

# POTASH

*By Jane Spooner,  
Micon International Ltd, Toronto, Canada*

**T**welve companies produce potash from operations in 13 countries but just four companies, (Potash Corp. of Saskatchewan Inc., IMC Global Inc., Belaruskali and K+S GmbH) produce around 60% of world output. Since its acquisition of the operations in both Spain (1998) and UK (2002), ICL Fertilizers of Israel has become the fifth largest producer accounting for 11% of world output. Production in Canada, Russia, Belarus and Germany, together, in 2002, accounted for over 75% of the world total.

About 93% of potash produced is used in the fertiliser industry where it is the principal source of the nutrient, potassium, which is essential for the healthy development of a range of agricultural crops. The balance is used in glass, ceramics, soaps and detergents, synthetic rubber and chemicals. In order to allow comparison of potassium content between marketable products, production and consumption are often expressed in terms of the oxide,  $K_2O$ . Most potash is produced as potassium chloride which contains 60-61.5%  $K_2O$ , although soluble grade contains a minimum 62%  $K_2O$ . Products for industrial use contain 62-63%  $K_2O$ .

Other potassium-containing salts for fertiliser use are potassium sulphate, potassium magnesium sulphate and potassium nitrate, in which the sulphate, magnesium and nitrate contents are also of value as plant nutrients. Potassium sulphate is valued for certain crops, such as tobacco, and in areas where soil salinity is high. Potassium nitrate is highly soluble allowing rapid uptake of nutrients and ease of use in liquid fertiliser products. Between 15% and 20% of primary potassium nitrate is used in industrial applications

Potash is recovered through the mining of evaporite deposits by conventional underground techniques and by solution mining. The principal ore mineral is sylvite,  $KCl$ , which generally occurs mixed with rocksalt, or halite, when it is known as sylvinite. Potassium chloride is the principal commercial potash product but a number of other minerals yield marketable salts. Langbeinite,  $K_2SO_4 \cdot MgSO_4$ , is mined in New Mexico to produce marketable potassium magnesium sulphate. Potassium sulphate is recovered from sulphate-bearing minerals, such as langbeinite, polyhalite and kainite. Potassium nitrate is recovered from caliche deposits in Chile. Surface and subsurface brines are also important sources of potash. Carnallite,  $KCl \cdot MgCl_2 \cdot 6H_2O$ , is harvested from solar evaporation pans in the Dead Sea. Potassium sulphate is recovered from the brines of the Great Salt Lake. Both potassium sulphate and nitrate also are produced as secondary salts through reaction of potassium chloride with a source of sulphur or nitrogen.

Total world potash production in 2002 is estimated at 26.9 Mt  $K_2O$  equivalent, compared to about 25.7 Mt  $K_2O$  in 2001. Canadian production increased by about 350,000 t  $K_2O$ , while Russia achieved significantly higher output. The

International Fertilizer Industry Association (IFA) estimates this represents capacity utilisation of about 72% averaged among all producers. However, while Potash Corp. of Saskatchewan (Potash Corp.) reported capacity utilisation of 53% last year, other producers were operating at or close to full capacity and continue to add incremental capacity at their facilities. Potash Corp is the industry's swing producer, but all participants recognise the need to match production with market demand which is growing at an average rate of about 2% per year.

IFA reported an estimated global export trade in potassium chloride at 21.2 Mt K<sub>2</sub>O, an increase of 5% over the previous year. Canada exported nearly 8.4 Mt K<sub>2</sub>O and Russia and Belarus together shipped 6.4 Mt K<sub>2</sub>O to world markets. Imports of potash by China, at 6.6 Mt KCl and 300,000 t potassium sulphate, were significantly higher in 2002 than in 2001, with Russia/Belarus and Canada the principal suppliers. Brazilian imports were also higher, at 4.4 Mt KCl, supplied by Canada, Israel and Germany. The Indian market showed weaker tone than either Brazil or China, but imports in 2002 are likely to exceed the level of the previous year.

Potash Corp. estimates that it owns 24% of world potash capacity, while IMC Global and Belaruskali account for around 14% and 13% each, respectively. Production capacity remains unused in Canada and, to less extent, in Russia and Belarus. For Potash Corp., this is over 3 Mt/y K<sub>2</sub>O of nameplate capacity that potentially could be brought to market to meet demand, and a further 1 Mt/y K<sub>2</sub>O for IMC Global. Since the late 1980s, Potash Corp. has been the principal swing producer, although all major suppliers actively match output to demand which can vary from year to year because of weather and economic conditions.

### **North America**

In Canada, Potash Corp. of Saskatchewan Inc. produced a total of 6.45 Mt KCl in 2002, an increase of 300,000 t from 2001. The Lanigan, Rocanville, Allan, Cory and Patience Lake mines in Saskatchewan produced 4.9 Mt KCl, and the New Brunswick operation, just under 600,000 t. In addition, the company received 950,000 t KCl from IMC Global at Esterhazy which mines and processes reserves owned by Potash Corp. under a long-term agreement. The company's total sales increased marginally in 2002 to 6.3 Mt. In contrast to the previous year, export sales were higher but domestic (North American) sales were lower in 2002. Rocanville, with the lowest cost production, worldwide, operated at 74% capacity utilisation. Overall, however, capacity utilisation was 53%, compared with 50% in 2001.

The company notes that it holds 65% of the world's excess potash capacity (mostly in Saskatchewan) and that, as demand increases, it will be able to increase production at minimal capital cost. Significant installed capacity remains unused at the Lanigan operation, although the production cost is second to that at Rocanville. Unused mill capacity is also available at the Patience Lake operation which was converted to a solution mine following a water inflow some years ago. In New Brunswick, Potash Corp. operates the Sussex mine and mill and the Cassidy Lake mill, which is used to compact

standard grade material from Rocanville. Potash Corp. has undertaken preliminary exploration near Picadilly, New Brunswick, that indicates a potentially significant new potash discovery on the southeastern flank of the geological structure which hosts its Sussex mine.

The Canadian mines of IMC Global are located at Esterhazy, Belle Plaine (solution mine) and Colonsay in Saskatchewan, with a combined annual capacity of about 8.34 Mt/y KCl. IMC completed an expansion of about 820,000 t/y KCl at the Belle Plaine and Colonsay mines in 2002. Agrium Inc. is the third producer in Saskatchewan, operating a 1.79 Mt/y KCl capacity conventional mine at Vanscoy. Production in 2002 increased to 1.53 Mt KCl. Canpotex Ltd. handles offshore export sales from Saskatchewan. In 2002, the allocation to IMC was increased to 36.67% from 34.97%, as a result of its capacity expansion. Potash Corp. accounted for 54.2% of Canpotex sales volume and Agrium for the balance (9.13%).

The Russell project in Manitoba, Canada, a joint venture between Entreprise Minière et Chimique and the provincial Government of Manitoba, remains undeveloped. It is located at the extreme southeastern edge of the potash basin close to the existing operations at Esterhazy and Rocanville in Saskatchewan.

Total US potash production is estimated to have increased by about 5% in 2002. In terms of total product, potassium chloride accounts for over 60% of output, with primary potassium sulphate and potassium magnesium sulphate accounting for the balance. Three mines in New Mexico, two operated by Mississippi Chemical and one by IMC Global, account for about 75% of total US potash production.

IMC's capacity at Carlsbad, New Mexico, is just under 1.8 Mt/y of potash products, of which approximately 400,000 t/y is potassium magnesium sulphate and an estimated similar tonnage of potassium sulphate, both recovered from langbeinite. (IMC's annual capacity, in both Canada and the US, totals 10 Mt, equivalent to 4.3 Mt K<sub>2</sub>O). In the Carlsbad operation, which integrates the former Western-Ag Minerals mine with IMC's facilities, langbeinite is hoisted through the Western-Ag Minerals shaft to a new potassium magnesium sulphate plant. Sylvinitic ore is hoisted via the original IMC shaft.

Mississippi Chemical produced 815,000 t of KCl in the year to June 2002. It operates two mines, the East and West mines near Carlsbad, New Mexico which have a combined capacity of just over 1 Mt/y. The company plans to connect the two mines underground by mid-2003 and to achieve improved ore grades, operational flexibility and economies of scale as a result. Mississippi Chemical reported 8% lower average potash sales prices in its fiscal year to June, 2002, attributed to lower sales of premium-priced industrial product and higher exports which, typically, result in lower netbacks.

Compass Minerals Group, Inc. owned by Apollo Management LP and company management (80%), with the balance held by IMC Global Inc.,

operates the Great Salt Lake potash facilities of IMC. Through Great Salt Lake Minerals, Compass is the largest North American producer of potassium sulphate from the brine evaporation facility near Ogden, Utah.

The Hersey solution mine in Michigan has a capacity of about 145,000 t/y KCl, with co-product salt. Two potash beds are mined from the evaporites of the Salina Group at depths of around 2,500 m.

Reilly Industries produces potassium chloride from subsurface brines of the Bonneville Salt Flats, near Wendover, Utah. Annual production is between 90,000 t and 135,000 t of standard and coarse grades. Intrepid Mining, LLC operates the Moab solution mine and solar evaporation complex in Utah. Potash output at Moab is less than 40,000 t/y.

IMC produced about 7.2 Mt of potash products in 2002 from its facilities in New Mexico, Michigan and in Saskatchewan, Canada, equivalent to about 4.3 Mt of K<sub>2</sub>O. Both total production and potash sales volumes were up by nearly 200,000 t in 2002, although net sales value declined slightly.

### **South America**

The Taquari-Vassouras mine in Sergipe, Brazil, owned by CVRD, operated above nominal capacity in 2002. Sales of 730,000 t KCl (440,000 t K<sub>2</sub>O) were achieved in part by drawdown of existing product inventory. The majority of output is used within Brazil where it accounts for 10-12% of domestic demand. The planned expansion, to 850,000 t/y KCl, is scheduled to come on stream in mid-2005. Investment on the expansion was US\$8 million in 2002 and US\$29.4 million is planned for expenditure in 2003. The company has also reported that it is reviewing the solution mining of carnallite and exploring the Santa Rosa de Lima sylvinite deposit.

In Chile, Sociedad Química y Minera de Chile SA (SQM) produces potassium chloride and sulphate (as well as boric acid and lithium chloride brine) from the subsurface brines of the Salar de Atacama, and potassium nitrate from the mining of caliche at Maria Elena, Pedro de Valdivia and Coya Sur. In 2002, 161,000 t of potassium sulphate and 286,000 t of potassium chloride were sold. Potassium chloride is also used internally for the production of secondary potassium nitrate. In March 2003, the SQM subsidiary, Soquimich Comercial, acquired Norsk Hydro Chile SA, subject to due diligence.

Atacama Minerals Corp. commenced production at its Aguas Blancas brine project early in 2002 and accelerated its plans to produce sodium sulphate and nitrates, in addition to iodine.

PCS Yumbes, owned by Potash Corp., operates a 285,000 t/y secondary potassium nitrate plant based on mined caliche and, since 2002, potassium chloride purchased from SQM. Co-products are 300,000 t/y sodium nitrate and 360 t/y iodine. The operation has not yet reached full capacity utilisation but will supply approximately 100,000 t/y of potassium nitrate to SQM.

Although in 2001 it was announced that an unnamed German group had become involved in the Potasio Rio Colorado solution mine project in Argentina, further news on this involvement has not been forthcoming. The project is located on the border between the provinces of Mendoza and Neuquen. A representative of the provincial government of Neuquen noted that private investors were being sought for the project and that infrastructure projects, such as a new rail link between the ports of Bahia Blanca in Argentina and Talcahuano in Chile, would benefit the development. In January 2003, a technical co-operation agreement was signed between the province of Neuquen and the Argentine state mining and geological service, Segemar, to develop a project that would be tendered to private companies. Initial production would be at 500,000 t/y KCl, increasing to 1 Mt/y within five years. Product would be shipped by truck to Huincul, a distance of 400 km and then railed to Bahia Blanca.

Also in Argentina, Admiralty Resources of Australia published a prefeasibility study in 2002 for the extraction of potassium, magnesium and lithium salts from the brines of the Salar de Rincon in the province of Salta. Located at an elevation of more than 3,000 m, the salar is close to the trans-Andean rail line and the route of a planned natural gas pipeline.

The Bolivian Government announced in March 2003 that it would restructure the Complejo Industrial de los Recursos Evaporíticos del Salar de Uyuni (Ciresu) in order to facilitate the award of concessions to private companies for the development of the metal values of the salar which include potassium, lithium, magnesium and boron.

### **Europe and Former Soviet Union**

In Germany, K+S reported that a sylvinite mining project at the Unterbreizbach mine in the Werra district is now underway following ratification of the amended treaty regarding the extraction of potash between the states of Hesse and Thuringia. Mines within the K+S group are Bergmannsseggen-Hugo and Sigmundshall near Hannover, Neuhoof-Ellers and Werra (Hattorf-Wintershall and Unterbiezsbach), located south of Kassel, and Zielitz near Magdeburg. The agreement between Hesse and Thuringia allows the operations at Unterbreizbach and Hattorf-Wintershall to become linked and to proceed with the sylvinite project for which underground development has been initiated. The higher potassium content of this ore will improve processing efficiency and, according to K+S, may also increase total output. During 2002, however, the company experienced problems with the startup of its new electrostatic kieserite (magnesium sulphate salt) separation plant at Sigmundshall. Sales of potash and magnesium products improved slightly in 2002, to €992 million. Total production was 3.5 Mt K<sub>2</sub>O. The potash and magnesium products division accounted for 44% of total revenues for K+S. Deusa International GmbH produces potassium chloride and co-product industrial magnesium chloride at its solution mine at Bleicherode.

The incorporation of UK producer Cleveland Potash Ltd as a subsidiary of Israel Chemical Ltd was completed in April 2002 after approval from the UK Secretary of State for Trade, at a final cost of approximately US\$24 million.



ICL Fertilizers now owns around 5 Mt/y of potash capacity (all potassium chloride) at Cleveland, Iberpotash in Spain and Dead Sea Works in Israel. Potash production in 2001 in the UK was reported at 890,000 t KCl and is estimated to have reached a similar level in 2002.

Since 1998, production in Spain has not exceeded 550,000 t K<sub>2</sub>O and, in 2002, is estimated to have been between 400,000 t and 425,000 t K<sub>2</sub>O. Iberpotash is owned by ICL Fertilizers which embarked on a substantial capital investment programme on acquisition of the Suria and Cabanasas/Vilafruns operations (previously known as Sallent/Balsareny). Ultimately, it is intended that output by Iberpotash will be doubled. Some €30 million will be invested at Cabanasas where two of the existing shafts are being refurbished and deepened. The Suria plant has nominal capacity of 300,000 t/y K<sub>2</sub>O, based on flotation. The Sallent plant has capacity of 400,000 t/y K<sub>2</sub>O. Although Spain is a net importer of potash, over half of output is exported.

Production in France ceased unexpectedly in October 2002, following a fire in an area of the underground workings. The Marie-Louise Ouest mine of Mines de Potasse d'Alsace had been scheduled to close in 2002, followed by Amélie in 2004. Under the long-term plan for the French potash industry, output has declined steadily over the past 10 years, as economic reserves have been mined out. Potash was discovered in the Alsace region in 1904 and, by 1914, 11 mines were operating near the town of Mulhouse. Annual production of between 1.5 and 2.0 Mt/y K<sub>2</sub>O was maintained between the late-1950s and early-1990s.

Production in Belarus is undertaken by PO Belaruskali which operates multi-shaft mining and milling complexes at Soligorsk near Minsk. Output in 2002 was 3.79 Mt K<sub>2</sub>O, an increase of about 400,000 t K<sub>2</sub>O on the previous year and, essentially, at full capacity utilisation. An investment programme of nearly US\$1.0 billion over the next eight years was approved in September 2002 by the Belarus Council of Ministers. However, this is reported as being required simply to develop resources to replace those which will be mined out over the next decade. An alternative reportedly being considered by Belneftekhim, the state petrochemical concern which owns Belaruskali, is the construction of a new mine at Krasnaja Slabada. Construction was reported to have started on the fifth mine in the Soligorsk complex. Ore will be milled at the Soligorsk 2 operation. Export sales from Belarus are conducted through International Potash Co. (IPC) which also handles product from JSC Sylvinite in Russia.

Production by JSC Sylvinite was reported at 1.96 Mt K<sub>2</sub>O, up by about 200,000 t K<sub>2</sub>O on the previous year. Operations are centred around Solikamsk, about 200 km north of Perm in the Urals. JSC Uralkali, the larger of the two Russian potash producers, produced approximately 2.4 Mt K<sub>2</sub>O last year, an increase of 18% compared with 2001. Total Russian production reached 4.44 Mt K<sub>2</sub>O, equivalent to utilisation of installed capacity of around 70%. Uralkali also has an interest of 15% in Sylvinite. Uralkali invested in new terminal facilities at St

Petersburg, with a planned ultimate capacity of 5 Mt/y potash, in addition to its traditional route through Ventspils.

Approximately 80% of Uralkali's output is exported, principally to China, India and Brazil. While Fertexim Ltd had been appointed to handle export sales for Uralkali in markets that were not covered by the marketing agreement between JSC Uralkali and Canpotex Ltd., the Canpotex agreement was terminated in April 2003, effective June 1. Potash Corp. noted that "the global potash market has grown and Uralkali has gained valuable experience in the nuances of the offshore market". Canpotex had handled approximately 2 Mt/y on behalf of Uralkali.

### **Middle East**

Production by the Dead Sea Works in Israel was just over 1.9 Mt K<sub>2</sub>O. Parent company, ICL Fertilizers, reported total production for the first nine months of 2002 at 3.3 Mt (2 Mt K<sub>2</sub>O), which included output for Cleveland Potash from May 1, 2002, as well as for Iberpotash in Spain.

In Jordan, Arab Potash Co. achieved output of 1.19 Mt K<sub>2</sub>O in 2002, unchanged from the previous year. Approximately 50% of output was exported to India and China, and a further 16% to Malaysia and the Philippines. In March 2003, further to the plans of the Government of Jordan to privatise a number of companies, it was announced that the qualified bidders for a 26% stake in Arab Potash Co. included Potash Corp., K+S, Mitsubishi Corp. and Sinochem of China. The sale is expected to be completed in the second quarter of 2003.

### **Asia**

In addition to the principal producer, Qinghai Salt Lake Industry Ltd, there are a number of smaller producers of potash in China, most of which are also based on the salt flats and brines of the Tsaidam Basin in Qinghai Province. Total output is estimated at just over 400,000 t K<sub>2</sub>O.

By 2005, Qinghai Salt Lake Industry Ltd is scheduled to complete the expansion of its operations in the Tsaidam Basin to about 600,000 t/y K<sub>2</sub>O. The project is located near Geermu on the Chaerhan salt lake. Capacity is expected to reach 500,000 t/y K<sub>2</sub>O during 2003. The second phase of the project, which will take capacity to 1.5 Mt/y potash, is in progress. Production of potassium sulphate, based on brines in the Lop Nur area, is reported to have started in 2002 at an initial rate of 20,000 t/y product. Lop Nur is an extensive area of salt pans and marshes in the Tarim Basin of Xinjiang Uygur Autonomous Region. Capacity of the plant is 200,000 t/y, operated by the Xinjiang Lop Nur Potassic Salt Scientific and Technological Development Co. It was reported in February 2003, that the Yunnan Geological and Mineral Prospecting and Engineering Corp. is involved in a joint venture with the Association of Southeast Asian Nations (ASEAN), to investigate the potash potential of Laos. The evaporite basin of northeastern Thailand extends into the province of Vientiane, Laos.

In Thailand, Asia Pacific Potash Corp. (APPC) announced in March 2003 that it would apply for a mining lease for the Udon South area of its concession agreement near Udon Thani in northeast Thailand. The company plans to produce potassium chloride at an initial rate of 1 Mt/y  $K_2O$ , ramping up to 2 Mt/y in the second phase of a 22-year mining operation. In August 2002, the Thai Minerals Act was amended to allow mining at depths over 100 m below surface, without requiring the specific consent of the holder of the surface rights and, also, removing the limit of 48 ha as the maximum size for a mining lease. Application for a mining lease must be accompanied by an environmental impact assessment. APPC has received approval of its environmental impact assessment. The procedure for application for a mining lease includes public hearings. Mining will take place at a depth of approximately 350 m and salt tailings ultimately will be backfilled underground.

Local opposition to development in the area, which is heavily dependent on agriculture, has escalated because of fears of subsidence, increased salinity that could be caused by runoff and dust from salt tailings stored on surface, as well as concern for local water resources. In 2002, APPC initiated a community relations and public consultation programme in order to address these concerns and plans to spend between US\$30 million and US\$40 million on environmental programmes. Olympus Capital Holdings Asia is the controlling shareholder in APPC. Asia Pacific Resources continues to hold a direct and indirect beneficial interest of 90% in APPC, with the balance held by the Government of Thailand.

The ASEAN Potash Mining Co. (APMC) project, at Bamnet Narong, is based on a carnallite deposit accessed by a decline. Six foreign companies responded to the company's request for expressions of interest in becoming the strategic partner for a 50% interest in the 1.1 Mt/y KCl project. Basic International Development Corp. of the US, an Israel-Japan joint venture including Bateman Engineering Ltd, Cementation Skanska of Sweden, Ferrostaal AG of Germany, a Japan-Canada joint venture including Marubeni Energy & Chemical Project Corp. and a Thailand-China joint venture, TSB Trading Co. Ltd responded to the request. APMC is currently considering the selection of one of these companies and anticipates that agreement can be reached during 2003.

### **Potash demand**

In the developed regions, potash demand is stable in Western Europe and North America. But in Central Europe, potash demand remains less than a quarter of the level in the late 1980s, and in the former Soviet Union, has continued to decline, to only 11% of the peak achieved in 1988 and 1989. In contrast, demand in developing countries increased by about 60% between 1990 and 2000 and is expected to show an average annual rate of growth of over 4% to the middle of this decade. Demand in the developing world is now moving ahead of demand in developed countries.

IFA estimated world fertiliser potash consumption in 2001 (fertiliser year to June, 2001) at 22.2 Mt  $K_2O$  and a further modest increase to 22.6 Mt  $K_2O$  in



the year to June, 2002. Demand in 2006-07 is projected at 25.3 Mt K<sub>2</sub>O, which represents average annual growth of about 2.3%.

Nitrogen, phosphate and potash are the three principal fertiliser nutrients and all are essential for plant life. While potash has been regarded as the least important of the three primary nutrients, because symptoms of potassium deficiency in plants can be subtle, it is now increasingly recognised that inadequate potash application is a limiting factor in crop production. Balanced application of nitrogen, phosphate and potash is critical to increased food production and, in many regions of the world, as a result of years of less than adequate potash application, improved potash usage is essential in order to increase food supply.

Fertiliser demand is affected by general economic conditions, by conditions in agricultural commodity markets and by the weather. In 2001/2002, these factors had differing effects in the major consuming countries and regions: in Western Europe, commodity prices were weak and grain imports increased from Eastern Europe; in Central Europe, weather conditions were favourable and farmers benefited from improved access to inputs; in North America, demand recovered slightly from the previous year when poor weather and low crop prices were unfavourable; in South America, export markets for Brazil's crops were strong but the economic situation in Argentina resulted in significant reduction in fertiliser demand; conditions in India were improved due to the weather but in China, drought affected cereal production and resulted in a significant drawdown of stocks.

The world grain stocks to use ratio is an indicator of grain prices and these, in turn, affect prices in the fertiliser markets. Grain consumption has exceeded production since the late-1990s and the stocks to use ratio is at a 20-year low, exacerbated by poor growing conditions in 2002 in the US, India and China and in other countries. Prices for certain crops, including corn, rice and palm oil increased during the year indicating higher planted acreage and fertiliser application rates in 2003. Generally, when crop prices are relatively high, farmers gain income and are able to invest in increased planted acreage, and/or apply more fertiliser, in order to improve their returns.

### **Prices**

There was little change in the benchmark price range, for standard grade potash fob Vancouver, which Fertecon reported at US\$106-129/t KCl through most of the year and into 2003. Granular grade material also remained steady at US\$113-135/t KCl.

Generally, North American producers reported weaker average unit revenues from offshore exports, although export volumes were strong. Potash Corp. reported aggressive competition in offshore markets, although its unit revenue was essentially unchanged from 2001. IMC reported a reduction of 4% in unit revenue. Arab Potash Co. also reported somewhat softer unit revenues in 2002.

Delivered prices in regional markets firmed at the beginning of 2003 reflecting both higher freight costs and anticipation of steady demand in key markets including China and Brazil. At the end of 2002, Sinochem agreed to the purchase of 2.2 Mt KCl from Canpotex, and CNAMPGC of China purchased 1.5 Mt from IPC, representing Belaruskali and Sylvinit, for delivery in 2003, all at fob prices unchanged from 2002 (delivered prices are higher, however, because of increased freight costs).

For the US market, Potash Corp. posted higher listed prices for March 2003, taking granular grade to US\$94.00/short ton, fob mine, although this is lower than the list for the same period in 2002.

## Outlook

Developments in the key import markets, China, Brazil and India, will remain important in terms of short-term potash pricing. Over the next five years, the global supply/demand balance will tighten gradually. Development of new, greenfield potash capacity will take a number of years, however, once the decision is taken to proceed with a project, and such a decision now appears likely before 2005. The need for balanced fertilisation to meet the food needs of the growing world population, indicates that the rate of demand growth could improve somewhat, particularly if potash usage rates improve in Russia.

## World Potash Production ('000 t K<sub>2</sub>O)

	2000	2001	2002 <sup>P</sup>
Belarus	3,400	3,650	3,790
Brazil	340	357	400
Canada	9,033	8,150	8,500
Chile	355	365	390
China	380	385	420
France	321	250	100
Germany	3,409	3,550	3,450
Israel	1,710	1,800	1,930
Jordan	1,180	1,197	1,190
Russia	3,680	3,750	4,440
Spain	522	471	450
Ukraine	30	30	30
UK	590	545	550
US	1,300	1,200	1,260
<b>Total</b>	<b>26,250</b>	<b>25,700</b>	<b>26,900</b>

Sources: UN Food and Agriculture Organisation; Fertecon; US Geological Survey; British Geological Survey, Corporate reports; Potash and Phosphate Institute.

P – preliminary.

<b>micon</b> <b>INTERNATIONAL LIMITED</b>	<b>mineral industry consultants</b>	<a href="http://www.micon-international.com">www.micon-international.com</a>
	<b>390 BAY STREET, TORONTO, ONTARIO, CANADA M5H 2Y2</b> Telephone 1 (416) 362-5135, Fax 1 (416) 362-5763, E-mail <a href="mailto:mail@micon-international.com">mail@micon-international.com</a> Suite 10, Keswick Hall, Keswick, Norwich, Norfolk, UK NR4 6TJ Telephone (44)(1603)-501501, Fax (44)(1603)-507007, E-mail <a href="mailto:office@micon-international.co.uk">office@micon-international.co.uk</a>	