

THE UNITED STATES

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The concept that a National Minerals Policy is needed in the US moved forward again in 2003. Members of Congress have expressed interest in developing a minerals policy, as has the Bush Administration. 2003 and 2004 were years of education and development, and legislative proposals are expected to be finalised and introduced in early 2005. The US is one of the world's richest minerals nations, there is strong public support for greater use of domestically mined minerals, and a policy (that encourages investment and development of US resources and production, while assuring environmental protection) must be developed in the years to come. Energy Policy in the form of comprehensive legislation to address energy supply, as well as conservation and efficiency, advanced through both the House and Senate in 2003 but remained stalled for political reasons in 2004. Again, this will be an issue in 2005.

Events in 2003

The US Economy, as measured by current dollar GDP, was US\$10,987.9 billion in 2003, 4.8% higher than in 2002. The rate of growth was mixed all year with a 6.5% annual growth rate in the first quarter and a 5.1% increase in the third quarter but only a 2.5 and 3.2% increase in quarters two and four respectively. Domestic production of almost all metals and minerals was approximately the same or lower in 2003 when compared with 2002, the sharpest decline being in the production of iron ore, gold and silver. The amount of copper and lead refined was also down. Steel production was up but continued to face strong competition from non-US sources. As measured by value, the demand for minerals and mineral products was just slightly above 2002 at an estimated US\$370 billion. (See Table 1). The total value of non-fuel raw minerals was unchanged in 2003 at US\$38.0 billion. The value of metals, an estimated US\$8.4 billion, saw the first increase in nearly a decade. This was due to higher prices, not higher production. The value of non-metals was down by 1.3% from 2002 at US\$29.6 billion. (Note that all 2002 data have been revised.)

The estimated value of coal, crude oil, and natural gas production was US\$176.9 billion, 40.8% above 2002 levels. This sharp increase in the value of fossil fuels production was due to a 22% increase in the average price of domestic crude and a 69% increase in the average price of natural gas at the well-head, which went from US\$2.95/Mcf in 2002 to US\$4.98/Mcf in 2003. US production of coal declined by 2.3% in 2003, production of crude oil was essentially unchanged and production of natural gas increased by 0.5%.

Employment in coal mining declined to an average 70,400 workers in 2003 as compared with 74,400 in 2002. Employment in metal mining declined to an average 26,900 (28,800 in 2002) and employment in non-metals declined to

an average 105,400 workers (versus 107,400 in 2002). The Mine Safety and Health Administration (MSHA) reported that mine fatalities declined to 56 in 2003: 30 in coal and 26 in other mines.

The producer price indexes (PPI) most closely associated with mineral products all increased in 2003 (1982=100). The PPI for metals and metal products increased by 3.1% to 129.2, reflecting an increase in the prices of some metals. The PPI for fuels and related products and power increased going from 93.2 in 2002 to 112.9 in 2003. The increase was due to the aforementioned increase in the price of natural gas and oil.

The US trade deficit in goods and services continued to climb in 2003 reaching US\$496.5 billion. The value of exports of goods and services increased by 4.6%, but the value of imports, driven by petroleum prices increased at a faster pace (8.5%). Imports of petroleum and petroleum products reversed a one year decline and increased by 6.3% to total 4,476 million barrels (Mbbl). Because the average price for crude and product increased sharply in 2003, the estimated value of these imports was US\$133.1 billion, 28% higher than in 2002. The value of exports of petroleum and petroleum products in 2003 was an estimated US\$12.7 billion. The value of coal exported totalled US\$1.5 billion, lower than in 2003, essentially the same as in 2002.

Total US trade (exports and imports) in raw minerals and processed material of mineral origin was valued at US\$106 billion in 2003. Imports of processed mineral material were valued at US\$64 billion, and exports were an estimated US\$42 billion for a mineral trade deficit of US\$22 billion, the same as in 2002. The most important sources of non-fuel mineral materials and import dependence for several commodities are listed in Table 2.

Issues in 2003

The mining industry had the same top priorities as in 2001 and 2002. The industry continued to work for a National Energy Policy that recognises the importance of coal to the US economy and a National Minerals Policy that both promotes the importance of mining metals and minerals within the US and results in responsible reform of the nation's mining law and other policies that affect mining. An energy policy to support coal, and thus affordable and reliable electricity, encompasses support for research and then development and commercialisation of the clean coal technologies that will promote greater use of coal while generating electricity more efficiently and with lower emissions. Clean coal is supported by the Bush Administration as reflected in the 2001 National Energy Policy, in the Administration's budget requests and in support for coal-based hydrogen production.

Clean coal technologies are also supported in Congress as reflected in the provision of The Comprehensive Energy Bill that passed both the House of Representatives and the Senate in 2003. Although this bill never became law, support for clean coal technologies was evident in the R&D awards made by the DOE under the Clean Coal Power Initiative and in the announcement of

the FUTURE GEN programme, an industry-government funded project to build a zero-emission power plant.

Climate change is included under the Energy Policy umbrella. In March 2001 President Bush announced that the US would not be a party to the Kyoto Protocol. Instead, the President announced that the US would embark on a long-term effort to reduce emissions that include additional research, technology development, and voluntary industry actions. During 2002, the Administration advanced the Climate Science and Technology Programme, began developing a long-term climate change research strategy, negotiated several bilateral and multilateral climate agreements, and challenged business to meet a voluntary emissions intensity reduction goal. In response to the President's challenge to the business community, the mining industry has developed the Mining Industry Climate Action plan. Details can be found on the National Mining Association web site: www.nma.org

Air issues are also closely related to Energy Policy. The Administration announced a multi-emissions proposal to amend the Clean Air Act by replacing several existing regulations on utilities with new SO₂, NO_x, and mercury reduction requirements. The mining industry supports this effort. Debate on the legislation needed to amend the Clean Air Act continued into 2003 but no progress was made. These issues are now being handled in the regulatory arena. .

On the mining side, and following a favourable Administration decision on Section 3809 regulations governing hardrock mining on federal lands, the industry began the quest for a National Minerals Policy in earnest. Although the US has a number of advantages that encourage development of resources – including a relatively strong market and government stability – there are a number of issues that must be addressed before widespread development of mineral resources can once again occur. The issues that must be addressed continue to include the complexity of US environmental regulations, and the major time delays and excessive permitting costs that are experienced when trying to develop new resources. A Minerals Policy that addresses these issues, including responsible reform of the Mining Law, would assist in encouraging mineral resource development.

Sustainable development continues as an area in which the mining industry is involved. As a response to international activities, including the 2002 World Summit on Sustainable Development, mining companies that are members of the National Mining Association unanimously adopted a sustainable development principles statement in September 2002. Most companies are publishing the results of their sustainable development activities on their company websites.

Energy ¹

The US consumed 98.188 quadrillion Btu (quads) of energy in 2003 essentially the same as in 2002. Energy use increased in all sectors of the economy with the largest increase occurring in the residential sector. Energy use for each dollar of economic activity (GDP) continued to decline and in 2003 was 9.44 thousand Btu/dollar ² of GDP, 2.9% lower than the revised 2002 estimates. The 2003 market shares for the various sources of energy were as follows: 39.8% petroleum, 23.0% natural gas, 23.1% coal, 8.1% nuclear, 2.8% hydroelectric and 3.2% from geothermal, wind, biomass, solar and other renewable sources. Domestic production of energy supplied 70.3 quads and net imports added another 27.0 quads. Changes in stocks of fossil fuels accounted for the small difference between consumption, production, and net imports.

According to preliminary data, domestic production of crude oil continued its decade long decline again in 2003. After a small decline in 2002, revised data show that imports of crude oil and petroleum products jumped by 6.4% in 2003 to 12.26 Mbbl/d. At year-end, 638 Mbbl were stored in the Strategic Petroleum Reserve. Natural gas production, on a dry basis, totalled 19,068 billion ft³, slightly higher than in 2002 but still well below 2000 and 2001 levels. Net imports of natural gas declined for the second year in a row to 3,236 billion ft³, 7.5% lower than in 2002. Consumption declined by 4.6% in 2003 due to high natural gas prices. Approximately 87% of US natural gas imports are from Canada.

Coal production declined again in 2003 totalling 970 Mt, 2.3% lower than in 2002. Coal had an estimated value of US\$19.7 billion. About 66% of this production came from surface mines and 34% came from underground mines. Western production (which is primarily from the Powder River Basin that is located in Wyoming and Montana) accounted for 56% of US coal production. There are approximately 1,500 coal mines in the US. The number of mines is declining, but the average size of a mine has nearly doubled over the past decade.

Coal production levels declined in all regions in 2003 with the most significant reductions occurring in the Appalachian region where mines were closed due both to market conditions and for permitting reasons. Demand, however, increased with the difference made up by an increase in imports and a drawdown of stockpiles. The only major coal-producing states to experience an increase in production in 2003 were Wyoming and Texas. Production declined most sharply in West Virginia, Pennsylvania, and Kentucky. The states with the largest coal production are Wyoming with 340.5 Mt and West Virginia with 125.6 Mt. Estimated productivity in 2003 increased slightly to 6.3 Mt/h.

¹ All 2002 energy data have been revised by the DOE's Energy Information Administration.

² 2000 'chained' dollars

Domestic coal consumption in 2003 reached an estimated 992.2 Mt, an all time high. Use of coal by steel mills increased as did coal use by electric generators. This sharp increase (almost a 20 Mt jump) reflects the increase in the cost of natural gas and concern about its availability. A total of 936.5 Mt was used to generate electricity by electric utilities and by combined heat and power facilities (approximately 52% of US 2002 electrical production was from coal). The industrial sector consumed another 31.2 Mt and 22.0 Mt was used for coking. Together, the commercial and retail sectors consumed 2.6 Mt. Coal stockpiles declined by nearly 20 Mt.

The US exported 38.9 Mt of coal in 2003 the first year since 1995 that exports have increased. Shipments to Europe declined but were offset by the increase in exports to Canada. Exports of metallurgical coal to both Japan and South Korea were again zero and metallurgical coal shipments to Brazil continued to decline. Steam coal exports to all regions declined with the exception of exports to Canada. These jumped sharply: in 2003 over 80% of all US steam coal exported went to Canada. Coal imports, primarily from Columbia, Venezuela, and Indonesia in the form of low-sulphur steam coal for utilities in Florida, increased by over 50% to an all-time high of 22.7 Mt.

Iron, steel, and ferro-alloys

Raw steel production in 2003 was 93.7 Mt, 2.3% above production in 2002. The increase in production was during the first six months of 2003. During the second half of the year production was 6.2% lower than during the second half of 2002. Raw steel is produced either in basic oxygen furnaces in integrated mills or in electric arc furnaces in minimills. Steel production in basic oxygen furnaces continued to decline in 2003, to 49% of the total. Electric arc furnace production was 51.0% of the total. Continuous casting accounted for 97% of processed steel production. Capacity utilisation declined to an average 84.9% in 2003. The US had approximately 9.7% of worldwide production in 2002.

Although production in 2003 was higher than in either 2001 or 2002, raw steel production is still well below the record levels of 2000 and, as mentioned, production in the second half of 2003 was relatively weak. In the spring of 2001, at the request of the steel industry, the US Department of Commerce agreed to an investigation of alleged dumping of steel into the US market. In March 2002 a decision was made to impose tariffs of 8% to 30% on imports of a large number of steel products from a selected set of countries. These tariffs were challenged by a number of countries and in September 2003 the WTO concluded that these '201' tariffs violated global trading rules. In December 2003, President Bush decided to drop these tariffs. A monitoring system was initiated early in 2004.

Steel mill products shipped totalled 96.1 Mt in 2003, up 6% over shipments in 2002. Carbon products made up the bulk of the shipments. Alloy and stainless shipments totalled 5.4 Mt and 2.2 Mt respectively. Due to the tariffs that were in effect the entire year, imports of steel-mill products declined by 30% to 21.0 Mt or to 15.8% of total steel supply. Apparent consumption of steel was 104 Mt.

Reported consumption of iron and steel scrap was 69 Mt, identical to scrap consumption in 2002. The US remained a net exporter of scrap in 2003. The total value of purchased scrap and exports was US\$7.6 billion, up 41% from 2002. This reflected a sharp increase in the average prices for scrap. Iron and steel slag used or sold in 2003 was 19 Mt valued at about US\$300 million. Although the amount sold was the same as in 2002, the value was nearly double.

In 2003, 11 mines, eight concentrating plants, and eight pelletising plants shipped 48.5 Mt of usable iron ore worth US\$1.2 billion to customers in the US and abroad. This was 5.8% lower than shipments in 2002, primarily because one plant was closed from May through December. Imports were higher in 2003. The effects of the growing demand for iron ore in China has finally reached the US. The State of Minnesota is helping facilitate the permitting and construction of a new iron briquetting plant, the first to be built in the US in many years.

There was no domestic production of chromium, manganese, nickel, cobalt, tungsten, or vanadium in 2003. US molybdenum production, reflecting stronger copper production in the second half of the year, increased for the first time since 1997 totalling 33,700 t valued at US\$342 million (based on average oxide prices). US production accounted for 27% of estimated worldwide production in 2002. The iron and steel industry continues to be the largest customer for molybdenum, consuming about 75% of US production. Molybdenum exports were 32,300 t. Based on contained metal, net imports of chromium totalled 328,000 t, manganese 812,000 t, cobalt 5,500 t, primary, and secondary nickel 88,770 t, tungsten 7,590 t, and vanadium 790 t.

Light metals

Aluminium: Primary production totalled 2.7 Mt, with an estimated value of US\$4 billion, roughly 10% of worldwide production. Aluminium production in the US declined in 2001 due to production cutbacks caused by higher energy prices and reduced energy supplies in the Pacific Northwest, and has yet to recover. Six smelters idled in 2001 have yet to be re-opened. In 2003, 1.2 Mt was recovered from old scrap. The US imported 4.3 Mt, which was partially offset by 1.5 Mt of exports. Consumption of aluminium increased by only 3.0% to 6.5 Mt. Transportation accounted for 35%, packaging 24%, building 16%, electrical 7%, consumer durables 8%, and 10% went for other uses. Bauxite is no longer mined in the US and thus US primary aluminium production came entirely from the 8.3 Mt of imported bauxite (of which 90% went to the production of alumina) and the 1.3 Mt net imports of alumina.

Magnesium: The producer of primary magnesium metal in the state of Washington closed in 2001 leaving only one company in Utah, which recovers magnesium metal from brines from the Great Salt Lake. This company is in the process of increasing its capacity to 60,000 t/y, but no date is set for completion of the project. As there is now only one producer, neither actual production amounts nor value is available from published sources. Consumption continued to increase due to the increase in the use of

magnesium in the production of automobiles. Recovery of old scrap supplied 26,000 t of magnesium metal and net imports totalled 58,000 t.

Titanium: Only two firms produce titanium sponge metal in the US, in Nevada and Utah, and thus mine production and primary metal production is not available. Most titanium is consumed as titanium dioxide (TiO₂) pigment. Four companies produced 1.41 Mt of TiO₂ pigment in 2002 valued at US\$2.8 billion. Imports of sponge metal were 10,000 t and exports were 5,150 t. TiO₂ exports were 590,000 t. Consumption of sponge metal declined in 2003 to 16,500 t due to lower demand from commercial aircraft manufacturers that use approximately 55% of the sponge metal used in the US. The remainder is used in the chemical process industry, and in the power generation, marine, ordnance, medical and other non-aerospace industries. TiO₂ consumption was 1.07 Mt, 53% in paints, varnishes and lacquers, 27% in plastics and 26% in ceramics, coated fabrics, printing ink, paper and other uses.

Non-ferrous metals

Copper: Copper production declined for the seventh consecutive year in 2003, totalling 1.12 Mt, 1.7% below 2002 levels. The value of production was an estimated US\$2.0 billion. US production represented 8.0% of worldwide output in 2003. Refined copper production also declined in 2002 to 1.27 Mt. Old scrap provided 210,000 t, with net imports (ores and concentrates, refined and unmanufactured) totalling 1.2 Mt. Apparent consumption was 2.3 Mt – 46% in building construction, 23% electric and electronic products, 10% in industrial machinery and equipment, 11% transportation equipment and 10% consumer and general products. Average copper prices, which had declined in both 2001 and 2002 strengthened in 2003.

The production cut-backs of 2001 and 2002 were beginning to be reversed by the end of 2003 in response to higher prices.

Lead: Mine output in 2003 was 449,000 t, 2.0% higher than in 2002. Mine output had a value of approximately US\$435 million. US output represented approximately 16% of worldwide production. Old scrap provided over 1.1 Mt. The US was a net exporter of lead in concentrates; net exports were 160,000 t. Apparent consumption was 1.5 Mt, with 76% used in batteries, fuel tanks, solder, seals and bearings, and 22% used in electrical, electronic, communications, ammunition, television glass, construction, and protective coatings. The remaining 2% was used in weights, crystal glass, tubes and containers, type metal, foil, wire and specialised chemicals. Demand for automotive (replacement batteries) was lower again in 2002, as was demand for new car batteries and for batteries for use in the telecommunications and computer industries.

Zinc: Ten mines produced 738,000 t valued at about US\$664 million in 2003. This was approximately 9.0% of estimated worldwide production. Old scrap provided 50,000 t and net imports reached 109,000 t. The trade data are affected because production in Alaska is processed in Canada and then shipped to the US for use, thus counting both as an export and an import. Consumption of all forms was 1.1 Mt with 55% used in galvanizing, 17% in

zinc-based alloys, 13% in brass and bronze, and 15% going for other uses. Over the past three years, five underground mines have been permanently closed and three have been put on a standby basis.

Precious metals

Gold: Mine production was 276 t, nearly 8% below production in 2002. Production was valued at over US\$3 billion. US production was approximately 10.2% of worldwide production. Exports of refined gold, based on revised data, were 320 t in 2003. Domestic output continued to be centred in Nevada, California and Alaska, with 80% of 2002 mine production located in those states. Between July 2002 and June 2003 two gold mines were closed. There were no new mines opened in this time frame. Mergers and acquisitions continued, as did the trend toward larger mines. It is becoming more difficult in the US to replace annual production with new reserves. Exploration expenditures of US producers declined for the fifth straight year but by the end of 2003 were showing some strength due to increasing prices for gold.

Silver: Silver mines in the US produced 1,300 t in 2002, approximately 14% below production in 2002. Precious metal ores accounted for about one half of production, the remainder was recovered as a byproduct from the processing of copper, lead and zinc ores. Silver was valued at US\$184 million, and US production represented nearly 6.8% of worldwide production. About 1,100 t of silver was recovered from new and old scrap. The US was a net importer of silver in 2002, importing 3,300 t while exporting only 320 t. In 2000, the US Government disposed of the remaining silver held in the National Defense Stockpile, selling it to the Department of the Treasury for coinage. Demand for silver from the electronics and photographic industries continued to decline during the year as digital imaging has affected silver demand in this market.

Platinum group metals: In 2003, ore containing 4,100 kg of platinum (just under 2.2% of worldwide production) and 14,600 kg of palladium (8.5% of worldwide production) was mined, concentrated and smelted and the matte exported for refining. US production of both platinum and palladium continued to be at near record levels again in 2002. There is only one primary PGM producer in the US. Recycling provided 6 t and net imports were 160,000 kg. The automotive industry is the principal consumer of PMG as oxidation catalysts in catalytic converters. PGMs are also used in jewelry and cancer chemotherapy.

Sources: US. Department of Commerce: Bureau of the Census, Bureau of Economic Analysis; US Department of Defense: Defense Logistics Agency; US Department of Energy: Energy Information Administration; US. Department of the Interior: US Geological Survey; US Department of Labor: Bureau of Labor Statistics; and various publications of the National Mining Association

Tables 1-5 following pages.

Table 1. US metal and mineral production

		2001*	2002*	2003*	% change
Value of non-fuel processed minerals	US\$ billion	374.0	366.0	370.0	1.09%
Value of non-fuel raw minerals	US\$ billion	39.0	38.0	38.0	0.00%
of which: non-metallics	US\$ billion	29.9	30.0	29.6	-1.33%
metals from US ores	US\$ billion	9.1	8.0	8.4	5.00%
Coal (anthracite, bituminous, lignite)	Mt	1,023.0	992.7	970.2	-2.27%
Steel (raw)	Mt	90.1	91.6	93.7	2.29%
Steel mill products (shipments)	Mt	90.2	90.0	95.8	6.44%
Iron and steel castings (shipments)	Mt	9.1	9.1	8.8	-3.30%
Iron ore (production)	Mt	46.1	51.5	48.5	-5.83%
Iron (purchased scrap)	Mt	55.0	56.0	57.0	1.79%
Aluminium (primary)	'000 t	2,637.0	2,707.0	2,703.0	-0.15%
Aluminium (secondary from scrap)	'000 t	1,210.0	1,170.0	1,160.0	-0.85%
Copper (mine)	'000 t	1,340.0	1,140.0	1,120.0	-1.75%
Copper (refined-primary)	'000 t	1,630.0	1,440.0	1,290.0	-10.42%
Copper (refined-secondary)	'000 t	172.0	69.9	53.3	-23.75%
Lead (mine)	'000 t	454.0	440.0	449.0	2.05%
Lead (refined-primary)	'000 t	290.0	262.0	240.0	-8.40%
Lead (refined-secondary)	'000 t	1,100.0	1,120.0	1,150.0	2.68%
Zinc (mine- recoverable)	'000 t	799.0	754.0	738.0	-2.12%
Zinc (smelters- refined)	'000 t	311.0	259.0	272.0	5.02%
Magnesium	'000 t	W	W	W	0.00%
Titanium (mill product shipments)	t.	27.9	19.9	21.1	6.03%
Molybdenum (mine)	'000 t	37.6	32.6	33.7	3.37%
Nickel (plant production)	'000 t	0.0	0.0	0.0	0.00%
Antimony (primary)	'000 t	18.0	W	W	0.00%
Mercury (secondary)	t	NA	NA	NA	0.00%
Tin (secondary from scrap)	'000 t	13.9	10.0	10.8	8.00%
Gold (mine)	t	335.0	298.0	276.0	-7.38%
Gold (secondary)	t	83.0	89.0	95.0	6.74%
Silver (mine)	'000 t	1.6	1.4	1.2	-14.29%
Silver (secondary)	'000 t	1.1	1.0	1.1	10.00%
Platinum group metals (mine)	thou. kg	15.7	19.2	18.7	-2.60%

Sources: US Geological Survey: *Minerals Commodity Summaries 2004, Monthly*

The US Department of Energy

W = Withheld to avoid disclosing company data NA = Not available

* Revised ** Preliminary

**Table 2 US 2003 net import reliance
For selected non-fuel mineral materials**

Commodity	%	Major Sources (1999-2002)*
Arsenic (trioxide)	100	China, Chile, Mexico
Asbestos	100	Canada
Bauxite and Alumina	100	Australia, Guinea, Jamaica, Surinam
Columbium (niobium)	100	Brazil, Canada, Germany, Estonia
Fluorspar	100	China, South Africa, Mexico
Graphite (natural)	100	China, Mexico, Canada, Brazil
Indium	100	China, Canada, France, Russia
Manganese	100	South Africa, Gabon, Australia, Mexico
Mica sheet (natural)	100	India, Belgium, Germany, China
Quartz Crystal	100	Brazil, Germany, Madagascar
Rare Earths	100	China, France, Japan, Estonia
Rubidium	100	Canada
Strontium	100	Mexico, Germany
Thallium	100	Belgium, Canada, France, Russia, UK
Vanadium	100	South Africa, Czech Republic, Canada, China
Yttrium	100	China, Japan, Germany, Netherlands
Gemstones	99	Israel, India, Belgium
Platinum	96	South Africa, UK, Germany, Canada
Bismuth	95	Belgium, Mexico, China, UK
Tin	91	Peru, China, Indonesia, Brazil, Bolivia
Stone (dimension)	86	Italy, Canada, India, Spain
Barite	81	China, India, Morocco
Diamond (natural industrial stone)	80	Switzerland, Russia, UK, Ireland
Potash	80	Canada, Russia, Belarus, Germany
Tantalum	80	Australia, Canada, China, Kazakhstan
Cobalt	78	Finland, Norway, Russia, Canada
Phenium	76	Chile, Kazakhstan, Germany
Chromium	74	South Africa, Kazakhstan, Zimbabwe, Turkey, Russia
Iodine	74	Chile, Japan, Russia
Palladium	74	Russia, South Africa, UK, Belgium
Titanium (sponge)	73	Japan, Kazakhstan, Russia
Titanium Mineral Concentrates	70	South Africa, Australia, Canada, Ukraine
Tungsten	69	China, Russia, Canada
Zinc	57	Canada, Mexico, Peru
Garnet (industrial)	56	Australia, India, China
Silver	56	Mexico, Canada, Peru, UK
Peat	55	Canada
Silicon	54	Norway, South Africa, Russia, Canada
Magnesium Compounds	51	China, Australia, Canada, Austria
Nickel	48	Canada, Norway, Russia, Australia
Beryllium	47	Japan, Kazakhstan, Russia, Brazil
Manganese Metal	47	Canada, China, Russia, Israel
Nitrogen (fixed), Ammonia	42	Trinidad and Tobago, Canada, Russia
Aluminum	41	Canada, Russia, Venezuela, Mexico
Diamond (dust, grit, powder)	39	Ireland, China, Ukraine
Copper	38	Canada, Peru, Chile, Mexico
Pumice	29	Greece, Italy, Turkey
Perlite	28	Greece
Vermiculite	28	South Africa, China

Mining Annual Review 2004

Gypsum	23	Canada, Mexico, Spain
Salt	23	Canada, Chile, Mexico, The Bahamas
Cement	20	Canada, Thailand, China, Venezuela, Greece
Sulfur	20	Canada, Mexico, Venezuela
Iron Ore	11	Canada, Brazil, Australia, Venezuela
Lead	11	Canada, China, Mexico, Australia
Phosphate Rock	10	Morocco
Iron and Steel	9	European Union, Canada, Mexico, Japan
Talc	8	China, Canada, France, Japan
Mica sheet (natural)	7	Canada, India, China, Argentina
Iron and Steel Slag	6	Italy, France, Japan, Canada
* countries listed in descending order of importance		
Source: US Geological Survey. <i>Mineral Commodity Summary 2004</i>		

Table 3 Special property metals
(metric tons except where noted)

	US Mine	Production	%Change from 2002
	2002 (r)	2003(p)	
Beryllium	80	100	25.0%
Cadmium (refinery production)	700	640	-8.6%
Cobalt (secondary)	2,800	2,200	-21.4%
Germanium (refinery products) (kg)	15,000	12,000	-20.0%
Rare Earth Oxides	5,000	-	-100.0%
Rhenium (kg)	4,400	4,600	4.5%

Data on production of Lithium, Selenium and Tellurium are withheld.

There was no 2002 or 2003 production of Antimony, Mercury or Scandium.

Source: US Geological Survey. *Mineral Commodity Summaries, 2004*

(p) Preliminary.

Table 4 Non-metallic minerals*

(thousand metric tons unless otherwise noted)

	US mine production 2002 ^(r)	US mine production 2003 ^(p)	% Change from 2002
Asbestos	3	-	-100.0
Barite	420	480	14.3
Boron	518	536	3.5
Bromine	222	216	-2.7
Cement	89,732	91,000	1.4
Clays	39,300	39,300	0.0
Diatomite	624	625	0.2
Feldspar	790	800	1.3
Garnet	38	39	2.6
Graphite (natural)	-	-	0.0
Gypsum (crude)	15,700	16,000	1.9
Iodine ('000 kg)	1,420	1,750	23.2
Iron and Steel Slag	19,000	19,000	0.0
Kyanite	90	90	0.0
Lime	17,900	18,200	1.7
Magnesium Compounds (Mg content)	312	285	-8.7
Mica (scrap and flake)	81	98	21.0
Peat	642	618	-3.7
Perlite	521	562	7.9
Phosphate Rock	36,100	33,300	-7.8
Potash (K ₂ O)	1,200	1,100	-8.3
Pumice	956	914	-4.4
Salt	40,300	41,200	2.2
Sand and Gravel (construction) (Mt)	1,130	1,130	0.0
Sand and Gravel (industrial)	27,300	28,300	3.7
Soda Ash	10,500	10,600	1.0
Sodium sulfate	500	500	0.0
Stone, Crushed (Mt)	1,520	1,490	-2.0
Stone, Dimension	1,260	1,350	7.1
Sulfur (Recovered)	8,500	8,800	3.5
Sulfur (other)	772	750	-2.8
Talc and Pyrophyllite	775	817	5.4
Titanium Dioxide (TiO ₂) (mfg.)	1,410	1,410	0.0
Vermiculite	-	100	-
Zircon	100	100	0.0

(r) = Revised. (p) = Preliminary.

Source: US Geological Survey. *Minerals Commodity Summaries, 2004*

Table 5 Old scrap reclaimed 2003

	t (p)	% of apparent Consumption
Aluminium	1,120,000	17%
Chromium	127,900	26%
Cobalt	2,200	28%
Copper	210,000	9%
Gold (old + new)	95	50%
Iron and Steel Scrap	76,000,000	100%
Lead	1,100,000	77%
Magnesium	26,000	22%
Mercury	NA	100%
Nickel	92,900	57%
Platinum Group (old + new)	70	NA
Silver (old + new)	1,100	20%
Tin	4,000	9%
Tungsten	4,300	37%
Zinc	50,000	4%
Plus minor percentages of several other metals.		
Source: US Geological Survey. <i>Minerals Commodity Summaries, 2004</i>		
n.a. = Not available (p) = Preliminary.		