OF POTASH TO U.S. CUSTOMERS, BY GRADE¹

(Thousand metric tons of K₂O equivalent)

Grade	2004	2005
Agricultural:		
Standard	173	124
Coarse	2,390	1,130
Granular	1,710	2,280
Soluble	463	455
Total	4,740	3,990
Nonagricultural:		
Soluble	699	NA
Other	176	NA
Total	875	923
Grand total	5,610	4,910

NA Not available.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

Source: Potash & Phosphate Institute.

TABLE 5
PRICES OF U.S. POTASH, BY TYPE AND GRADE^{1, 2}

(Dollars per metric ton of K₂O equivalent)

Type and grade	2004			2005		
	January- June	July- December	Yearly average	January- June	July- December	Yearly average
Muriate, 60% K₂O minimum:						
Standard	170	190	180	185	275	230
Granular	195	225	210	300	305	300

¹Average prices, free on board mine, based on sales.

²Data rounded to nearest \$5.

TABLE 6
U.S. EXPORTS OF POTASH, BY TYPE¹

	Approximate average K ₂ O equivalent content (percentage)	Quantity (metric tons)	
		Gross weight	K ₂ O equivalent ^e
2004:			
Potassium chloride, all grades	61	184,000 ^r	112,000 ^r
Potassium sulfate	51	68,100	34,700
Potassium magnesium sulfate	22	383,000	84,200
Potassium nitrate	45	5,390	2,430
Total	XX	640,000 ^r	233,000 ^r
2005:			
Potassium chloride, all grades	61	136,000	83,200
Potassium sulfate	51	72,100	36,800
Potassium magnesium sulfate	22	356,000	78,400
Potassium nitrate	45	3,910	1,760
Total	XX	569,000	200,000

^eEstimated. ^rRevised. XX Not applicable.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

Source: U.S. Census Bureau, as adjusted by the U.S. Geological Survey.

TABLE 7
U.S. EXPORTS OF POTASH, BY COUNTRY¹

(Metric tons of product)

Country	Potassium chloride		Potassium sulfates, all grades ²		Potassium nitrate		Total	
	2004	2005	2004	2005	2004	2005	2004	2005
Argentina	19	--	5,490	3	--	--	5,510	3
Australia	--	18	14,100	24,800	--	--	14,100	24,800
Barbados	1,150	1,100	180	157	--	--	1,330	1,260
Belize	1,940	--	6	36	--	--	1,950	36
Brazil	--	25,000	5,410	10,500	7	--	5,420	35,500
Canada	4,260	2,060	74,000	76,200	1,540	846	79,800	79,100
Chile	86	--	29,900	29,800	--	--	30,000	29,800
China	2 ^r	--	25,600	28,000	20	10	25,700	28,000
Colombia	126	72	24,100	33,300	4	3	24,300	33,400
Costa Rica	1,980	6,000	39,300	40,000	--	--	41,300	46,000
Côte d'Ivoire	--	--	--	3,000	--	--	--	3,000
Czech Republic	201	320	--	--	--	--	201	320
Dominican Republic	21,100	4,000	14,900	6,000	4	5	36,000	10,000
Ecuador	7,020	18	5,500	9,010	--	--	12,500	9,030
El Salvador	4,200	6,200	2,100	2	--	--	6,300	6,200
Guatemala	9,930	6	6,810	3,000	--	--	16,700	3,010
Gutana	--	2,500	--	--	--	--	--	2,500
Honduras	4,220	--	11,000	8,510	--	--	15,300	8,510
Indonesia	--	--	5,500	--	--	--	5,500	--
India	2	--	--	--	--	2,150	2	2,150
Israel	--	--	--	935	6	--	6	935
Jamaica	10,600	--	--	--	7	--	10,600	--
Japan	5,530 ^r	40	49,600	46,700	--	1	55,100 ^r	46,700
Korea, Republic of	2 ^r	1	93	5,070	16	71	111 ^r	5,150
Malaysia	--	--	7,900	--	--	--	7,900	--
Martinique	8,300	13,900	805	3,560	--	--	9,110	17,500
Mexico	60,300	57,400	70,100	61,500	2,640	377	133,000	119,000

See footnotes at end of table.

TABLE 7—Continued
U.S. EXPORTS OF POTASH, BY COUNTRY¹

(Metric tons of product)

Country	Potassium chloride		Potassium sulfates, all grades ²		Potassium nitrate		Total	
	2004	2005	2004	2005	2004	2005	2004	2005
New Zealand	--	--	5,010	--	--	32	5,010	32
Nicaragua	2,670	4,400	1,400	3,750	--	--	4,070	8,150
Panama	12,600	10,400	1,690	1,750	--	--	14,200	12,200
Peru	30	20	14,200	20,000	--	--	14,200	20,000
Russia	--	274	--	--	6	--	6	274
Saudi Arabia	--	617	210	--	396	--	606	617
South Africa	--	--	3,260	--	--	--	3,260	--
Suriname	800	--	718	--	--	--	1,520	--
Thailand	485 ^r	258	--	--	--	--	485 ^r	258
Trinidad and Tobago	1,500	1,200	--	4	--	--	1,500	1,200
Venezuela	24,100	2	30,600	12,200	--	--	54,700	12,200
Other	685 ^r	471	1,160 ^r	806	751 ^r	412	2,600 ^r	1,690
Total	184,000 ^r	136,000	451,000	429,000	5,390	3,910	640,000 ^r	569,000

^rRevised. -- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Includes potassium magnesium sulfate.

Source: U.S. Census Bureau, as adjusted by the U.S. Geological Survey.

TABLE 8
U.S. IMPORTS FOR CONSUMPTION OF POTASH, BY TYPE¹

	Approximate average K ₂ O equivalent content (percentage)	Quantity (metric tons)		Value (thousands)		
		Gross weight	K ₂ O equivalent ^c	Customs	C.i.f. ²	
2004:						
Potassium chloride ³	61	7,880,000	4,810,000	\$686,000	\$709,000	
Potassium sulfate	51	107,000	54,500	21,200	24,800	
Potassium nitrate	45	116,000	52,400	32,900	36,900	
Potassium sodium nitrate mixture	14	41,900	5,870	11,800	14,800	
Total	XX	8,140,000	4,920,000	751,000	785,000	
2005:						
Potassium chloride ³	61	7,880,000	4,810,000	1,100,000	1,160,000	
Potassium sulfate	51	106,000	53,900	23,400	27,700	
Potassium nitrate	45	120,000	54,000	40,700	46,200	
Potassium sodium nitrate mixture	14	5,700	798	1,750	2,250	
Total	XX	8,110,000	4,920,000	1,170,000	1,240,000	

^cEstimated. XX Not applicable.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Cost, insurance, and freight.

³Contains imports listed under Harmonized Tariff Schedule of the United States code 3104.10.0000.

Source: U.S. Census Bureau, as adjusted by the U.S. Geological Survey.

TABLE 9
U.S. IMPORTS FOR CONSUMPTION OF POTASH, BY COUNTRY¹

Country	Total																
	Potassium chloride (metric tons)			Potassium sulfate (metric tons)			Potassium nitrate (metric tons)			Potassium sodium nitrate (metric tons)			Quantity (metric tons)		Value (thousands)		C.i.f. ²
	2004	2005	2004	2005	2004	2005	2004	2005	2004	2005	2004	2005	2004	2005	2004	2005	
Australia	--	2	--	--	--	--	--	--	--	--	--	2	--	\$3	--	--	\$3
Belarus	493,000	436,000	--	--	--	--	--	--	--	--	--	493,000	436,000	\$58,500	\$67,200	73,500	\$67,200
Belgium	11	--	10,400	5,520	--	7	--	--	--	--	--	10,400	5,520	2,440	2,710	1,530	2,250
Cameroon	--	17	--	--	--	--	--	--	--	--	--	--	17	--	--	6	6
Canada	7,280,000	7,030,000	18,300	13,000	--	--	1,240	1,760	7,300,000	7,040,000	616,000 [†]	972,000	628,000 [†]	1,000,000	36,500	32,700	36,500
Chile	166	--	11,400	13,300	104,000	81,500	16,500	--	115,000	94,800	32,800	30,500	36,500	14	22	16	16
China	--	--	--	--	36	18	--	--	36	18	16	14	22	668	973	--	--
Denmark	--	--	--	--	2,250	--	38	--	2,250	--	--	--	--	190	258	215	215
France	--	--	202	163	--	--	--	--	202	163	222	190	258	20,100	17,000	24,200	24,200
Germany	12,500	29,800	66,400	72,400	1,870	2,500	--	--	80,800	105,000	13,600	20,100	17,000	134	51	144	144
India	--	1	2	4	57	393	--	--	59	398	47	134	51	14,000	15,000	17,800	17,800
Israel	226	5,720	--	--	7,350	34,300	24,100	3,860	7,570	43,900	12,000	14,000	15,000	43	--	50	50
Italy	--	--	--	36	--	--	--	--	--	36	--	--	--	445	506	646	646
Japan	--	--	137	234	1,020	1,090	--	--	1,160	1,320	445	554	506	27	--	28	28
Mexico	--	39	--	--	--	7	--	--	--	46	--	--	--	2	3	15	15
Netherlands	130	165	--	--	--	--	--	1	130	166	2	14	3	88	83	108	108
Poland	--	--	--	--	198	160	--	--	198	160	73	88	83	63,300	11,100	75,000	75,000
Russia	91,500	382,000	--	--	--	--	--	44	91,500	382,000	8,720	63,300	11,100	3	--	3	3
Slovakia	--	19	--	--	--	--	--	--	--	19	--	--	--	12	15	117	117
Spain	--	--	--	1,020	13	--	--	--	--	1,020	12	112	15	160	229	314	314
United Kingdom	90	180	--	--	--	2	49	37	90	219	160	286	229	1,170,000	785,000 [†]	1,240,000	1,240,000
Total	7,880,000	7,880,000	107,000	106,000	116,000	120,000	41,900	5,700	8,140,000	8,110,000	751,000 [†]	1,170,000	785,000 [†]	1,240,000	1,240,000	1,240,000	1,240,000

[†]Revised. -- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Cost, insurance, and freight.

Source: U.S. Census Bureau, as adjusted by the U.S. Geological Survey.

TABLE 10
MARKETABLE POTASH: WORLD PRODUCTION, BY COUNTRY^{1,2}

(Thousand metric tons of K₂O equivalent)

Country	2001	2002	2003	2004	2005 ^c
Belarus ^c	3,700	3,800	4,230	4,600 ^r	4,844 ³
Brazil	319	337	416 ^r	403 ^r	405
Canada	8,237	8,515 ^r	9,093 ^r	10,114 ^r	10,120 ³
Chile ^c	390	350	370	370 ^r	370
China ^c	385	450	500	551	600
France ^c	244	130	--	--	--
Germany	3,549 ^r	3,472 ^r	3,563 ^r	3,626 ^r	3,600
Israel	1,770	1,920	1,960	2,060 ^c	2,060
Jordan	1,180	1,170	1,230	1,230 ^c	1,230
Russia ^c	4,300	4,400	4,740	5,000	5,500
Spain ^c	471	407	510	500	500
Ukraine ^c	75	60	60	50	65
United Kingdom ^c	532	540	620	600	600
United States ^{c,4}	1,200	1,200	1,100	1,300	1,200
Total	26,400 ^r	26,800 ^r	28,400	30,400 ^r	31,100

^cEstimated. ^rRevised. -- Zero.

¹World totals, U.S. data, and estimated data are rounded to no more than three significant digits; may not add to totals shown.

²Table includes data available through April 24, 2006.

³Reported figure.

⁴Rounded to within 100,000 metric tons to avoid disclosing proprietary data.