

# Mineral Industry Surveys

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## ZINC IN MAY 2003

Domestic mine production in May, at 67,800 metric tons (t), was more than 20% higher than in April and about 2% higher than in May 2002. Smelter production, at 22,400 t, was about 3% lower than in April but was nearly 24% higher than a year before. Apparent consumption, at 80,600 t, was about 1% higher than during the previous month, but was nearly 58% lower than in May 2002.

The Platts Metals Week average monthly composite price for North American Special High grade zinc increased by about 3% to 38.18 cents per pound in May, about the same as in May 2002.

Pasminco Ltd. closed its Gordonsville Mine in Smith County, TN on May 9th when the new Cumberland orebody did not prove to be economically viable. The Clinch Valley Mine in Grainger County, TN, is expected to continue operation for 1 more year. Both mines have supplied all their zinc concentrate output to Pasminco's 125,000-metric-tons-per-year (t/yr) Clarksville smelter, which is also located in Tennessee. The Gordonsville Mine produced 11,000 t and 51,500 t of zinc in concentrate during the first quarter of this year and in 2002, respectively (CRU International Ltd., 2003a).

The Society of Toxicology and Chemistry (SETAC) sponsored a workshop to evaluate the current science used to assess the hazard of metals and inorganic metal substances. Hazard identification and classification procedures used in many countries are currently based upon persistence, bioaccumulation, and toxicity (PBT) criteria, originally developed for organic substances. The workshop, held in Pensacola, FL, from 3-8 May, 2003, concluded that applying PBT to metals and inorganic substances have significant limitations. Traditional degradation processes used for organic substances to evaluate persistence (biodegradation) are not applicable to metals. Bioconcentration factors are inversely related to exposure concentration and may not be reliable predictors of concern for chronic toxicity or food chain accumulation. Metal elements and some inorganic metal compounds are not readily soluble and many organisms appear to regulate metal accumulation to some extent. In conclusion, the workshop recommended a new approach that integrates environmental chemistry, bioaccumulation, and toxicity. A critical load calculation was

proposed as a means of assessing the significance of bioaccumulation and toxicity in terrestrial and aquatic environment (ILZRO Environmental Update, 2003).

Xstrata plc of Switzerland closed its Reocin Mine in Spain, due to exhaustion of reserves. The closure was anticipated for a long time, although it occurred sooner than expected. Due to technical difficulties the closure date was moved forward from July to May (CRU International Ltd., 2003b).

Western Metals Ltd. of Australia has decided to place its Kapok lead-zinc mine in Western Australia on care and maintenance. The decision is the result of the rising Australian dollar against the U.S. dollar and continued low zinc prices. Kapok, which is part of the company's Lennard Shelf operations, produced 384,000 t of ore during the first 9 months of fiscal year 2003, containing 24,400 t of zinc (Platts Metals Week, 2003d).

According to the CHR Metals Ltd. consulting firm in the United Kingdom, China's zinc industry has responded to the pressures of the global economy and its impact on metal markets. During the past year, many previous production cuts in zinc smelting have been maintained, limiting the growth of zinc metal production below the growth of domestic consumption. However, some privately owned, modern, medium-sized smelters are beginning to emerge in China (Metal-pages, 2003a<sup>1</sup>). One of these companies is the Shaanxi Dongling Zinc Industry Co. based in the northern province of Shaanxi, which started to build a 100,000-t/yr zinc plant expected to be completed by 2005 (Metal-pages, 2003c<sup>§</sup>).

Kumba Resources Ltd. of South Africa agreed with Chifeng Hongye Zinc Smelting Co. Ltd. and Chifeng Baiyinnuoer Lead Zinc Mine Co. Ltd. of China to expand and jointly operate the Hongye Zinc Refinery at Chifeng and the Lindong Roaster at Lindong. The projects are located in the Inner Mongolia Autonomous Region, some 350 kilometers (km) and 700 km, respectively, northeast of Beijing. Expansion to 50,000 t/yr should be completed by January 2004 and operations will be

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<sup>1</sup>References that include a section mark (§) are found in the Internet References Cited section.

under Chifeng Kumba Hongye Zinc Corp. Ltd. (Metal-pages, 2003b).

Sichuan Hongda Chemical Industry Co. Ltd. of China is preparing plans for a new 200,000-t/yr zinc smelter in Yunnan Province after acquiring the state-owned Yunnan Lanping Mine Co. for \$120,000. The acquisition will guarantee a secured feed for the new smelter, which is to be located in Lanping. Construction is expected to start during the second half of 2003, pending final approval from the Chinese Government. Part of the concentrate will be transported to Sichuan Hongda's newly expanded smelter in the company's home province of Sichuan (Metal Bulletin, 2003).

### Update

The U.S. Bankruptcy Court for the Southern District of New York authorized the sale of the idled Balmat zinc mine in New York to St. Lawrence Zinc, Delaware-based subsidiary of Canada's OntZinc Corp. The price for the Balmat Mine, owned by the Zinc Corp. of America (a subsidiary of Horsehead Industries Inc.), was \$20 million, payable from operating profit after the mine reopens. The sale is scheduled for June 30, by which time OntZinc expects to secure a bridge loan for closing expenditures, for standby costs at the mine, interest, and for the assumption of a \$1 million environmental bond. Financing for the reopening of the mine is expected to come from the issuance of New York State bonds (Platts Metals Week, 2003c).

SUN Capital Partners, an affiliate of the SUN Group, has offered to buy Horsehead Industries for \$88.7 million. Horsehead was originally established in 1996 to make direct investments in the countries of the former Soviet Union. During the past few years, the company had begun leveraged buyouts of mid-size companies in the United States. The purchase of the Horsehead Industries has to be approved by the U.S. Bankruptcy Court for the Southern District of New York where Horsehead filed for bankruptcy protection in August 2002. The bid would allow SUN to purchase all the operating assets of Horsehead Industries, except the Balmat Mine. These assets include Zinc Corp. of America (ZCA), Horsehead Resource Development (HRD) Co., and ZCA Powders, employing a total of about 1,000 people. ZCA operates the largest zinc recycling facility in the United States, the 180,000-t/yr smelter in Monaca, PA. HRD operates flue dust recycling facilities in Palmerton, PA; Rockwood, TN; Calumet, IL; and Beaumont, TX. Sun Capital Partners is a private investment concern headquartered in Florida with investments in about 50 companies that have combined revenues in excess of \$5 billion (Metal Bulletin, 2003).

Falconbridge Ltd. will close its Kidd smelter in Timmins, Ontario, from June 29 to September 30. The extended shutdown is necessitated by persistently low treatment charges, unfavorable currency exchange rates, and high energy costs relative to concentrate purchases and metal sales.

Consequently, total zinc production for 2003 has been revised down to 110,000 t from 145,000 t. The closure will result in the layoff of about 295 workers, some of whom may perform scheduled annual maintenance work or may be reassigned to other Falconbridge divisions (Metal-pages, 2003).

Consolidated Broken Hill (CBH) Co. Ltd. and Pasminco Ltd. agreed to extend the closing date for CBH to purchase the Elura zinc-lead mine in New South Wales. The delay will allow CBH to finalize insurance and labor agreements (Platts Metals Week, 2003a). CBH has already reached an agreement with the Japanese smelting company Toho Zinc Co. Ltd. for sale of Elura concentrate. The deal does not cover concentrate already committed to Pasminco's Hobart and Port Pirie smelters. The Toho deal is based on ore output of up to 1.4 million metric tons per year and excludes any additional concentrate produced if CBH boosts Elura's production (Platts Metals Week, 2003b).

Shareholders in the Australian diversified mining company MIM Holdings Ltd. approved the takeover by Xstrata plc of Switzerland despite the opposition by MIM's managing director. Nearly 90% of the shareholders participated, and of those that voted, more than 58% were in favor of the takeover. The takeover was subject to approval by the Queensland Supreme Court (Mining Journal, 2003).

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TABLE 1  
SALIENT ZINC STATISTICS<sup>1</sup>

(Metric tons, unless otherwise specified)

	2002	2003			January- May
	January- December	March	April	May	
<b>Production:</b>					
Mine, zinc content of concentrate	874,000 <sup>†</sup>	65,300	56,300	67,800	320,000
Mine, recoverable zinc	754,000 <sup>†</sup>	62,700	54,000	65,200	307,000
Smelter, refined zinc	259,000	21,700	23,000	22,400	115,000
<b>Consumption:</b>					
Refined zinc, reported	421,000	34,400	35,200 <sup>†</sup>	34,600	170,000
Ores <sup>e</sup> (zinc content)	727	61	61	61	303
Zinc-base scrap <sup>e</sup> (zinc content)	189,000	15,900	15,900	15,900	79,400
Copper-base scrap <sup>e</sup> (zinc content)	176,000	14,700	14,700	14,700	73,400
Aluminum-and magnesium-base scrap <sup>e</sup> (zinc content)	1,430	120	120	120	598
Total <sup>e</sup>	789,000	65,100	66,000	65,300	324,000
Apparent consumption, metal <sup>2</sup>	1,150,000	83,500	79,500 <sup>†</sup>	80,600	447,000 <sup>3</sup>
<b>Stocks of refined (slab) zinc, end of period:</b>					
Producer <sup>4</sup>	XX	6,110	8,340	7,300	XX
Consumer <sup>5</sup>	XX	55,200	56,700	55,700	XX
Merchant	XX	11,300	10,600 <sup>†</sup>	9,990	XX
Total	XX	72,600	75,600 <sup>†</sup>	72,900	XX
Shipments of zinc metal from Government stockpile	5,040	--	200	997	1,710
<b>Imports for consumption:</b>					
Refined (slab) zinc	874,000	59,400	54,600	NA	257,000 <sup>6</sup>
Oxide (gross weight)	69,700	6,900	8,260	NA	28,400 <sup>6</sup>
Ore and concentrate (zinc content)	122,000	2,480	13,300	NA	26,000 <sup>6</sup>
<b>Exports:</b>					
Refined (slab) zinc	1,160	128	167	NA	467 <sup>6</sup>
Oxide (gross weight)	10,800	1,080	1,030	NA	3,980 <sup>6</sup>
Ore and concentrate (zinc content)	822,000	14,300	48,500	NA	95,600 <sup>6</sup>
Waste and scrap (gross weight)	47,700	3,790	4,090	NA	14,400 <sup>6</sup>
<b>Price:</b>					
London Metal Exchange, average, dollars per metric ton	\$778.38	\$790.60	\$754.30	\$775.33	\$777.21
Platts Metals Week North American Special High Grade, average, cents per pound	38.64	38.88	37.23	38.18	38.34

<sup>e</sup>Estimated. <sup>†</sup>Revised. NA Not available. XX Not applicable. -- Zero.

<sup>1</sup>Data are rounded to no more than three significant digits; except prices; may not add to totals shown.

<sup>2</sup>Smelter production plus imports minus exports plus shipments from Government stockpile plus stock change.

<sup>3</sup>Data based on reported consumption, stocks, and estimated trade data.

<sup>4</sup>Data from U.S. Geological Survey and American Bureau of Metal Statistics.

<sup>5</sup>Includes an estimate for companies that report annually.

<sup>6</sup>Includes data through April only.

TABLE 2  
REFINED ZINC PRODUCED IN THE UNITED STATES<sup>1</sup>

(Metric tons)

Month	Beginning stocks <sup>2</sup>	Production	Shipments	Ending stocks <sup>2</sup>
2002:				
May	9,420	23,900	25,800	7,470
June	7,470	23,700	24,500	6,670
July	6,670	19,100	18,900	6,830
August	6,830	16,200	16,000	7,010
September	7,010	17,900	17,400	7,470
October	7,470	16,100	16,600	7,020
November	7,020	21,800	20,800	7,970
December	7,970	23,500	22,900	8,550
Year	XX	259,000	257,000	XX
2003:				
January	8,550	24,900	21,500	11,900
February	11,900	22,800	25,800	8,930
March	8,930	21,700	24,500	6,110
April	6,110	23,000	20,700	8,340
May	9,340	22,400	23,500	7,300
January-May	XX	115,000	116,000	XX

XX Not applicable.

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

<sup>2</sup>Includes stocks held at locations other than smelters.

Sources: U.S. Geological Survey and American Bureau of Metal Statistics.

TABLE 3  
APPARENT CONSUMPTION OF REFINED ZINC ACCORDING TO INDUSTRY USE AND PRODUCT<sup>1</sup>

(Metric tons)

Industry and product	2002	2003			January-May
	January-December	March	April	May <sup>2</sup>	
Galvanizing:					
Sheet and strip	477,000	35,500	34,400 <sup>†</sup>	34,500	190,000
Other	175,000	11,500	10,800 <sup>†</sup>	10,900	64,500
Total	652,000	47,000	45,200 <sup>†</sup>	45,400	254,000
Brass and bronze	189,000	13,900	12,800	13,200	72,200
Zinc-base alloy	233,000	18,000	17,100 <sup>†</sup>	17,400	95,900
Other uses <sup>3</sup>	71,700	4,700	4,400	4,600	24,800
Grand total	1,150,000	83,500	79,500 <sup>†</sup>	80,600	447,000

<sup>†</sup>Revised.

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

<sup>2</sup>Data based on reported consumption, stocks and estimated trade data.

<sup>3</sup>Includes zinc used in making zinc dust, desilvering lead, powder, alloys, anodes, chemicals, castings, light metal alloys, rolled zinc, and miscellaneous uses not elsewhere specified.

TABLE 4  
AVERAGE MONTHLY ZINC PRICES<sup>1</sup>

Period	North	LME cash	
	American ¢/lb.	¢/lb.	\$/t
2002:			
May	38.16	34.89	769.19
June	38.04	34.78	766.75
July	39.30	36.04	794.45
August	37.27	33.89	747.24
September	37.81	34.29	755.88
October	37.71	34.21	754.30
November	38.09	34.70	764.91
December	39.69	36.17	797.36
Year	38.64	35.31	778.38
2003:			
January	38.72	35.43	781.01
February	38.68	35.60	784.80
March	38.88	35.86	790.60
April	37.23	34.21	754.30
May	38.18	35.17	775.33
January-May	38.34	35.25	777.21

<sup>1</sup>Special High Grade.

Source: Platts Metals Week.

TABLE 5  
U.S. EXPORTS OF ZINC<sup>1</sup>

Material	2002		2003 <sup>2</sup>			
	Quantity (metric tons)	Value (thousands)	April		Year to date	
			Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Refined (slab) zinc	1,160	\$1,210	167	\$153	467	\$416
Ore and concentrate (zinc content)	822,000	322,000	48,500	16,800	95,600	27,500
Waste and scrap (gross weight)	47,700	23,000	4,090	2,110	14,400	7,540
Powders, flakes, dust (zinc content)	5,660	8,120	763	999	2,430	3,040
Oxide (gross weight)	10,800	14,600	1,030	1,070	3,980	5,160
Chloride (gross weight)	1,950	1,930	96	109	426	473
Sulfate (gross weight)	2,900	1,760	292	154	934	540
Compounds, other (gross weight)	217	600	4	15	30	116

<sup>1</sup>Data are rounded to no more than three significant digits.

<sup>2</sup>Data for May 2003 were not available at time of publication.

Source: U.S. Census Bureau.

TABLE 6  
U.S. IMPORTS FOR CONSUMPTION OF ZINC<sup>1</sup>

Material	2002		2003 <sup>2</sup>			
	Quantity (metric tons)	Value (thousands)	April		Year to date	
			Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Refined (slab) zinc	874,000	\$716,000	54,600	\$44,200	257,000	\$211,000
Ore and concentrate (zinc content)	122,000	44,600	13,300	4,160	26,000	9,640
Waste and scrap (gross weight)	31,200	9,530	734	467	3,790	1,900
Powders, flakes, dust (zinc content)	30,900	47,800	2,320	3,500	9,250	13,900
Oxide (gross weight)	69,700	57,600	8,260	6,140	28,400	22,100
Chloride (gross weight)	716	775	1	5	181	188
Sulfate (gross weight)	20,100	10,300	2,180	1,110	10,300	4,830
Compounds, other (gross weight)	1,030	1,180	67	78	186	194

<sup>1</sup>Data are rounded to no more than three significant digits.

<sup>2</sup>Data for May 2003 were not available at time of publication.

Source: U.S. Census Bureau.

TABLE 7  
SHIPMENTS OF ZINC METAL FROM THE NATIONAL DEFENSE  
STOCKPILE<sup>1</sup>

(Metric tons)

Period	Beginning inventory	Shipments	Ending inventory
2002:			
May	113,000	1,220	112,000
June	112,000	741	111,000
July	111,000	890	110,000
August	110,000	445	110,000
September	110,000	--	110,000
October	110,000	1,130	109,000
November	109,000	--	109,000
December	109,000	--	109,000
Year	XX	5,040	XX
2003:			
January	109,000	516	108,000
February	108,000	--	108,000
March	108,000	--	108,000
April	108,000	200	108,000
May	108,000	997	107,000
January-May	XX	1,710	XX

XX Not applicable. -- Zero.

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

Source: Defense Logistics Agency.

TABLE 8  
U.S. IMPORTS OF ZINC, BY TYPE OF MATERIAL AND COUNTRY<sup>1,2</sup>

(Metric tons)

Material and country	General imports			Imports for consumption		
	2002	2003		2002	2003	
		April	Year to date		April	Year to date
<b>Ore and concentrate (zinc content):</b>						
Australia	41,800	--	--	41,800	--	--
Ireland	6,570	7,800	18,000	6,570	7,800	18,000
Mexico	12,700	--	--	12,700	--	--
Peru	61,100	5,520	8,000	61,100	5,520	8,000
Other	118	--	--	118	--	--
<b>Total</b>	<b>122,000</b>	<b>13,300</b>	<b>26,000</b>	<b>122,000</b>	<b>13,300</b>	<b>26,000</b>
<b>Blocks, pigs, or slab:</b>						
Australia	35,000	--	14,000	21,000	--	14,000
Brazil	30,200	1,360	7,370	30,200	1,360	5,370
Canada	523,000	39,600	170,000	523,000	39,600	170,000
China	39,700	3,000	18,900	1,040	--	22
Japan	10,500	--	--	--	--	--
Kazakhstan	93,200	--	5,720	93,200	--	5,720
Korea, Republic of	76,200	15,000	19,000	2,480	--	--
Mexico	136,000	9,830	44,100	136,000	9,830	44,100
Peru	36,000	3,830	16,400	34,300	3,830	16,400
Poland	9,340	--	1,600	9,340	--	1,600
Russia	10,700	--	--	10,700	--	--
Other	25,200	40	40	13,100	40	40
<b>Total</b>	<b>1,020,000</b>	<b>72,600</b>	<b>297,000</b>	<b>874,000</b>	<b>54,600</b>	<b>257,000</b>
<b>Dross, ashes, fume (zinc content)</b>	<b>15,500</b>	<b>1,070</b>	<b>4,590</b>	<b>15,500</b>	<b>1,070</b>	<b>4,590</b>
<b>Grand total</b>	<b>1,160,000</b>	<b>87,000</b>	<b>328,000</b>	<b>1,010,000</b>	<b>69,000</b>	<b>288,000</b>
<b>Oxide (gross weight):</b>						
Canada	44,800	4,370	16,300	44,800	4,370	16,300
China	838	101	200	838	101	200
Japan	869	102	352	869	102	352
Mexico	19,900	3,130	9,750	19,900	3,130	9,750
Netherlands	2,640	508	1,600	2,640	508	1,600
Other	760	44	119	760	44	119
<b>Total</b>	<b>69,700</b>	<b>8,260</b>	<b>28,400</b>	<b>69,700</b>	<b>8,260</b>	<b>28,400</b>
<b>Other (gross weight):</b>						
Waste and scrap	31,200	734	3,790	31,200	734	3,790
Sheets	1,640	138	670	1,640	138	670
<b>Powders, flakes, dust (zinc content)</b>	<b>30,900</b>	<b>2,320</b>	<b>9,260</b>	<b>30,900</b>	<b>2,320</b>	<b>9,250</b>

-- Zero.

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

<sup>2</sup>Data for May 2003 were not available at time of publication.

Source: U.S. Census Bureau.