

# Mineral Industry Surveys

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## POTASH—CROP YEAR 2001

U.S. potash production was down to 1.2 million metric tons (Mt),  $K_2O$ ,<sup>1</sup> while sales declined to about 1.1 Mt, according to the U.S. Geological Survey (USGS). Apparent consumption was about the same as the previous crop year.

The USGS developed domestic potash data from voluntary semiannual surveys of U.S. operations. Seven survey requests were sent to operations for the first half of the crop year (July through December 2000) and the second half of the year (January through June 2001); six responded and the response for the seventh operation was estimated. Data from the responding sites for both reporting periods are estimated to represent more than 95% of the total output and sales. Producers were: 1) IMC Global Inc., with ores and brines in New Mexico, Utah, and Michigan; 2) Mississippi Chemical Corp., with two mines in New Mexico; 3) Reilly Industries, Inc., with a near-surface brine reserve and mill near Wendover, Utah; and 4) Intrepid Mining, LLC, owner of Moab Salt, LLC, a solution mine and mill, near Moab, UT.

Since approximately 1950, the term potash has been used to indicate potassium chloride (KCl, sylvite), potassium sulfate [ $K_2SO_4$ , or sulfate of potash (SOP), sometimes a manufactured product], and potassium-magnesium sulfate [ $K_2SO_4 \cdot 2MgSO_4$ , or langbeinite, or sulfate of potash magnesia (SOPM, or K-Mag)]. Another term for SOP is Lemery salt, and is used in China and Russia; some Spanish-speaking countries refer to SOP as Sal de Lemery. It is not clear what purity is implied by the name Lemery salt or Sal de Lemery, but the Chinese manufacturing plants report both names (potassium sulfate and Lemery salt) as saleable products, implying some difference. Muriate of potash (MOP) is an acceptable mix of potassium chloride (95% or greater) and sodium chloride, that includes minor amounts of other nontoxic minerals from the mined ore, for fertilizer use and is neither the crude ore sylvinitic nor pure

sylvite.

Domestic potash application rates from U.S. and Canadian producers were about average for the first half of the report year but fell to nearly the lowest application rates in a decade for the second half of the year. There was a price rise in the latter half of the year, e.g., for human food grains, the price index rose from 94 for January 2001 to 106 in April, (1990-92 = 100), but price index for cattle feed grains and hay stayed around 90 over the same period, which tended to suppress planting and potash application in the second half of the year (Agricultural Outlook, 2001a). By mid-year (January 2001), the U.S. farmer faced lower gross domestic product growth rates and rising credit rates. The word "recession" was mentioned but not considered probable (Agricultural Outlook, 2001b).

Exports of domestic potash declined by more than 27% from crop year 2000 while imports increased by about 2%. Exports of MOP were about 49% of the total; SOPM was about 29%; SOP was about 19%; and potassium nitrate was about 3%. Exports of MOP to all countries declined by about 37%; exports of SOP declined by about 32%, and SOPM exports declined slightly. Exports of the four types of potash to Latin America were about 63% of total exports; exports to the Asia-Pacific region were about 26%. About 12% of exports went to the rest of the world (including Canada). Exports of the four types of potash to Latin America declined by about 30%, but that region's MOP purchases from domestic producers were 42% of total exports. Latin America purchased more than 8% of the total exports as SOP and about 13% as SOPM. The Asia Pacific region purchased about 9% of total exports as SOPM while purchasing less than 11% as SOP. The United States' largest source of potash imports was Canada, totaling about 93% of imports of all types of potash, nearly all of it as MOP. Canada produced about one-third of the world's total MOP production for the calendar year 2000. Canada has two SOP manufacturers. Canada has not produced nitrates but Chilean exporters unload nitrates in a Canadian port, then tranships the

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<sup>1</sup>All tonnages are reported in metric tons,  $K_2O$  equivalent, unless otherwise noted.

nitrate across the U.S. border to northern users by truck or train, simply for convenience. Russia and Belarus were the source of about 6% of all potash imports. The remaining 1% came from several countries.

Domestic potash consumption declined slightly in this report period. At the beginning of this crop year, market prices for grain commodity crops, which consume potash, were down, reflecting world-wide grain commodity oversupply conditions.

It is expected that farmers will use even less potash next year, because they will have to contend with large grain stocks,

low prices, and little, or no, profits; there could be increased foreign demand for the domestic farmers' production of pork and poultry proteins.

### **References Cited**

Agricultural Outlook, 2001a, Farm Prices—Indexes of prices received & paid by farmers, U.S. average: Economic Research Service, U.S. Department of Agriculture. Agricultural Outlook, AGO-282, June-July, p. 35.

———2001b, Slower growth for U.S. economy in 2001: Economic Research Service, U.S. Department of Agriculture, AGO-278, January-February, p. 1.

TABLE 1  
SALIENT POTASH STATISTICS 1/ 2/

(Thousand metric tons and thousand dollars, unless otherwise specified)

	Year ending June 30		
	2000	2001	
United States:			
Production (Gross weight)	2,700	2,600	
K <sub>2</sub> O equivalent	1,300	1,200	
Sales by producers (Gross weight)	2,700	2,400	
K <sub>2</sub> O equivalent	1,300	1,100	
Value 3/	dollars	\$300,000	\$260,000
Average value per ton of product	do.	\$110	\$110
Average value per ton of K <sub>2</sub> O equivalent	do.	\$230	\$240
Exports 4/	1,000	830	
K <sub>2</sub> O equivalent	430 r/	320	
Imports for consumption 4/ 5/	7,500	7,700	
K <sub>2</sub> O equivalent	4,600	4,600	
Customs value	do.	\$550,000	\$550,000
Consumption, apparent 6/ (Gross weight)	9,100 7/	9,100 7/	
K <sub>2</sub> O equivalent	5,300 7/	5,300 7/	

r/ Revised.

1/ Includes muriate and sulfate of potash, potassium magnesium sulfate, and parent salts. Excludes other chemical compounds and mixtures containing potassium.

2/ Data are rounded to no more than two significant digits.

3/ F.o.b. mine.

4/ Excludes potassium chemicals and mixed fertilizers.

5/ Includes nitrate of potash and mixed sodium-potassium nitrate.

6/ Measured by sales plus imports minus exports.

7/ Data rounded to within 200,000 tons to avoid disclosing proprietary data.

TABLE 2  
PRODUCTION OF CRUDE ORE IN NEW MEXICO

(Thousand metric tons)

Period	Crude salts 1/ (mine production)	
	Gross weight	K <sub>2</sub> O equivalent
Crop year 2000:		
July - December 1999 2/	6,000	700
January - June 2000 2/	6,000	700
Total	12,000	1,400
Crop year 2001:		
July - December 2000 2/	6,000	700
January - June 2001 2/	6,000	700
Total	12,000	1,400

1/ Sylvinites and langbeinites.

2/ Data rounded to no more than one significant digit.

TABLE 3  
PRICES OF U.S. POTASH, BY TYPE AND GRADE 1/ 2/

(Dollars per metric ton of K<sub>2</sub>O equivalent)

Type and grade	1999		2000		2001
	January - June	July - December	January - June	July - December	January - June
Muriate, 60% K <sub>2</sub> O minimum:					
Standard	150	145	155	160	165
Granular	170	150	165	160	160

1/ Average prices, f.o.b. mine, based on sales.

2/ Data are rounded to the nearest \$5.

TABLE 4  
SALES OF NORTH AMERICAN POTASH TO U.S. CUSTOMERS, BY GRADE 1/

(Thousand metric tons of K<sub>2</sub>O equivalent)

Grade	1999		2000		2001	July 1999	July 2000
	January - June	July - December	January - June	July - December	January - June	to June 2000	to June 2001
<u>Agricultural:</u>							
<u>Muriate of potash:</u>							
Standard	150	96	125	85	113	220	198
Coarse	998	997	1,070	1,020	1,020	2,070	2,040
Granular	837	687	1,040	652	917	1,730	1,570
Soluble	235	175	234	173	231	409	404
Total	2,220	1,960	2,480	1,930	2,280	4,430	4,210
<u>Nonagricultural:</u>							
Standard muriate	316	285	285	293	305	570	598
Soluble muriate	58	66	66	81	74	132	155
Total	374	351	351	374	379	702	753

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

Source: Potash & Phosphate Institute.

TABLE 5  
U.S. EXPORTS OF POTASH 1/

(Metric tons, unless otherwise specified)

	Approximate average K <sub>2</sub> O content (percent)	July - December 2000		January - June 2001		Year ending June 30, 2001	
		Product	K <sub>2</sub> O equivalent e/	Product	K <sub>2</sub> O equivalent e/	Product	K <sub>2</sub> O equivalent e/
Potassium chloride, all grades	61	113,000	68,800	148,000	90,000	260,000	159,000
Potassium nitrate	45	12,100	5,460	6,110	2,750	18,200	8,210
Potassium sulfate	51	39,900	20,300	82,400	42,000	122,000	62,400
Potassium magnesium sulfate 2/	22	195,000	42,900	230,000	50,500	425,000	93,400
Total	XX	360,000	137,000	466,000	185,000	825,000	323,000

e/ Estimated. XX Not applicable.

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

2/ Contains exports listed under Harmonized Code Category 3104.10.0000.

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

TABLE 6  
U.S. IMPORTS FOR CONSUMPTION OF POTASH 1/

(Metric tons, unless otherwise specified)

	Approximate average K <sub>2</sub> O content (percent)	July - December 2000			January - June 2001			Year ending June 30, 2001		
		Product	K <sub>2</sub> O equivalent e/	Customs value (thousands)	Product	K <sub>2</sub> O equivalent e/	Customs value (thousands)	Product	K <sub>2</sub> O equivalent e/	Customs value (thousands)
Potassium chloride 2/ 3/	61	3,520,000	2,140,000	\$246,000	3,970,000	2,420,000	\$271,000	7,480,000	4,560,000	\$517,000
Potassium sulfate	51	23,100	11,800	4,940	75,800	38,700	14,100	98,900	50,400	19,100
Potassium nitrate	45	20,100	9,030	5,740	31,400	14,200	7,980	51,500	23,200	13,700
Potassium nitrate mixtures	14	261	37	48	15,400	2,150	2,610	15,600	2,190	2,650
Total	XX	3,560,000	2,170,000	257,000	4,090,000	2,480,000	296,000	7,650,000	4,640,000	553,000

e/ Estimated. XX Not applicable.

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

2/ Purchases of muriate by U.S. companies were subtracted from imports to prevent double counting due to conversion to sulfate of potash.

3/ Contains imports listed under Harmonized Code Category 3104.10.0000.

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

TABLE 7  
U.S. IMPORTS FOR CONSUMPTION OF POTASH, BY COUNTRY 1/ 2/

(Metric tons)

Country	Potassium chloride		Potassium sulfate		Potassium nitrate		Potassium sodium nitrate		Total		Total value (thousands)			
	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	Customs		C.i.f.	
											2000	2001	2000	2001
Belarus	96,800	196,000	--	--	--	--	--	--	96,800	196,000	\$8,100	\$16,100	\$9,330	\$18,000
Belgium	--	--	23	21	--	--	--	--	23	21	7	7	9	11
Bulgaria	1000	--	--	--	--	--	--	--	1,000	--	85	--	100	--
Canada	7,010,000	6,960,000	20,800	16,700	--	38	105	222	7,030,000	6,980,000	499,000	477,000	529,000 r/	495,000
Chile	50	--	300	13,400	19,800	44,400	9,030	15,400	29,200	73,200	7,250	16,000	8,160	17,900
Denmark	--	--	--	--	2,480	2,100	22	--	2,500	2,100	946	721	1,220	934
Germany	62	689	46,300	67,900	419	728	10	32	46,800	69,400	9,840	12,700	10,500	13,500
Israel	40	20	--	--	1110	2900	--	--	1,150	2,920	455	758	549	1060
Japan	1	333	260	758	987	891	--	--	1,250	1,980	603	846	689	956
Poland	--	--	--	--	111	131	--	--	111	131	60	73	73	84
Russia	276,000	322,000	--	--	--	--	--	--	276,000	322,000	23,300	27,700	26,700	30,800
United Kingdom	597	668	--	--	--	1	--	--	597	669	288	385	317	479
Other 3/	53	95	2	96	369	367	--	--	424	558	205	250	239	276
Total	7,390,000	7,480,000	67,700	98,900	25,300	51,500	9,170	15,600	7,490,000	7,650,000	551,000 r/	553,000	587,000 r/	579,000

r/ Revised. -- Zero.

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

2/ Crop year 2000 contains data from July 1, 1999 to June 30, 2000 and crop year 2001 contains data from July 1, 2000 to June 30, 2001.

3/ Potassium chloride includes China, France (2000), India (2001), Slovakia (2001), Spain (2000), Switzerland; potassium sulfate includes China (2000), the Dominican Republic (2001), France (2001), India (2001), the Netherlands (2001), Switzerland (2001); potassium nitrate includes the Dominican Republic (2001), Finland (2000), India, Italy (2000), Mexico, the Netherlands (2000), Spain (2000), Switzerland (2000).

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