

Lead

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Canada is an important world producer and supplier of refined lead, ranking seventh in mine production in 2002 after the United States, China, Germany, the United Kingdom, Australia and Japan. In Canada, primary lead is produced mainly as a co-product of zinc. 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 OF LEAD

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 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 Roman word for lead is "plumbum," which led to the modern English words "plumber" and "plumbing." The chemical symbol for lead, Pb, was also derived from the Latin word.

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.

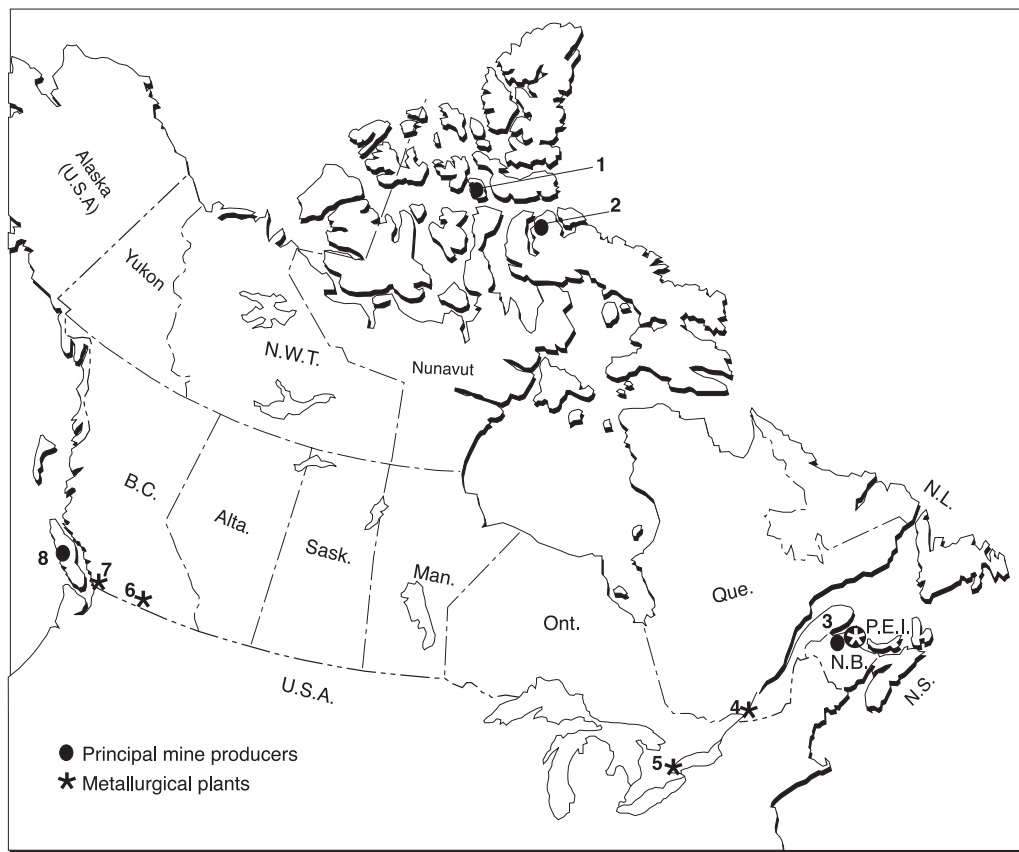
The now-famous Sullivan mine started operation near Kimberley, British Columbia, in the early 1900s and continued to produce lead until its closure in December 2001. By 1914, the Sullivan mine was the largest lead producer in Canada, a position it held for 50 years until the Pine Point mine in the Northwest 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, the mine had the distinction of being the most northerly base-metal mine until its closure at the end of August 2002 after 20 years of operation.

Today Noranda'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 2002 are listed 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 about 75% 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.

Figure 1
Lead Producers in Canada, 2002



Numbers refer to locations on map above.

LEAD-PRODUCING MINES

- 1. Polaris, Teck Cominco Limited
(closed September 2002)
- 2. Nanisivik, Breakwater Resources Ltd.
(closed September 2002)
- 3. Brunswick, Noranda Inc.
- 8. Myra Falls, Boliden Limited

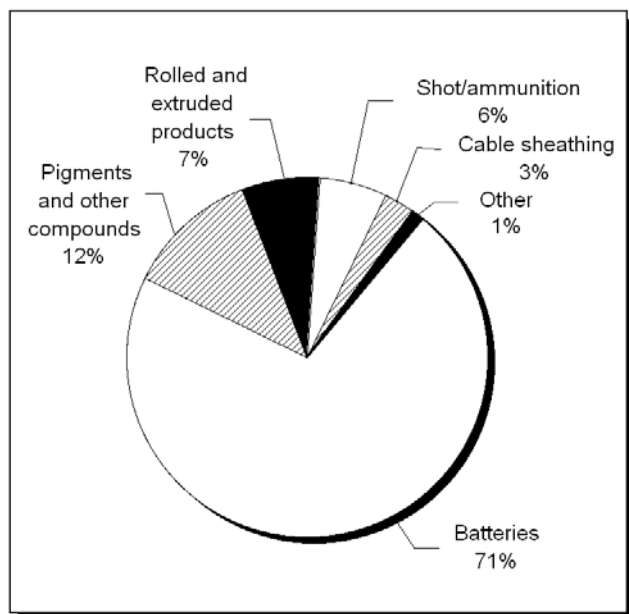
WEB SITE

- www.teckcominco.com
- www.breakwater.ca
- www.noranda.com
- www.boliden.ca

LEAD METALLURGICAL PLANTS

- 3. Belledune, Noranda Inc. www.noranda.com
- 4. Nova Pb Inc. www.novapb.com
General Smelting Company of Canada
- 5. Tonolli, Tonolli Canada Ltd. and Canada Metal Company
- 6. Trail, Teck Cominco Limited www.teckcominco.com
- 7. Metalex Products Ltd.

Figure 2
Western World Lead Markets, 2001



Source: International Lead and Zinc Study Group.

already being reflected by lower treatment charges and cutbacks at some smelters. Overall, taking into consideration the information provided by the member countries of the International Lead and Zinc Study Group (ILZSG), it is expected that there will be a modest deficit of just under 50 000 t in the Western World market for refined lead metal in 2003. This should translate into higher prices over the coming months with lead prices expected to average between US\$500 and \$550/t to the year 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 June 30, 2003. (3) This and other reviews, including previous editions, are available on the Internet at www.nrcan.gc.ca/mms/cmty/com_e.html.

NOTE TO READERS

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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 cerussite (PbCO₃) and anglesite (PbSO₄).

PRICE OUTLOOK

Cash London Metal Exchange (LME) settlement prices for lead traded between US\$450 and \$500/t over the year. Prices peaked at US\$538/t in early January and then fell to reach a minimum for the year of US\$402.50/t in October. Prices rallied somewhat to trade in the \$450-\$470/t range at the end of November, falling back to end the year at \$421/t. Overall, lead prices averaged US\$452.52/t for the year. LME stocks followed a steady rise from a minimum of 97 000 t at the start of January and rose to a peak of 197 400 t in early August. They then continued a slow downward decline to reach 183 900 t by the end of December, but were still almost double the amount at the start of the year.

Lead concentrate markets have been particularly tight as older mines close and few new projects with significant amounts of lead come on stream. The tight market is

TARIFFS

Item No.	Description	Canada			United States	EU	Japan
		MFN	GPT	USA	Canada (1)	MFN	WTO (1)
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% or 3.10 yen/kg
7801.99.10	Lead bullion	2.5%	Free	Free	Free	Free	3% or 4.50 yen/kg
7801.99.20	Lead alloys	2.5%	Free	Free	Free	2.5%	Free to 2.8%
7801.99.90	Unwrought, other	2.5%	Free	Free	Free	2.5%	Free-2.70 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	Bars and rods of lead-antimony-tin alloys	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	5%	3%
7806.00	Other articles of lead	3%	Free	Free	Free	Free to 5%	3%

Sources: Canadian Customs Tariff, effective January 2003, Canada Customs and Revenue Agency; Harmonized Tariff Schedule of the United States, 2003; Worldtariff Guidebook on Customs Tariff Schedules of Import Duties for European Union (42nd Annual Edition: 2002); Customs Tariff Schedules of Japan, 2003.

(1) WTO rate is shown; lower tariff rates may apply circumstantially.

TABLE 1. CANADA, LEAD PRODUCTION AND TRADE, 2001 AND 2002, AND USE, 2000 AND 2001

Item No.	2001		2002 (p)		
	(tonnes)	(\$000)	(tonnes)	(\$000)	
SHIPMENTS					
	New Brunswick	82 368	59 964	73 250	52 301
	British Columbia	35 278	25 682	2 283	1 630
	Nunavut	32 743	23 837	23 523	16 795
	Total	150 389	109 483	99 056	70 726
	Mine output (2)	153 932	..	97 283	..
	Refined production				
	Primary	127 007	..	133 815	..
	Recycled	103 921	..	118 005	..
	Total	230 928	..	251 820	..
EXPORTS					
2603.00.20	Lead content of copper ores and concentrates	-	-	-	-
2607.00	Lead ores and concentrates				
	Germany	10 600	7 860	22 807	15 064
	China	15 049	7 575	11 495	6 520
	Belgium	4 792	2 454	8 003	5 870
	Sweden	23 384	16 597	-	-
	Italy	4 368	2 320	-	-
	Total	58 193	36 806	42 305	27 454
2607.00.20	Lead content of lead ores and concentrates	58 163	32 809	42 271	22 762
2608.00.20	Lead content of zinc ores and concentrates	10 929	3 458	10 912	3 613
2616.10.20	Lead content of silver ores and concentrates	-	-	-	-
7801.10	Unwrought lead				
	Refined lead				
	United States	123 586	104 485	134 752	108 847
	Taiwan	-	-	293	198
	Japan	116	166	61	87
	Malaysia	71	61	80	70
	Other countries	1 604	1 120	-	-
	Total	125 377	105 832	135 186	109 202
7801.91	Lead, unwrought, containing by weight antimony as the principal other element	18 225	18 234	20 348	17 065
7801.99	Lead, unwrought, n.e.s.	28 775	26 603	32 125	26 758
7802.00	Lead waste and scrap				
	United States	1 632	729	352	369
	Other countries	-	-	49	31
	Total	1 632	729	401	400
7803.00	Lead bars, rods, profiles and wire				
	United States	308	490	416	537
	Other countries	-	-	15	62
	Total	308	490	431	599
7804.11	Lead sheets, strip and foil of a thickness (excluding any backing) <0.2 mm	-	-	2	8

TABLE 1 (cont'd)

Item No.		2001		2002 (p)	
		(tonnes)	(\$000)	(tonnes)	(\$000)
EXPORTS (cont'd)					
7804.19	Lead plates, sheet, strip and foil, n.e.s.	877	1 199	1 453	2 136
7804.20	Lead powders and flakes	89	113	100	135
7805.00	Lead tubes, pipes, and tube or pipe fittings (i.e., couplings, elbows, sleeves)	8	28	30	73
7806.00	Other articles of lead				
	United States	..	5 902	..	5 592
	Other countries	..	48	..	41
	Total	..	5 950	..	5 633
	Total exports	..	232 251	..	215 838
IMPORTS (3)					
2603.00.00.20	Lead content of copper ores and concentrates	-	-	-	-
2607.00	Lead ores and concentrates				
	Peru	28 374	39 120	44 878	59 557
	United States	23 477	58 579	13 558	46 949
	Australia	-	-	4 201	12 018
	Chile	3 079	3 859	17	3 936
	Morocco	1 579	2 273	6 532	1 958
	Honduras	16	2 793	2 017	1 775
	Other countries	1 299	4 225	20	1 264
	Total	57 824	110 849	71 223	127 457
2607.00.00.20	Lead content of lead ores and concentrates	52 652	63 520	68 361	69 379
2608.00.00.20	Lead content of zinc ores and concentrates	2 376	2 153	298	305
2616.10.00.20	Lead content of silver ores and concentrates	3 186	1 767	194	61
7801.10.10	Unwrought lead	975	834	1 422	1 407
	Refined lead, pig and block				
7801.10.90	Refined lead, other	2 349	6 762	372	419
7801.91	Lead, unwrought, containing by weight antimony as the principal other element	184	215	15	20
7801.99	Lead, unwrought, other	495	1 770	311	481
7802.00	Lead waste and scrap				
	United States	54 956	11 882	41 058	7 354
	Other countries	221	102	358	108
	Total	55 177	11 984	41 416	7 462
7803.00	Lead bars, rods, profiles and wire				
	United States	842	1 354	1 253	2 136
	Other countries	275	498	15	29
	Total	1 117	1 852	1 268	2 165
7804.11	Lead sheets, strip and foil of a thickness (excluding any backing) <0.2 mm	396	429	289	345
7804.19	Lead plates, sheet, strip and foil, n.e.s.	202	294	186	260
7804.20	Lead powders and flakes	71	136	79	145

TABLE 1 (cont'd)

Item No.	2001		2002 (p)				
	(tonnes)	(\$000)	(tonnes)	(\$000)			
IMPORTS (3) (cont'd)							
7805.00	Lead tubes, pipes, and tube or pipe fittings (i.e., couplings, elbows, sleeves)	18	30	15	27		
7806.00	Other articles of lead						
	United States	4 051	5 418	3 329	4 837		
	Japan	371	467	567	733		
	France	166	173	106	167		
	Germany	135	126	164	162		
	Other countries	395	517	93	117		
	Total	5 118	6 701	4 259	6 016		
	Total imports	182 140	209 296	189 708	215 949		
		2000		2001 (p)			
		Primary	Recycled (5)	Primary	Recycled (5)	Total	
QUANTITY USED (4)							
Lead used for or in the production of:							
	Antimonial lead	x	x	x	x	x	
	Batteries and battery oxides	13 286	12 915	26 201	x	x	
	Chemical uses: white lead, red lead, litharge, tetraethyl lead, etc.	x	x	x	x	x	
	Copper alloys: brass, bronze, etc.	14	13	27	12	8	20
	Lead alloys:						
	Solders	273	1 184	1 457	x	x	x
	Others (including babbitt, type metals, etc.)	x	x	x	x	x	
	Semi-finished products:						
	Pipe, sheet, traps, bends, blocks for caulking, ammunition, etc.	2 428	195	2 624	x	x	x
	Other lead products	2 014	1 809	3 823	3 201	1 695	4 896
	Total, all categories	30 146	51 219	81 365	23 009	33 947	56 956

Sources: Natural Resources Canada; Statistics Canada.

– Nil; . . Not available; n.e.s. Not elsewhere specified; (p) Preliminary; x Confidential.

(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.

Note: Numbers may not add to totals due to rounding.

TABLE 2. CANADA, LEAD PRODUCTION, TRADE AND USE, 1975, 1980 AND 1985-2002

	Production			Exports (1)			Imports Refined	Quantity Used (3)	
	All Forms (2)	Primary	Refined Recycled	Total	In Ores and Concentrates	Refined			Total
	(tonnes)								
1975	349 133	171 516	..	171 516	211 909	110 882	322 791	(a) 1 962	89 192
1980	251 627	162 463	72 117	234 580	147 008	126 539	273 547	(a) 2 602	106 836
1985	268 291	173 220	66 791	240 011	93 657	113 993	207 650	(a) 5 675	104 447
1986	334 342	169 934	87 746	257 680	118 373	111 831	230 204	(a) 4 247	94 680
1987	373 215	139 475	91 186	230 661	207 936	100 204	308 140	(a) 12 558	97 281
1988	351 148	179 461	88 615	268 076	200 822	179 946	380 768	15 132	88 728
1989	268 887	157 330	85 515	242 845	170 582	121 444	292 026	11 734	88 408
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	6 458	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	50 900	148 428	199 328	7 028	81 365
2001	150 389	127 007	103 921	230 928	69 092	126 652	195 744	(r) 5 110	56 956
2002 (p)	99 056	133 815	118 005	251 820	53 183	137 070	190 253	3 616	..

Sources: Natural Resources Canada; Statistics Canada.

.. Not available; (p) Preliminary; (r) Revised.

(a) Lead in pigs, blocks and shot.

(1) Beginning in 1988, exports and imports are based on the new Harmonized System and may not be in complete accordance with previous method of reporting. Ores and concentrates include HS classes 2603.00.20, 2607.00.20, 2608.00.20 and 2616.10.20. Refined exports include HS classes 7801.10, 7803.00, 7804.11, 7804.19 and 7804.20. Refined imports include HS classes 7801.10.10, 7801.10.90, 7803.00, 7804.11, 7804.19 and 7804.20.

(2) Recoverable lead in ores and concentrates shipped. (3) Primary and recycled in origin, as measured by a survey of users.

TABLE 3. ANNUAL AVERAGE LEAD PRICES, 1975-2002

	London Metal Exchange			
	Settlement		Three Months	
	(US\$/t)	(US\$/lb)	(US\$/t)	(US\$/lb)
1975	413.48	18.75	441.93	18.82
1976	451.51	20.48	469.03	21.28
1977	617.78	28.02	626.84	28.43
1978	658.87	29.89	659.07	29.90
1979	1 203.15	54.57	1 149.95	52.16
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

Source: International Lead and Zinc Study Group.

TABLE 4. LME MONTHLY AVERAGE LEAD PRICES, 2001 AND 2002

	London Metal Exchange			
	Settlement		Three Months	
	(US\$/t)	(US\$/lb)	(US\$/t)	(US\$/lb)
2001				
January	478.05	21.68	488.84	21.17
February	501.80	22.76	500.63	22.71
March	498.39	22.61	503.50	22.84
April	477.50	21.66	489.63	22.21
May	466.69	21.17	478.74	21.72
June	444.14	20.15	456.14	20.69
July	461.55	20.94	470.39	22.34
August	482.95	21.91	491.16	22.28
September	465.25	21.10	475.45	21.57
October	468.11	21.23	477.78	21.67
November	486.48	22.07	485.57	22.03
December	483.26	21.92	481.15	21.82
2002				
January	512.43	23.24	509.91	23.13
February	479.95	21.77	489.25	22.19
March	480.15	21.78	492.42	22.34
April	472.36	21.43	484.67	21.98
May	451.89	20.50	463.61	21.03
June	440.00	19.96	451.86	20.50
July	446.13	20.24	456.52	20.71
August	423.24	19.20	432.67	19.63
September	421.26	19.11	430.50	19.53
October	418.15	18.97	428.80	19.45
November	442.12	20.05	449.05	20.37
December	443.61	20.12	452.26	20.51

Source: International Lead and Zinc Study Group.

**TABLE 5. MINE PRODUCTION OF LEAD, BY COUNTRY,
1998-2002**

	1998	1999	2000	2001	2002 (p)
	(000 t)				
EUROPE					
Bulgaria	22	14	14	16	24
Greece	23	19	16	27	29
Ireland	36	39	57	45	32
Italy	6	5	3	4	4
Macedonia	30	27	24	24	24
Poland	60	63	51	53	45
Romania	15	18	19	20	17
Russia	13	14	14	14	19
Spain	19	29	51	36	6
Sweden	112	118	107	88	44
Serbia and Montenegro	16	9	4	5	5
Other Europe	5	–	–	–	–
Total Europe	357	355	360	330	249
AFRICA					
Morocco	80	80	82	77	73
Namibia	14	12	12	12	12
South Africa	84	80	75	51	50
Other Africa	4	8	8	8	7
Total Africa	182	179	178	149	142
AMERICAS					
Canada	190	162	149	154	97
Mexico	166	126	138	136	140
Peru	258	271	271	289	291
United States	491	513	458	463	448
Other Americas	180	39	37	38	41
Total Americas	1 146	1 111	1 053	1 080	1 017
ASIA					
China	581	549	660	599	568
India	38	38	36	32	35
Iran	17	17	17	18	17
Japan	6	6	9	5	6
Kazakhstan	26	31	39	43	43
North Korea	30	16	12	9	6
Thailand	7	12	11	–	3
Turkey	12	14	17	16	14
Other Asia	9	5	5	4	2
Total Asia	726	688	806	726	694
OCEANIA					
Australia	584	633	650	714	658
Total Western World	2 246	2 261	2 245	2 237	2 038
Total World	2 995	2 966	3 047	3 005	2 760

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

**TABLE 6. REFINED LEAD PRODUCTION, BY COUNTRY,
1998-2002**

	1998	1999	2000	2001	2002 (p)
	(000 t)				
EUROPE					
Belgium	92	110	119	100	88
Bulgaria	77	82	84	83	66
Czech Republic	24	25	28	30	29
France	289	273	262	230	203
Germany	353	353	387	375	378
Italy	199	215	231	222	193
Poland	64	64	56	58	50
Russia	36	44	32	58	63
Spain	94	98	120	122	125
Sweden	87	79	78	75	65
United Kingdom	370	372	338	382	368
Other Europe	167	140	147	146	137
Total Europe	1 852	1 855	1 882	1 889	1 765
AFRICA					
Morocco	62	65	67	58	65
South Africa	50	52	46	55	61
Other Africa	15	14	12	12	11
Total Africa	127	131	125	125	137
AMERICAS					
Brazil	48	52	50	47	47
Canada	266	266	284	231	251
Mexico	259	199	241	234	232
Peru	104	111	116	118	121
United States	1 436	1 447	1 457	1 376	1 359
Other Americas	69	60	67	64	72
Total Americas	2 182	2 136	2 215	2 070	2 082
ASIA					
China	757	918	1 100	1 172	1 288
India	66	64	67	63	78
Japan	302	293	312	302	280
Kazakhstan	92	159	208	159	166
Malaysia	29	33	32	38	40
North Korea	25	14	10	7	5
South Korea	180	190	220	211	230
Taiwan	39	53	55	62	55
Other Asia	163	158	159	171	176
Total Asia	1 648	1 882	2 163	2 185	2 318
OCEANIA					
Australia	200	271	259	271	302
New Zealand	6	6	5	5	5
Total Oceania	206	277	263	276	307
Total Western World	4 911	4 945	5 093	4 929	4 902
Total World	6 015	6 280	6 499	6 545	6 609

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

(p) Preliminary.

TABLE 7. REFINED LEAD USE, BY COUNTRY, 1998-2002

	1998	1999	2000	2001	2002 (p)
	(000 t)				
EUROPE					
Austria	67	55	61	59	60
Belgium	58	51	57	40	38
France	251	260	268	265	250
Germany	356	372	390	403	381
Ireland	26	30	29	34	42
Italy	262	279	279	284	286
Netherlands	51	30	29	30	30
Poland	59	60	52	59	54
Russia	92	95	83	94	111
Spain	188	192	231	246	240
United Kingdom	310	325	328	315	310
Other Europe	251	231	241	256	253
Total Europe	1 971	1 980	2 048	2 085	2 055
AFRICA					
Algeria	21	21	21	20	21
Egypt	8	8	9	9	9
South Africa	74	67	59	59	71
Other Africa	32	37	41	35	42
Total Africa	135	133	130	123	143
AMERICAS					
Brazil	110	108	114	112	112
Canada	67	70	68	55	58
Mexico	163	187	195	192	225
United States	1 742	1 793	1 791	1 694	1 653
Other Americas	116	105	113	94	103
Total Americas	2 198	2 263	2 281	2 147	2 061
ASIA					
China	505	524	590	700	860
India	95	112	119	127	130
Indonesia	53	45	66	48	61
Iran	64	65	68	70	68
Japan	308	289	301	284	252
Malaysia	62	76	84	82	86
South Korea	236	272	303	314	330
Taiwan	132	150	170	167	154
Thailand	46	66	96	82	111
Other Asia	179	196	207	210	214
Total Asia	1 681	1 796	2 004	2 084	2 266
OCEANIA					
Australia	54	56	41	41	39
New Zealand	10	6	5	5	6
Total Oceania	64	62	46	47	44
Total Western World	5 259	5 419	5 623	5 1	5 364
Total World	6 034	6 235	6 508	6 485	6 569

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

TABLE 8. WESTERN WORLD RECOVERY OF RECYCLED⁽¹⁾ LEAD, 1998-2002

	1998	1999	2000	2001	2002 (p)
	(000 t)				
EUROPE					
Austria	23	24	23	22	21
Belgium	33	77	107	100	88
France	158	150	137	132	121
Germany	192	192	216	218	237
Ireland	13	11	9	10	7
Italy	142	148	163	164	152
Netherlands	17	18	21	20	18
Spain	94	98	120	122	116
Sweden	48	44	47	44	47
United Kingdom	184	183	182	183	175
Other Europe	39	42	38	38	37
Total Europe	943	987	1 063	1 053	1 019
AFRICA					
Algeria	6	6	6	6	6
Morocco	4	6	4	4	4
South Africa	50	52	46	49	61
Other Africa	9	7	6	5	5
Total Africa	69	71	62	64	76
AMERICAS					
Brazil	48	52	50	47	42
Canada	136	118	125	104	117
Mexico	87	91	79	92	106
United States	1 099	1 097	1 115	1 086	1 099
Other Americas	68	60	60	55	62
Total Americas	1 438	1 418	1 429	1 384	1 426
ASIA					
India	17	19	25	19	35
Indonesia	22	18	18	18	17
Iran	26	28	28	28	30
Japan	158	168	182	175	173
Malaysia	29	33	32	38	40
South Korea	47	57	66	63	69
Taiwan	39	53	55	62	55
Thailand	19	23	24	28	40
Other Asia	69	70	70	76	75
Total Asia	426	469	500	507	534
OCEANIA					
Australia	28	32	34	34	34
New Zealand	6	6	5	5	5
Total Oceania	34	37	38	39	39
Total Western World	2 910	2 983	3 093	3 048	3 093

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.