Lead

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Canada is an important world producer and supplier of refined lead, ranking eighth in 2004 after China, the United States, Germany, Japan, Australia, the United Kingdom, and Mexico. In Canada, primary lead is produced mainly as a co-product of zinc mining. Recycling of lead, mainly from scrapped car batteries, is an important source of refined lead in Canada, representing nearly 50% of the total refined production.

HISTORY

Lead has been known since ancient times and is one of several metals that were discovered during the early periods of human history. Some experts believe that lead was used as early as 5000 B.C. The oldest archaeological evidence of lead use by humans is a figurine found in the Dardanelles area of Asia Minor dating from 3800 B.C.

Lead was used in coinage in China about 2000 B.C. and it was mined by the Greeks from about 1200 B.C. to make coins, ornaments, weights and many other articles. One of lead's most enduring uses has been as pipe for the transportation of water. Romans manufactured lead pipes in one standard length and in several diameters, and used it extensively in municipal water systems. The Latin word for lead is *plumbum*, which led to the modern English words "plumber" and "plumbing" and to the chemical symbol for lead, Pb.

LEAD IN CANADA

An outcrop of lead-zinc ore was discovered in the Kootenay region of British Columbia in the 1820s. Active prospecting in the area dates from 1865 and mining commenced shortly thereafter. In the early years, the ores from British Columbia were sent to the United States for smelting and refining.

The now-famous Sullivan mine started operation near Kimberly, British Columbia, in the early 1900s and continued to produce lead until its closure in December 2001. By 1914, the Sullivan mine was the largest lead producer in Canada, a position it held for 50 years until the Pine Point mine in the Northwest Territories completed its first year of operation in 1966. Pine Point closed in 1988. The Kingdon mine at Galetta, on the Ottawa River near Arnprior, Ontario, was discovered in 1884, operated briefly in the 1880s, and was reactivated in 1914, producing lead and zinc ore until the early 1930s. The discovery of lead and zinc ores by the Geological Survey of Canada on Baffin Island in the mid-1950s led to the development of the Nanisivik mine in the mid-1970s. The mine closed in September 2002. The discovery of lead-zinc on Little Cornwallis Island in 1971 led to the development of the Polaris mine. Operated by Teck Cominco Limited, the mine had the distinction of being the most northerly basemetal mine until its closure at the end of August 2002 after 20 years of operation.

Today Noranda Inc.'s operation at the Brunswick mine near Bathurst, New Brunswick, is the largest producer of lead. Lead has been mined in every province and territory with the exception of Alberta, Saskatchewan and Prince Edward Island. Operations in 2004 are shown in Figure 1.

USES

The largest single use of lead today is in the manufacture of the lead-acid storage battery, a vital part of every automobile. The average car battery contains about 10 kg of lead. Lead-acid batteries for automotive, industrial and consumer purposes account for over 70% of the world's demand for lead. In the communications industry, lead is still used extensively as protective sheathing for underground and underwater cables, including transoceanic cable systems. Certain lead compounds are used as paint pigments. Red lead (lead oxide) is the basic paint primer for iron and steel. Lead's corrosion-resistant nature also makes it suitable for applications in sheeting for roofing purposes, while its radiation attenuation properties prevent the emission of harmful radiation from television, video and computer screens.

N.W.T. Alta. Sask. Man. Que. Ont. U.S.A. Principal mine producers ★ Metallurgical plants

Figure 1 Lead Producers in Canada, 2004

Numbers refer to locations on map above.

LEAD-PRODUCING MINES

- 1. Brunswick, Noranda Inc.
- 6. Myra Falls, Breakwater Resources Ltd.

WEB SITE

www.noranda.com www.breakwater.ca

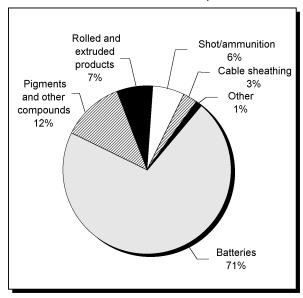
LEAD METALLURGICAL PLANTS

- 1. Belledune, Noranda Inc.
- 2. Nova Pb Inc. General Smelting Company of Canada
- 3. Tonolli, Tonolli Canada Ltd.
- 4. Trail, Teck Cominco Limited
- 5. Metalex Products Ltd.

www.noranda.com www.novapb.com www.generalsmeltingofcanada.ca

www.teckcominco.com www.metalexleadrecycling.com

Figure 2
Western World Lead Markets, 2004



Source: International Lead and Zinc Study Group.

NATURAL OCCURRENCE

Almost all lead is obtained from sulphide ores in which the most common lead mineral is galena (PbS). It is usually found in combination with other sulphide ores, most frequently those of zinc, and also those of copper. Other lead-containing minerals include cerrusite (PbCO₃) and anglesite (PbSO₄).

PRICE OUTLOOK

Cash London Metal Exchange (LME) settlement prices for lead started the year at just over US\$750/t and reached \$970/t before falling back to below \$700/t at the end of April. For the remainder of the year, lead prices increased on falling inventories to reach a maximum of US\$1056/t on December 31. Overall, cash settlement prices for lead averaged US\$888.41/t, representing the best average price for lead since 1996 and a 59% increase over the previous year. LME stocks continued their steady decline from a maximum of 108 975 t at the start of January to a minimum of 32 425 t in September, ending the year at 40 700 t.

Lead concentrate markets have been particularly tight as more older mines close and fewer new projects with significant amounts of lead come on stream. The tight market is already being reflected by lower treatment charges and cutbacks at some smelters. Increased demand in Asian markets, particularly China, coupled with an overall

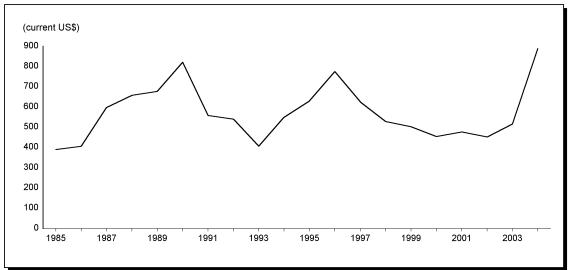
decline in refined output, will continue to keep markets tight for lead. Overall, taking into consideration the information provided by the member countries of the International Lead and Zinc Study Group, it is expected that there will be a deficit of about 105 000 t in the Western World market for refined lead metal in 2005. This should translate into higher prices over the coming months with lead prices expected to average about US\$950/t in 2005.

Notes: (1) For definitions and valuation of mineral production, shipments and trade, please refer to Chapter 64. (2) Information in this review was current as of May 31, 2005. (3) This and other reviews, including previous editions, are available on the Internet at www.nrcan.gc.ca/mms/cmy/com_e.html.

NOTE TO READERS

The intent of this document is to provide general information and to elicit discussion. It is not intended as a reference, guide or suggestion to be used in trading, investment, or other commercial activities. The author and Natural Resources Canada make no warranty of any kind with respect to the content and accept no liability, either incidental, consequential, financial or otherwise, arising from the use of this document.

Figure 3
Average LME Cash Settlement Prices for Lead, 1985-2004



Source: London Metal Exchange.

TARIFFS

			Canada		United States	EU	Japan
Item No.	Description	MFN	GPT	USA	Canada (1)	Conventional Rate (1)	WTO (2)
2607.00	Lead ores and concentrates	Free	Free	Free	Free	Free	Free
78.01	Unwrought lead						
7801.10	Refined lead						
7801.10.10	Pig and block	Free	Free	Free	Free	2.5%	Free-2.70 yen/kg
7801.10.90	Other	2.5%	Free	Free	Free	2.5%	Free-2.70 yen/kg
7801.91	Other: Containing by weight antimony as the principal other element	Free	Free	Free	Free	2.5%	Free to 2.8%
7801.99.10	Lead bullion	2.5%	Free	Free	Free	Free	Free-2.8%
7801.99.20	Lead alloys	2.5%	Free	Free	Free	2.5%	3% or 4.50 yen/kg
7801.99.90	Other, unwrought lead	2.5%	Free	Free	Free	2.5%	Free-4.50 yen/kg
7802.00	Lead waste and scrap	Free	Free	Free	Free	Free	2.1%
7803.00	Lead bars, rods, profiles and wire						
7803.00.10	Bars and rods, not alloyed	2.5%	Free	Free	Free	5%	3%
7803.00.90	Other	3%	Free	Free	Free	5%	3%
7804.11	Lead sheets, strip and foil of a thickness (excluding any backing) not exceeding 0.2 mm						
7804.11.10	Of lead-tin alloys, whether or not containing antimony	Free	Free	Free	Free	5%	3%
7804.11.90	Other	3%	Free	Free	Free	5%	3%
7804.19	Lead plates, sheet, strip and foil, n.e.s.						
7804.19.10	Not alloyed, of a thickness exceeding 0.2 mm but not exceeding 5 mm, and a width exceeding 600 mm	2.5%	Free	Free	Free	5%	3%
7804.19.20	Of lead-antimony-tin alloys	2.5%	Free	Free	Free	5%	3%
7804.19.90	Other	2.5%	Free	Free	Free	5%	3%
7804.20	Powders and flakes						
7804.20.10	Powders, not alloyed	2.5%	Free	Free	Free	Free	3%
7804.20.20	Alloyed powders; flakes	2.5%	Free	Free	Free	Free	3%
7805.00	Lead tubes, pipes, and tube or pipe fittings	3%	Free	Free	Free	Free-5%	3%
7806.00	Other articles of lead	3%	Free	Free	Free	Free-5%	3%

Sources: Canadian Customs Tariff, effective January 2005, Canada Border Services Agency; Harmonized Tariff Schedule of the United States, 2005; Official Journal of the European Union (October 30, 2004 Edition); Customs Tariff Schedules of Japan, 2004.

⁽¹⁾ The customs duties applicable to imported goods originating in countries that are Contracting Parties to the General Agreement on Tariffs and Trade or with which the European Community has concluded agreements containing the most-favoured-nation tariff clause shall be the conventional duties shown in column 3 of the Schedule of Duties. (2) WTO rate is shown; lower tariff rates may apply circumstantially.

TABLE 1. CANADA, LEAD PRODUCTION (1) AND TRADE, 2002-04, AND USE, 2001-03

EXPORTS 2603.00.20 2607.00	New Brunswick British Columbia Nunavut Total Mine output (2) Refined production Primary Recycled Total	(tonnes) 71 551 6 256 23 523 101 330 97 177 136 896 114 664 251 560	(\$000) 50 801 4 442 16 701 71 944	(tonnes) 72 914 20 020 - 92 934 81 264	(\$000) 52 571 14 434 - 67 005	(tonnes) 68 833 2 289 - 71 122 76 726	(\$000) 79 778 2 653 - 82 431
EXPORTS 2603.00.20 2607.00	British Columbia Nunavut Total Mine output (2) Refined production Primary Recycled Total	6 256 23 523 101 330 97 177 136 896 114 664	4 442 16 701 71 944 	20 020 - 92 934	14 434 - 67 005	2 289 - 71 122	2 653 -
2603.00.20 2607.00	British Columbia Nunavut Total Mine output (2) Refined production Primary Recycled Total	23 523 101 330 97 177 136 896 114 664	16 701 71 944 	92 934	67 005	71 122	-
2603.00.20 2607.00	Total Mine output (2) Refined production Primary Recycled Total	101 330 97 177 136 896 114 664	71 944		67 005		82 431
2603.00.20 2607.00	Mine output (2) Refined production Primary Recycled Total	97 177 136 896 114 664					82 431
2603.00.20 2607.00	Refined production Primary Recycled	136 896 114 664		81 264		76 726	
2603.00.20 2607.00	Primary Recycled Total	114 664					• •
2603.00.20 2607.00	Recycled Total	114 664		440 500		404.045	
2603.00.20 2607.00		251 560		118 506 104 927		131 015 110 382	
2603.00.20 2607.00				223 434		241 397	
2603.00.20 2607.00	l d t - t - f d t						
	Lead content of copper ores and concentrates	_	-	820	1 464	2 527	2 035
2007 00 00	Lead ores and concentrates	42 305	27 454	7 605	5 220	596	270
2607.00.20	Lead content of lead ores and concentrates						
	Venezuela Belgium	7 985	3 357	_	_	596	270
	China	11 479	4 341	7 588	2 944	_	-
	Germany	22 807	15 064	-	-	-	-
	Total	42 271	22 762	7 588	2 944	596	270
2608.00.20	Lead content of zinc ores and concentrates						
	Belgium Poland	6 289 3 316	2 107 1 079	4 860 3 010	1 618 1 031	4 523 3 534	2 640 2 171
	Peru	1 307	427	3010	-	3 334	2 17 1
	Romania	_	-	4 603	1 681	-	-
	Russia		-	1 188	507	_	_
	Total	10 912	3 613	13 661	4 837	8 057	4 811
7801.10	Unwrought lead						
	Refined lead United States	134 752	108 847	121 626	88 728	118 325	136 097
	Italy		- -	391	327	5 088	5 212
	Netherlands Ireland	4 003 3 003	2 558 1 957	5 005 496	3 214 374	4 498	4 740
	Other countries	434	355	164	172	877	979
	Total	142 192	113 717	127 682	92 815	128 788	147 028
7801.91	Lead, unwrought, containing by weight						
	antimony as the principal other element	47.004	45.004	00.550	40.005	00.400	00.400
	United States China	17 601 1 801	15 981 573	20 553 220	16 325 90	20 102	23 132
	Other countries	946	511	839	497	693	614
	Total	20 348	17 065	21 612	16 912	20 795	23 746
7801.99	Lead, unwrought, n.e.s.						
	United States	20 061	17 788	25 707	20 820	28 625	35 317
	China Belgium	1 010	347	2 209 260	1 914 191	8 427 4 963	9 908 5 530
	Malaysia	7 396	5 715	4 992	3 946	3 180	3 871
	Thailand	1 267	959	180	159	1 198	1 260
	Mexico	655	514	2 781	2 162	410	483
	Other countries	1 736	1 435	2 652	2 375	641	753
	Total	32 125	26 758	38 781	31 567	47 444	57 122
7802.00	Lead waste and scrap United States	352	369	817	568	928	646
	Other countries	49	31	210	385	180	146
	Total	401	400	1 027	953	1 108	792
7803.00	Lead bars, rods, profiles and wire						
	United States	416	537	533	1 227	587	1 460
	Other countries	15	62	164	232	60	70
	Total	431	599	697	1 459	647	1 530
7804.11	Lead sheets, strip and foil of a thickness	2	8	1	2	3	6

TABLE 1 (cont'd)

Item No.		2	002	2003		2004 (p)	
		(tonnes)	(\$000)	(tonnes)	(\$000)	(tonnes)	(\$000)
EXPORTS (cor							
7804.19	Lead plates, sheet, strip and foil, n.e.s. United States	1 453	2 134	1 347	1 963	1 122	1 987
	Other countries		2	3	2	35	53
	Total	1 453	2 136	1 350	1 965	1 157	2 040
7804.20	Lead powders and flakes	100	135	7	41	1	16
7805.00	Lead tubes, pipes, and tube or pipe fittings (i.e., couplings, elbows, sleeves)	30	73	31	73	62	161
7806.00	Other articles of lead						
	United States Other countries		5 592 41		6 131 110		7 165 331
	Total		5 633		6 241		7 496
	Total exports		197 591		163 549		247 053
IMPORTS (3)	Total exporte			••	100 0 10	• • • • • • • • • • • • • • • • • • • •	2 000
2607.00	Lead ores and concentrates						
	United States Peru	13 558 44 878	46 949 59 557	18 552 41 633	73 616 43 309	34 516 42 082	78 316 38 195
	Australia	4 201	12 018	10 705	14 370	19 125	15 074
	Other countries	8586	8 933	5527	8888	60	2625
	Total	71 223	127 457	76 417	140 183	95 783	134 210
2607.00.00.20	Lead content of lead ores and concentrates						
	Peru	44 833	50 465	38 257	26 807	42 038	27 974
	United States Australia	10 817 4 162	11 019 4 162	15 756 10 658	14 186 6 110	31 659 19 125	21 762 15 074
	Other countries	8 549	3 733	5 480	4 074	-	-
	Total	68 361	69 379	70 151	51 177	92 822	64 810
2608.00.00.20	Lead content of zinc ores and concentrates	200	205	470	205	4.400	700
	United States	298	305	170	205	1 188	760
2616.10.00.20	Lead content of silver ores and concentrates	194	61	383	189	201	194
7801.10.10	Refined lead, unwrought, pig and block United States	1 302	1 273	803	828	2 131	2 458
	Other countries	120	134	696	632	_	-
	Total	1 422	1 407	1 499	1 460	2 131	2 458
7801.10.90	Refined lead, unwrought, other						
	United States Spain	136 233	148 267	23 4	26 5	248 62	288 73
	Other countries	3	4	6	7	13	15
	Total	372	419	33	38	323	376
7801.91	Lead, unwrought, containing by weight	15	20	104	125	309	337
7001.91	antimony as the principal other element	10	20	10-1	120	000	007
7801.99	Lead, unwrought, other	311	481	654	771	494	518
7802.00	Lead waste and scrap						
	United States Other countries	41 058 358	7 354 108	40 965 423	6 779	44 780 640	10 812 337
					118		
	Total	41 416	7 462	41 388	6 897	45 420	11 149
7803.00	Lead bars, rods, profiles and wire	4.050	2.126	1 112	0.445	675	2.505
	United States South Korea	1 253 9	2 136 16	1 413 245	2 415 512	675 173	2 595 578
	Japan		.1	100	176	66	420
	Other countries	6	12	8	14	28	37
	Total	1 268	2 165	1 766	3 117	942	3 630
7804.11	Lead sheets, strip and foil of a thickness						
	(excluding any backing) <0.2 mm United States	134	175	91	124	1 654	2 086
	New Zealand	75	77	268	174	34	127
	Germany United Kingdom	20 57	16 73	22 13	19 19	67 13	90 29
	Other countries	3	4	3	7	2	3
	Total	289	345	397	343	1 770	2 335

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Item No.	Item No.		2002		2003		2004 (p)	
		(tonnes)	(\$000)	(tonnes)	(\$000)	(tonnes)	(\$000)	
IMPORTS (c	cont'd)							
7804.19	Lead plates, sheet, strip and foil, n.e.s.	186	260	245	365	406	584	
7804.20	Lead powders and flakes	79	145	130	172	412	523	
7805.00	Lead tubes, pipes, and tube or pipe fittings	15	27	15	24	14	28	
7806.00	Other articles of lead							
	United States	3 329	4 829	2 744	3 777	2 212	3 787	
	Other countries	930	1 177	389	462	233	323	
	Total	4 259	6 006	3 133	4 239	2 445	4 110	
	Total imports	121 347	146 560	126 334	158 128	151 838	161 212	

		2001 (a)		2002					
	Primary	Recycled (5)	Total	Primary	Recycled (5)	Total	Primary	Recycled (5)	Total
QUANTITY USED (4)									
Lead used for or in the production of:									
Antimonial lead	x	х	х	x	х	x	х	х	30 299
Batteries and battery oxides	x	х	х	x	х	x	х	х	х
Chemical uses: white lead, red lead,									
litharge, tetraethyl lead, etc.	x	x	x	x	x	x	x	_	x
Copper alloys: brass, bronze, etc.	12	8	20	x	X	19	x	X	19
Lead alloys:									
Solders	x	x	x	х	x	x	x	x	x
Others (including babbitt, type metals, etc.)	x	х	х	x	х	x	х	х	х
Semi-finished products:									
Pipe, sheet, traps, bends, blocks for									
caulking, ammunition, etc.	x	X	x	х	X	x	x	X	x
Other lead products	3 201	1 695	4 896	3 280	1 332	4 612	2 202	1 485	3 687
Total, all categories	23 009	33 896	56 905	31 828	34 746	66 575	32 519	35 840	68 359

Sources: Natural Resources Canada; Statistics Canada.

TABLE 2. CANADA, LEAD PRODUCTION, TRADE AND USE, 1990-2004

		Productio	n		Dom	estic Exports			
			Refined		In Ores and			Imports	Quantity
	All Forms (1)	Primary	Recycled	Total	Concentrates	Refined	Total	Refined	Used (2)
					(tonnes)				
1990	233 372	87 180	96 465	183 645	221 566	84 007	305 573	11 781	72 203
1991	248 102	106 420	105 946	212 366	175 150	86 631	261 781	7 553	80 253
1992	339 626	151 252	101 633	252 885	190 822	131 546	322 368	8 289	92 420
1993	183 105	147 907	69 107	217 014	96 428	124 610	221 038	11 612	91 915
1994	167 584	153 035	98 605	251 640	55 923	133 203	189 126	5 119	95 764
1995	204 227	178 019	103 372	281 391	90 254	140 478	230 732	3 967	91 171
1996	241 751	192 877	117 914	310 791	154 697	159 860	314 557	4 179	93 373
1997	170 847	139 736	131 659	271 395	112 694	155 639	268 333	5 843	92 997
1998	150 019	129 750	135 737	265 487	52 250	145 358	197 608	6 460	87 466
1999	155 369	148 526	117 889	266 415	58 831	139 622	198 453	7 663	92 557
2000	143 303	159 192	125 141	284 833	50 524	148 428	198 952	7 028	81 365
2001	150 389	127 007	103 921	230 928	69 093	126 652	195 744	(r) 5 110	56 956
2002	101 330	136 896	114 664	251 560	53 183	144 177	197 360	3 619	66 575
2003	92 934	118 506	104 927	223 434	22 068	129 737	151 805	4 070	68 359
2004 (p)	71 122	131 015	110 382	241 397	11 179	130 598	141 777	5 986	48 143

Sources: Natural Resources Canada; Statistics Canada.

⁻ Nil; . . Not available; . . . Amount too small to be expressed; n.e.s. Not elsewhere specified; (p) Preliminary; (r) Revised; x Confidential.

(a) Increase in number of companies being surveyed.

(1) Production includes recoverable lead in ores and concentrates shipped valued at the Montréal Exchange average price for the year. (2) Lead content of domestic ores and concentrates exported. (3) Imports from "other countries" may include re-imports from Canada. (4) Available data, as reported by users. (5) Includes all remelt scrap lead used to make antimonial lead.

⁽p) Preliminary; (r) Revised.

⁽¹⁾ Recoverable lead in ores and concentrates shipped. (2) Primary and recycled in origin, as measured by a survey of users.

TABLE 3. ANNUAL AVERAGE LEAD PRICES, 1980-2004

	ı	London Metal Exchange						
	Set	tlement	Three	Months				
	(US\$/t)	(US¢/lb)	(US\$/t)	(US¢/lb)				
1980	909.12	41.24	911.46	41.34				
1981	734.73	33.33	750.12	34.03				
1982	544.08	24.68	562.53	25.52				
1983	425.27	19.29	440.55	19.98				
1984	444.36	20.16	445.25	20.20				
1985	394.10	17.88	394.12	17.88				
1986	406.89	18.46	407.26	18.47				
1987	597.41	27.10	567.38	25.74				
1988	655.83	29.75	635.68	28.83				
1989	676.14	30.67	659.36	29.91				
1990	817.85	37.10	790.82	35.87				
1991	557.84	25.30	568.90	25.81				
1992	540.04	24.50	553.56	25.11				
1993	406.38	18.43	420.36	19.07				
1994	549.01	24.90	564.10	25.59				
1995	630.51	28.60	638.88	28.98				
1996	773.96	35.11	771.22	34.98				
1997	624.08	28.31	633.01	28.71				
1998	528.42	23.97	533.29	24.19				
1999	502.24	22.78	508.89	23.08				
2000	454.22	20.60	468.07	21.23				
2001	476.04	21.59	483.24	21.92				
2002	452.52	20.53	461.65	20.94				
2003	515.66	23.39	517.53	23.48				
2004	888.41	40.30	850.63	38.58				

Source: International Lead and Zinc Study Group.

TABLE 4. LME MONTHLY AVERAGE LEAD PRICES, 2003 AND 2004

	London Metal Exchange							
•	Settler	nent	Three M	onths				
	(US\$/t)	(US¢/lb)	(US\$/t)	(US¢/lb)				
2003								
January	444.66	20.17	455.61	20.67				
February	475.83	21.58	479.77	21.76				
March	456.67	20.71	465.12	21.10				
April	437.38	19.84	447.02	20.28				
May	463.50	21.02	465.98	21.14				
June	468.02	21.23	471.38	21.38				
July	514.78	23.35	508.09	23.05				
August	496.52	22.52	500.38	22.70				
September	521.27	23.65	522.77	23.71				
October	587.33	26.64	583.83	26.48				
November	622.33	28.23	620.15	28.13				
December	692.07	31.39	683.95	31.02				
2004								
January	758.38	34.40	744.50	33.80				
February	888.47	40.30	852.35	38.70				
March	886.48	40.20	855.07	38.80				
April	753.67	34.20	749.83	34.00				
May	808.89	36.70	768.24	34.80				
June	871.32	39.50	816.73	37.00				
July	939.59	42.60	869.66	39.40				
August	921.79	41.80	863.40	39.20				
September	935.45	42.40	888.59	40.30				
October	932.76	42.30	893.05	40.50				
November	967.80	43.90	941.75	42.70				
December	974.90	44.20	946.02	42.90				

Source: International Lead and Zinc Study Group.

TABLE 5. MINE PRODUCTION OF LEAD, BY COUNTRY, 2000-2004

	2000	2001	2002	2003	2004 (p)
			(000 tor	nnes)	
EUROPE					
Bulgaria	14	16	24	17	13
Greece	16	27	29	2	-
Ireland	57	45	32	50	65
Italy	3	4	4	5	6
Macedonia	24	20	15	5	-
Poland	51	53	57	42	40
Romania	19	17	18	16 24	17 22
Russia Spain	14 51	14 36	19 6	24	22
Sweden	107	88	44	51	- 55
Serbia and Montenegro	4	5	_	-	_
· ·					
Total Europe	360	324	248	216	217
AFRICA					
Morocco	82	77	62	41	46
Namibia	12	13	12	16	16
South Africa	75	51	50	40	37
Other Africa	8	8	7	6	6
Total Africa	178	159	130	102	105
AMERICAS					
Canada	149	154	97	81	77
Mexico	138	136	139	142	128
Peru	271	289	297	308	306
United States	458	463	449	458	438
Other Americas	37	38	40	41	43
Total Americas	1 053	1 080	1 022	1 030	992
ASIA					
China	660	599	641	955	951
India	36	32	34	44	51
Iran	17	18	17	16	16
Japan	9	5	6	6	6
Kazakhstan	39	43	43	44	44
North Korea	12 11	9	10 3	20	20
Thailand	16	- 18	3 17	- 14	- 12
Turkey Other Asia	5	4	17	14	2
Total Asia	805	728	772	1 100	1 102
OCEANIA					
Australia	650	714	658	648	642
Total world	3 046	2 995	2 831	3 097	3 058

Sources: Natural Resources Canada; International Lead and Zinc Study Group. — Nil; (p) Preliminary.

TABLE 6. REFINED LEAD PRODUCTION, BY COUNTRY, 2000-2004

	2000	2001	2002	2003	2004 (p)
			(000 tonn	es)	
EUROPE					
Belgium	119	100	88	65	62
Bulgaria	84	83	66	69	63
Czech Republic	28	30	29	26	25
France	262	230	203	101	104
Germany	387 231	375 227	378 196	357 214	411 202
Italy Poland	231 56	66	196	60	62
Russia	32	58	63	66	66
Spain	120	122	116	102	105
Sweden	78	75	65	76	72
United Kingdom	338	382	368	320	243
Other Europe	146	137	128	117	136
Total Europe	1 881	1 893	1 766	1 573	1 551
AFRICA					
Morocco	67	58	72	61	25
South Africa	46	55	61	65	64
Other Africa	12	12	11	12	12
Total Africa	125	125	144	138	101
AMERICAS					
Brazil	50	47	37	35	38
Canada	284	231	252	223	241
Mexico	241	236	234	240	243
Peru	116	118	120	112	120
United States Other Americas	1 457 68	1 376 79	1 364 88	1 392 91	1 269 98
Other Americas					
Total Americas	2 216	2 087	2 095	2 093	2 009
ASIA					
China	1 100	1 195	1 325	1 564	1 812
India	67 312	63 302	78 286	71 295	51 283
Japan Kazakhstan	208	159	152	141	149
Malaysia	32	38	40	57	54
North Korea	10	7	6	7	9
South Korea	220	211	243	230	233
Taiwan	55	62	55	56	56
Other Asia	159	172	176	203	229
Total Asia	2 163	2 209	2 361	2 624	2 876
OCEANIA					
Australia	259	271	302	307	273
New Zealand	11	9	9	8	8
Total Oceania	270	280	311	315	281
Total world	6 655	6 594	6 678	6 743	6 817

Sources: Natural Resources Canada; International Lead and Zinc Study Group. (p) Preliminary.

TABLE 7. REFINED LEAD USE, BY COUNTRY, 2000-2004

Company Comp		2000	2001	2002	2003	2004 (p)
Austria 60 59 60 54 48 Belgium 57 40 34 37 36 France 268 265 230 220 215 Germany 390 404 385 384 410 Ireland 29 30 402 385 384 410 Italy 279 284 286 258 273 30 Netherlands 29 30 29 34 31 Poland 52 59 70 58 69 Russia 83 94 111 112 112 Spain 219 231 238 216 247 United Kingdom 327 318 311 302 295 Other Europe 2018 2068 2041 1 928 2011 AFICA 4 43 35 34 31 31 Total Europe 2018				(000 tonn	es)	
Austria 60 59 60 54 48 Belgium 57 40 34 37 36 France 268 265 230 220 215 Germany 390 404 385 384 410 Ireland 29 30 402 385 384 410 Italy 279 284 286 258 273 30 Netherlands 29 30 29 34 31 Poland 52 59 70 58 69 Russia 83 94 111 112 112 Spain 219 231 238 216 247 United Kingdom 327 318 311 302 295 Other Europe 2018 2068 2041 1 928 2011 AFICA 4 43 35 34 31 31 Total Europe 2018	EUROPE					
France 268 265 230 220 215 Germany 390 404 385 384 410 Ireland 29 34 42 37 30 Italy 279 284 286 258 273 Netherlands 29 30 29 34 31 Poland 52 59 70 58 69 Russia 83 94 111 112 112 Spain 219 231 238 216 247 United Kingdom 327 318 311 302 296 Other Europe 2018 2068 2041 1928 2011 AFRICA Algeria 21 20 21 15 14 Egypt 9 9 9 6 6 South Africa 59 59 71 80 80 Other Africa 130		60	59	60	54	48
Germany Ireland 390 404 385 384 410 Ireland 29 34 42 37 30 Italy 279 284 286 258 273 Netherlands 29 30 29 34 31 Poland 52 59 70 58 69 Russia 83 94 111 112 112 Spain 219 231 238 216 247 United Kingdom 327 318 311 302 295 Other Europe 2018 2068 2041 1928 2011 AFRICA 34 2068 2041 1928 2011 Algeria 21 20 21 15 14 Egypt 9 9 9 6 6 South Africa 130 123 135 132 131 Total Africa 130 123 135 <	Belgium	57	40	34	37	36
Ireland 129 34 42 37 30 1						
Italy						
Netherlands 29 30 29 34 31 Poland 52 59 70 58 69 Russia 83 94 111 112 112 Spain 219 231 238 216 247 United Kingdom 327 318 311 302 295 Other Europe 2018 2068 2041 1928 2011 AFRICA Algeria 21 20 21 15 14 Egypt 9 9 6 6 South Africa 59 59 71 80 80 Other Africa 41 35 34 31 31 Total Africa 130 123 135 132 131 AMERICAS Brazil 114 112 112 112 103 Canada 68 55 58 51 52						
Poland Russia 52 59 70 58 69 Russia 83 94 111 112 112 247 Spain 219 231 238 216 247 247 United Kingdom 327 318 311 302 295 Other Europe 225 250 245 216 245 245 216 245 245 216 245 245 216 245 245 216 245 245 216 245 245 216 245 245 216 245 245 216 245 245 246 245 245 245 245 245 245 245 245 245 245 245 245 245 245 245 245 245 245 245 245 245 245 245 245 245 245 245 245 245 245 245 245 245 245 245 241<	•					
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United Kingdom Other Europe 327 25 250 318 245 311 302 295 245 Total Europe 2018 2068 2041 1928 2011 AFRICA Algeria 21 20 21 15 14 1928 2011 Egypt 9 9 9 9 6 6 6 6 6 80 South Africa 59 59 71 80 80 Other Africa 130 123 135 132 131 Total Africa 130 123 135 132 131 AMERICAS Brazil 114 112 112 112 112 103 Canada 68 55 58 51 52 Mexico 258 253 270 259 263 United States 1 791 1695 1536 1513 1494 Other Americas 99 94 100 102 118 Total Americas 2 330 209 2076 2037 2030 ASIA China 590 700 950 1183 1350 India 119 127 130 142 150 Indonesia 66 48 61 71 85 Iran 68 70 68 72 68 248 216 Japan 301 284 253 248 216 248 216 Malaysia 84 82 86 90 90 90 South Korea 303 314 343 349 368 349 368 Taiwan 170 167 154 137 162 1131 138 Thailand 96 82 111 131 131 138 138 Other Asia 198 191 213 239 242 Total As	Russia	83	94	111	112	112
Other Europe 225 250 245 216 245 Total Europe 2 018 2 068 2 041 1 928 2 011 AFRICA Algeria 21 20 21 15 14 Egypt 9 9 9 6 6 6 South Africa 59 59 71 80 80 Other Africa 41 35 34 31 31 Total Africa 130 123 135 132 131 AMERICAS Brazil 114 112 112 112 103 Canada 68 55 58 51 52 Mexico 258 253 270 259 263 United States 1 791 1 695 1 536 1 513 1 494 Other Americas 2 330 2 209 2 076 2 037 2 030 ASIA China 590 700 </td <td>Spain</td> <td></td> <td></td> <td></td> <td></td> <td></td>	Spain					
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Algeria 21 20 21 15 14 Egypt 9 9 9 9 6 6 South Africa 59 59 71 80 80 Other Africa 41 35 34 31 31 Total Africa 130 123 135 132 131 AMERICAS Brazil 114 112 112 112 103 Canada 68 55 58 51 52 Mexico 258 253 270 259 263 United States 1 791 1 695 1 536 1 513 1 494 Other Americas 99 94 100 102 118 Total Americas 2 330 2 209 2 076 2 037 2 030 ASIA 1 19 127 130 142 150 India 119 127 130 142 150 <td>Total Europe</td> <td>2 018</td> <td>2 068</td> <td>2 041</td> <td>1 928</td> <td>2 011</td>	Total Europe	2 018	2 068	2 041	1 928	2 011
Egypt 9 9 9 6 6 South Africa 59 59 71 80 80 Other Africa 41 35 34 31 31 Total Africa 130 123 135 132 131 AMERICAS Brazil 114 112 112 112 103 Canada 68 55 58 51 52 Mexico 258 253 270 259 263 United States 1 791 1 695 1 536 1 513 1 494 Other Americas 99 94 100 102 118 Total Americas 2 330 2 209 2 076 2 037 2 030 ASIA China 590 700 950 1 183 1 350 India 119 127 130 142 150 India 119 127 130 142	AFRICA					
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Brazil 114 112 112 112 103 Canada 68 55 58 51 52 Mexico 258 253 270 259 263 United States 1 791 1 695 1 536 1 513 1 494 Other Americas 99 94 100 102 118 Total Americas 2 330 2 209 2 076 2 037 2 030 ASIA China 590 700 950 1 183 1 350 India 119 127 130 142 150 Indonesia 66 48 61 71 85 Iran 68 70 68 72 68 Japan 301 284 253 248 216 Malaysia 84 82 86 90 90 South Korea 303 314 343 349 368 Taiwan	Total Africa	130	123	135	132	131
Canada 68 55 58 51 52 Mexico 258 253 270 259 263 United States 1 791 1 695 1 536 1 513 1 494 Other Americas 99 94 100 102 118 Total Americas 2 330 2 209 2 076 2 037 2 030 ASIA China 590 700 950 1 183 1 350 India 119 127 130 142 150 Indonesia 66 48 61 71 85 Iran 68 70 68 72 68 Japan 301 284 253 248 216 Malaysia 84 82 86 90 90 South Korea 303 314 343 349 368 Taiwan 170 167 154 137 162 Thailand	AMERICAS					
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India 119 127 130 142 150 Indonesia 66 48 61 71 85 Iran 68 70 68 72 68 Japan 301 284 253 248 216 Malaysia 84 82 86 90 90 South Korea 303 314 343 349 368 Taiwan 170 167 154 137 162 Thailand 96 82 111 131 138 Other Asia 198 191 213 239 242 Total Asia 1 995 2 065 2 369 2 662 2 869 OCEANIA Australia 41 41 39 38 39 New Zealand 5 4 3 4 2 Total Oceania 46 45 42 42 40	ASIA					
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South Korea 303 314 343 349 368 Taiwan 170 167 154 137 162 Thailand 96 82 111 131 138 Other Asia 198 191 213 239 242 Total Asia 1 995 2 065 2 369 2 662 2 869 OCEANIA Australia 41 41 39 38 39 New Zealand 5 4 3 4 2 Total Oceania 46 45 42 42 40	-					
Thailand Other Asia 96 198 191 213 239 242 Total Asia 1995 2 065 2 369 2 662 2 869 OCEANIA Australia New Zealand 41 41 39 38 39 4 2 Total Oceania 46 45 42 42 40	•					
Other Asia 198 191 213 239 242 Total Asia 1 995 2 065 2 369 2 662 2 869 OCEANIA Australia 41 41 39 38 39 New Zealand 5 4 3 4 2 Total Oceania 46 45 42 42 40	Taiwan	170	167	154	137	162
Total Asia 1 995 2 065 2 369 2 662 2 869 OCEANIA Australia 41 41 41 39 38 39 New Zealand 5 4 3 4 2 2 42 40 Total Oceania 46 45 42 42 40						
OCEANIA Australia 41 41 39 38 39 New Zealand 5 4 3 4 2 Total Oceania 46 45 42 42 40	Other Asia	198	191	213	239	242
Australia 41 41 39 38 39 New Zealand 5 4 3 4 2 Total Oceania 46 45 42 42 40	Total Asia	1 995	2 065	2 369	2 662	2 869
New Zealand 5 4 3 4 2 Total Oceania 46 45 42 42 40	OCEANIA					
Total Oceania 46 45 42 42 40						
	New Zealand	5	4	3	4	2
7-tal world	Total Oceania	46	45	42	42	40
rotal world 6 519 6 510 6 663 6 801 7 081	Total world	6 519	6 510	6 663	6 801	7 081

Sources: Natural Resources Canada; International Lead and Zinc Study Group. (p) Preliminary.

TABLE 8. WESTERN WORLD PRODUCTION OF LEAD FROM **RECYCLING**, (1) 2000-2004

	2000	2001	2002	2003	2004 (p)
	(000 tonnes)				
EUROPE					
Austria	23	22	21	18	24
Belgium	107	100	88	65	62
France	137	132	121	94	104
Germany	216	218	237	225	277
Ireland	9	10	7	9	21
Italy	163	169	155	166	162
Netherlands	21	20	18	17	17
Spain	120	122	116	102	105
Sweden	47	44	47	52	45
United Kingdom	182	183	175	158	120
Other Europe	38	37	34	30	32
Total Europe	1 063	1 057	1 019	936	969
AFRICA					
Algeria	6	6	6	6	6
Morocco	4	4	4	3	3
South Africa	46	49	61	65	64
Other Africa	6	5	5	5	6
Total Africa	62	64	76	80	79
AMERICAS					
Brazil	50	47	37	35	38
Canada	125	104	115	105	110
Mexico	79	92	106	110	110
United States	1 115	1 086	1 102	1 147	1 129
Other Americas	60	70	78	79	85
Total Americas	1 429	1 399	1 438	1 476	1 472
ASIA					
India	25	19	35	30	30
Indonesia	18	18	17	18	20
Iran	28	28	30	31	32
Japan	182	175	178	190	189
Malaysia	32	38	40	57	54 60
South Korea	66 55	63	64 55	60 56	56
Taiwan	55 24	62 28	55 40	56 46	57
Thailand Other Asia	70	26 76	76	46 88	99
Other Asia	70	70	70	00	93
Total Asia	500	507	535	576	597
OCEANIA	2.4	2.4	2.4	22	40
Australia	34	34	34	38	42
New Zealand	11	9	9	8	8
Total Oceania	45	43	43	46	50
Total Western	3 099	3 071	3 110	3 114	3 166

Sources: Natural Resources Canada; International Lead and Zinc Study Group.

⁽p) Preliminary.
(1) Refined lead and lead alloys (lead content) produced from scraps, wastes and residues.