

LEAD

By Gerald R. Smith

Domestic lead mine production increased for the second straight year, increasing by about 6% over the 1994 level. Alaska and Missouri were the dominant producing States with a 93% share. Other appreciable lead mine production occurred in Colorado, Idaho, and Montana. Lead was produced at 15 mines, employing approximately 1,300 people. The value of domestic mine production was approximately \$360 million. Primary lead was processed at two smelter-refineries in Missouri, a smelter in Montana, and a refinery in Nebraska.

Secondary lead, derived principally from scrapped lead-acid batteries, amounted to nearly three-fourths of the lead refined domestically. About 90% of secondary production came from 18 plants.

During 1995, U.S. Government agencies issued final rules on national emission standards for secondary lead smelting and on the prohibition of the use of lead solder in cans for food packaging. Also issued were modifications to final rules on occupational exposure to lead and on hazardous waste management of certain products, including batteries, pesticides, and thermostats. In addition, two agencies provided funds for programs pertaining to health-related lead issues.

Lead was consumed in about 210 plants in the manufacture of end-use products, including batteries, ammunition, covering for power and communication cable, building construction materials, and solders for motor vehicles, metal containers, and electrical and electronic components and accessories.

Lead-acid batteries continued to be the overwhelmingly dominant use of lead, accounting for about 85% of reported lead consumption in 1995. The Battery Council International reported a 1995 starting-lighting-ignition (SLI) battery production of 96.2 million units. This total included both original equipment and replacement automotive-type batteries. An estimated 1.02 million metric tons of lead was consumed in SLI batteries in 1995.

Monthly sales of lead from the National Defense Stockpile (NDS) continued during 1995. Sales totaled about 33,600 metric tons (37,000 short tons), leaving about 427,000 tons (471,000 short tons) in the NDS at yearend.

London Metal Exchange (LME) and North American producer average prices in December 1995 were higher by \$0.044 per pound and \$0.038 per pound, respectively, than in the final month of 1994. Prices rose steadily throughout the year with the yearly average LME and North American producer prices up by \$0.033 and \$0.051 per pound, respectively, compared with those in 1994.

Lead was mined in 58 countries, of which the top 5 accounted for 64% of the world total production of 2.71 million tons. Australia was the largest producer, with 17% of the world total, followed by China (16%), the United States (15%), Peru

(9%), and Canada (8%).

Legislation and Government Programs

Monthly sales of lead from the NDS continued during 1995 and totaled about 33,600 tons (37,000 short tons). The Defense National Stockpile Center's (DNSC) Annual Materials Plan (AMP) for fiscal year 1995 (October 1, 1994, to September 30, 1995) included a maximum disposal authority for lead of 54,400 tons (60,000 short tons). Disposal of lead from stockpile inventory under this authority during the first 9 months of calendar year 1995 was 24,800 tons (27,400 short tons), which included approximately 16,400 tons (18,000 short tons) sold in negotiated long-term contracts that began in May 1995. In its AMP submitted in October 1995 for fiscal year 1996 (October 1, 1995, to September 30, 1996), the DNSC received further lead disposal authority of 54,400 tons (60,000 short tons). Disposal of lead from stockpile inventory under this authority during the last 3 months of 1995 amounted to 8,800 tons (9,700 short tons), leaving about 427,000 tons (471,000 short tons) of lead in the NDS at yearend 1995.

In November 1995, the DNSC Market Impact Committee published its proposed AMP for fiscal year 1997 (October 1, 1996, to September 30, 1997), seeking public comment on the market impact of the proposed AMP, which included further lead disposal authority of 54,000 tons (60,000 short tons). It marked the first time that the committee was able to publish a proposed AMP prior to review and approval by the U.S. Congress. The committee, cochaired by the Departments of Commerce and State, provides advice to the Department of Defense (DOD) on the projected domestic and foreign economic effects of acquisitions and disposals proposed in the DOD's AMP.

During 1995, two U.S. Government agencies provided funds for programs pertaining to health-related lead issues. In January, the Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), announced the availability of funds in fiscal year 1995 to continue State and community-based childhood lead poisoning prevention programs, and to develop and implement statewide capacity for surveillance of elevated blood lead levels in children. To qualify for funding for State and community-based prevention programs, applicants had to (1) assure that children in communities with demonstrated high risk for lead poisoning were screened, (2) identify those children with elevated blood lead levels, (3) identify possible sources of lead exposure, (4) monitor medical and environmental management of lead poisoned children, (5) provide information on childhood lead poisoning and its prevention and management to the public,

health professionals, and policymakers and decisionmakers, (6) encourage and support community-based programs directed to the goal of eliminating childhood lead poisoning, and (7) address building capacity for conducting surveillance of elevated blood lead levels in children. Applicants for surveillance funds were required to assure timely implementation of regulations for public and private sector laboratories to report results on blood lead levels. Those applicants with existing funding for blood lead level surveillance activity were required to demonstrate how additional funds would be used to enhance the current activity.¹

In February, the Environmental Protection Agency (EPA) announced the availability of funds to develop and conduct authorized State accreditation and certification programs for professionals engaged in lead-based paint abatement activities. The funding was in conformance with the Toxic Substances Control Act as amended by the Residential Lead-Based Paint Hazard Reduction Act of 1992. The numerous lead-based paint activities considered to be eligible for this funding were described in a separate EPA publication entitled "State and Tribal Cooperative Agreement Guidance for Fiscal Year 1995," available at any of EPA's 10 regional offices. Approximately \$12.5 million was made available by EPA for awards to eligible recipients during fiscal year 1995.²

On May 11, 1995, EPA issued final modifications to its Universal Waste Rule originally proposed on February 11, 1993. The hazardous waste management regulations covered under this rule govern the collection and management of certain widely generated wastes, including batteries, pesticides, and thermostats. With respect to the collection and management of lead-acid batteries, EPA maintained certain exemptions in the final rule as they had existed in the original rule because of the current success with lead-acid battery recycling programs. Specifically, the exemptions pertained to persons who generate, transport, or collect spent lead-acid batteries, or who store them but do not regenerate them. The exemptions involved such items as proper labeling, storage time limits, employee training on waste handling, appropriate tracking of waste, and shipment and export requirements.³

In other EPA actions, a final rule on National Emission Standards for Hazardous Air Pollutants from Secondary Lead Smelting was issued June 23, 1995. This rulemaking affected secondary lead smelters that use blast, reverberatory, rotary, or electric furnaces to recover lead, primarily from used lead-acid automotive-type batteries. This EPA rule was issued pursuant to the Clean Air Act, as amended in 1990, and covered the emission of several chemicals identified in the Clean Air Act as hazardous air pollutants including, but not limited to, lead compounds, and certain other inorganic and organic compounds.⁴

On June 27, 1995, the Food and Drug Administration (FDA) issued its final rule prohibiting the use of lead solder in the manufacture of cans for packaging food. Affected products initially introduced or initially delivered into interstate commerce were required to comply with this final rule effective December 27, 1995. The sale of existing stocks of foods in

lead-soldered cans was allowed until June 27, 1996, provided the level of lead in the food packaged in these cans was not considered to be injurious to health.⁵

Further information on the identification of lead-based paint hazards, lead-contaminated dust, and lead-contaminated soil was published by EPA in the Federal Register, September 11, 1995. This information was designed to serve as guidance until the promulgation of final rules on such identification. Original issuance of this guidance was made by EPA on July 14, 1995, and subsequently was made available to the general public upon request. Further dissemination of this guidance, through publication in the Federal Register, was deemed necessary in response to the significant number of requests for guidance from State and EPA regional offices, as well as public health and housing officials.⁶

On October 11, 1995, the Occupational Safety and Health Administration (OSHA) amended its final rule on occupational exposure to lead. OSHA had promulgated the final rule on November 14, 1978; the rule had required lead chemicals manufacturers, secondary copper smelters, nonferrous foundries, and brass and bronze ingot manufacturers, in addition to 41 other lead industries, to limit airborne lead to 50 micrograms per cubic meter in the workplace. Industry had challenged the 50-microgram limit and had obtained a judicial stay of the rule. The stay was lifted for all of the lead industries, with the exception of the brass and bronze ingot manufacturers, in successive actions taken by the court on March 8, 1990, and July 19, 1991. As a result of the latter court action, the secondary copper smelting, lead chemical manufacturing, and large nonferrous foundry (20 or more employees) industries were given 5 years to comply with the 50-microgram limit. Small nonferrous foundries (fewer than 20 employees) were given 5 years to comply with a 75-microgram limit. The 1995 OSHA amendment held these industries to the 5-year compliance period and further set a 75-microgram-per-cubic-meter limit for the brass and bronze ingot manufacturers, to be achieved within 6 years of the lifting of the stay.⁷

Production

Primary.—In 1995, domestic mine production of lead increased for the second straight year and was up by more than 23,000 tons, or 6% over the 1994 level. Increases in production were reported at some major mines in Alaska and Missouri, of which the most significant increase occurred in Alaska. The share of the U.S. mine output of lead derived from production in Alaska and Missouri was 93%, about 1% higher than that in 1994. Other appreciable lead mine production occurred in Colorado, Idaho, and Montana. Domestic mine production data were developed by the U.S. Geological Survey (USGS) from a voluntary survey on lode-mine production of gold, silver, copper, lead, and zinc. All of the major lead-producing mines responded to this survey. (See tables 1, 2, and 3.)

ASARCO Incorporated, New York, operated two mines in southern Missouri that provided all of the concentrate feed for

its nearby smelter and refinery at Glover. Production of lead in concentrates at the mines was 106,000 tons in 1995, down about 2% from the 1994 production level, according to the company's annual report to stockholders. At yearend, Asarco reported total lead reserves in Missouri of 16.4 million tons, with 10.2 million tons grading 4.51% lead at its Sweetwater Mine and 6.2 million tons grading 5.07% lead at its West Fork Mine. Refinery production at the Glover facility was 123,000 tons of lead in 1995. Asarco also operated a custom primary lead business at its East Helena, MT, smelter and Omaha, NE, refinery, processing concentrates received from producers in the Western United States, including its 60%-owned mine in Leadville, CO, and from Latin America.

In August 1995, the company sold its 80% interest in the Quiruvilca Mine in northern Peru to Pan American Silver Corp., Vancouver, BC, Canada. The Quiruvilca Mine had previously supplied a small portion of the concentrate feed for the East Helena smelter. With regard to environmentally related actions, Asarco made the necessary investments at East Helena to meet current environmental standards. At the Omaha refinery, however, the company concluded that the investment required for environmental compliance could not be economically justified. As a result, the company planned to terminate operations at Omaha in mid-1996. Asarco indicated that upon closure of the Omaha facility, it would sell the lead bullion produced at the East Helena smelter to refineries located outside of the United States. (*See table 4.*) The Doe Run Co., St. Louis, MO, operated five lead mines and four mills centered around southeastern Missouri, supplying concentrates to its smelter and refinery at Herculaneum, MO. Doe Run is owned by The Renco Group, a New York-based, privately held company with investments in natural resources and industrial operations.

Cominco Alaska Inc., a wholly owned subsidiary of Cominco Ltd., Toronto, Canada, operated the Red Dog zinc-lead mine in northwest Alaska under a leasing agreement with NANA Regional Corp., owner of 100% interest in the property. NANA is a native corporation organized under the provisions of the Alaska Native Claims Settlement Act. According to Cominco Ltd.'s annual report to stockholders, process changes completed in late 1994 resulted in concentrate production exceeding original design levels during 1995. Lead concentrate production was 91,900 tons, a 70% increase over that of the previous year.

Ore reserves were expanded at Red Dog following the discovery of a new ore body north of the current open pit mine.

The new deposit, named Aqqaluk, was said by Cominco to contain 76 million tons of inferred reserves grading 13.7% zinc and 3.6% lead. As a result of the discovery of this ore body, conceptual design work was in progress at yearend to increase the mining rate an estimated 40% from the current 2.3 million tons annually to 3.2 million tons by 1998. At the increased rate, Red Dog would produce about 820,000 tons of zinc concentrate and 128,000 tons of lead concentrate annually. Cominco put ore reserves at the existing Red Dog Mine at 52.2 million tons grading 19.5% zinc and 5.3% lead.

Hecla Mining Co., Coeur d'Alene, ID, resumed full operation

at the Lucky Friday Mine, Mullan, ID, in early 1995. According to the company's annual report, the mine had been closed for approximately 4 months to repair the hoist, which was damaged in 1994. Mining operations during the year focused on working the existing deposit at a level 1,740 meters (5,700 feet) below the surface. Nearly 97% of the mined lead and silver, and 83% of the zinc were recovered using conventional flotation methods. In other mining activity, about 915 meters (3,000 feet) of a 2,135-meter (7,000-foot) access drift were completed toward a newly identified silver-lead deposit adjacent to the Lucky Friday deposit. Drill sampling of this deposit was expected to be completed by the end of 1996, with a decision made in 1997 on its mining status.

In early 1995, Hecla Mining and Kennecott Minerals Co., Salt Lake City, UT, approved the redevelopment of the Greens Creek lead-zinc-silver-gold mine on Admiralty Island near Juneau, AK. The mine was placed on care and maintenance status in 1993, when low metal prices forced the operation to be shut down. The joint venture between Kennecott (70.3%) and Hecla (29.7%) was expected to place the mine back in operation by January 1997. Recent exploration drilling results had significantly increased the ore resources at Greens Creek. Total production of lead in concentrate during the first year of operation was projected to be about 18,000 tons.⁸

Pegasus Gold Inc., Spokane, WA, mined and processed a record amount of gold-silver-lead-zinc ore at its Montana Tunnels Mine in central Montana in 1995. According to the company's annual report, the benefits of installation of larger mining equipment and greater mill capacity in 1994 increased the amount of ore milled by 8% to 5.1 million tons.

Secondary.—Domestic secondary production increased by about 4% in 1995. Secondary lead accounted for 72% of domestic lead refinery production, reflecting a continued high level of lead-acid battery recycling. Lead recovered from scrap lead-acid batteries accounted for 89% of all lead produced from secondary sources during 1995. The domestic secondary statistics were developed by the USGS from a combined secondary producer and consumer survey that included data from both monthly and annual respondents. Of the 212 consuming companies to which a survey request was sent, 150 responded, representing an estimated 90% of the total U.S. lead consumption. Of the 23 companies producing secondary lead, exclusive of that produced from copper-based scrap, to which a survey request was sent, 20 responded, representing an estimated 90% of the total refinery production of secondary lead. Production and consumption for the nonrespondents were estimated using prior-year levels as a basis. (*See tables 1, 5, 6, 7, 8, and 9.*)

GNB Technologies Inc., Atlanta, GA, and Nova Pb Inc., Quebec, Canada, signed a multiyear agreement in early 1995 that formalized a longstanding toll processing relationship between the companies. Under the agreement, Nova will become GNB's recycling agent in the northeastern part of North America. GNB will collect and deliver spent lead-acid batteries to Nova's secondary lead smelter for processing, and Nova, in turn, will ship the recycled lead to GNB's battery-making plants

in the United States. In other developments, GNB officially opened its new lead-acid battery recycling facility at Columbus, GA, in mid-June. The facility was designed to recycle about 9 million batteries annually, replacing an older plant located at the Columbus site that was capable of recycling only about one-fourth as many batteries.⁹

In March, RSR Corp., Dallas, TX, announced that it had abandoned efforts to build a new secondary lead smelter in Aiken, SC. Local opposition to the project had existed because of environmental concerns. RSR indicated, however, that it was still committed to building a smelter in southeastern United States, but specific plans on how to proceed had not yet been decided.¹⁰ In late 1995, RSR further announced that it would increase secondary refined lead production capacity through modifications to two of its secondary lead smelters. Upgrades planned at the Indianapolis, IN, and Middletown, NY, plants would add a combined total of 48,000 tons of capacity annually to their facilities. Improvements at the Indianapolis plant, expected to be completed in early 1996, included the addition of a second electric arc furnace, and another bag house and scrubber unit. At the Middletown plant, a desulfurization unit was to be installed that produces sodium sulfate crystals in the secondary recovery processing scheme. The unit was expected to be in operation by July 1996.¹¹

Quexco International, Dallas, TX, parent company of RSR Corp., completed the purchase in mid-December of the Rheinische Zinkgesellschaft (RZG) lead facilities owned by Metallgesellschaft AG, Frankfurt, Germany. RZG's operations included the Berzelius Stolberg primary lead smelter, Binsfeldhammer, Germany, and a total of five secondary lead plants in Austria, France, and Germany. According to company officials, the European facilities would be operated independently of RSR's secondary lead operations in the United States.

Exide Corp., Reading, PA, completed the purchase in September 1995 of the two secondary lead smelters owned by Schuylkill Metals Corp., Baton Rouge, LA. Exide had prepared an initial bid to purchase Schuylkill's approximately 100,000-ton-per-year-capacity facilities in January. The acquisition was described as part of Exide's vertical integration plans to increase the quantity of lead accessible in-house for its expanding lead-acid battery production operations. The company had acquired four battery production businesses in Europe during 1994.

Consumption

Reported consumption of lead increased by about 10% in 1995, due mostly to the continued strong overall demand for lead-acid storage batteries. There was a small decline of about 3% in the demand for replacement and original equipment automotive SLI batteries. This decline was countered, however, by an increased demand for non-SLI, industrial-type batteries such as those used in uninterruptible power-supply equipment for hospitals, and in computer and telecommunications networks, and in load-leveling equipment for commercial electrical power systems. Consumption of lead in all forms of

lead-acid batteries represented 85% of the total reported consumption of lead in 1995. Other end-uses for lead that showed increased consumption in 1995 were shot and bullets in ammunition, sheet lead in building construction and medical radiation shielding, and solder in building construction and motor vehicles.

The Battery Council International reported an SLI battery production of 96.2 million units in 1995, compared with 99.2 million units in 1994 and 86.0 million units in 1993. The totals include both original equipment and replacement automotive-type batteries. Using an estimate of 10.6 kilograms (23.3 pounds) per unit, the SLI offtake for 1995 was about 1.02 million tons of lead. SLI batteries include those used for automobiles, buses trucks, tractors, marine, golf carts, motorcycles, aircraft, mine equipment, floor care, and military equipment. (*See tables 6, 7, 8, 9, 12, 13, 14, and 15.*)

World Review

Statistics published by the International Lead and Zinc Study Group (ILZSG) indicated that world production of refined lead increased to 5.4 million tons and world consumption increased to 5.5 million tons in 1995 from about 5.3 million tons each in 1994. Commercial stocks of refined lead in industrialized countries subsequently declined to 0.59 million tons, or 5 weeks of world consumption, at yearend 1995. This is compared with 0.75 million tons, or 7 weeks of consumption, at yearend 1994; 0.79 million tons, or 8 weeks of consumption, at yearend 1993; and 0.74 million tons, or 7 weeks of consumption, at yearend 1992.¹²

Significant exports of lead to Western consumers from Eastern countries, notably China, continued during 1995, but declined about 10% from the 1994 level. Lead prices followed a generally upward trend in 1995, continuing the increase that occurred throughout most of 1994. The average annual LME and North American producer prices were up by \$0.033 and \$0.051 per pound, respectively, compared with average prices in 1994.

During 1995, a number of changes occurred worldwide to affect the structure of the lead mining and refining industries, including the opening and the developing of new facilities, as well as the closing, reopening, expanding, selling, and modernizing of existing facilities. (*See tables 10 and 11.*)

New Mines, Plants, Properties.—MIM Holdings Ltd., Australia, and Nippon Mining and Metals Co., Japan, began commercial mining in early September at the joint-venture McArthur River zinc-lead-silver mine in the Gulf of Carpentaria, Northern Territory, Australia. Plans were to mine 1.5 million tons of ore per year from which bulk concentrates containing 160,000 tons of zinc, 45,000 tons of lead, and 49 tons of silver would be produced for customers in Asia, Australia, and Europe.

In another new opening during 1995, Saudi Arabia's National Lead Smelting Co. began production in July at its secondary lead smelter in Riyadh. Initial lead output at the facility was about 12,000 tons per year, but was expected to

reach full capacity of 18,000 tons per year by the end of 1996. Feed material for the smelter was derived from locally obtained lead-acid battery scrap. Partners in the project were Saudi Arabia's National Industrialization Co., the Dallah Al Bakara Group, as well as Germany's Metallgesellschaft and private investors. Lead production from the Riyadh smelter was targeted for the Persian Gulf and Asian markets.¹³

In mine development activities, Arcon Mines Ltd., a wholly owned subsidiary of Arcon International Resources, was awarded a 21-year mining license for its Galmoy lead-zinc mine in County Kilkenny, Ireland, in February. Coupled with this action, Arcon signed a contract with Ireland's Cementation Co. Ltd. for the design and construction of the mine. Construction began at Galmoy in June 1995 and was expected to be completed by the end of 1996. During the first 12 months of operation Arcon planned to process about 500,000 tons of ore. According to an Arcon official, the mine at full-scale operation will process 715,000 tons of ore annually, yielding about 74,000 tons of zinc and 7,200 tons of lead in concentrate. Most of Galmoy's output will be shipped to European smelters. Reserves at Galmoy were estimated to be 6.25 million tons grading up to 9.83% lead. Continued exploration at zones near Galmoy during 1995 revealed additional reserves, the quantity of which was still being determined at yearend.

Ireland's Ivernia West and Minorco Lisheen, joint-venture developers of the Lisheen zinc-lead mine in County Tipperary, Ireland, initiated the preparation and submission of mining permit applications for the project and expected this part of the process to be completed by early 1996. Receipt of the approval permits allowing the project to proceed were anticipated by the end of 1996. Considering an additional development time of 18 months, initial operation of the mine was projected to begin by mid-1998. The planned production capacity for Lisheen is 320,000 tons per year of zinc concentrates and 60,000 tons per year of lead concentrates.¹⁴

The Australian miner, Western Metals, announced in April that its Kapok lead-zinc mine in Western Australia likely would be brought into full production by mid-1997 following a reexamination of a feasibility study. Further drilling results at the Kapok site also indicated an increase of 12% in the reserve base, to 4.16 million tons grading 7.2% lead and 8.2% zinc. The development of the Kapok ore body additionally was expected to allow exploration of two adjacent target areas, Cadjebut East and Pinnacle Lead, the latter of which has 800,000 tons of resources grading 12% combined lead and zinc.¹⁵ Western Metals had purchased the Kapok, Goongewa, and Blendevale deposits, as well as the nearby Cadjebut lead-zinc mining operation, from BHP Minerals, Melbourne, Australia, in early 1994. Although the life of the Cadjebut Mine originally was estimated to last only until the end of 1995, a revised plan released by Western in July was expected to extend the operation of Cadjebut well into 1997.

Development of the Goongewa ore body progressed during the year to the stage where full mining was expected to begin by yearend. In July, 2000 tons of development ore was mined at Goongewa and subsequently processed at the Cadjebut mill.

Reserves at the Goongewa deposit are about 2.4 million tons grading 10.1% zinc and 2.7% lead.¹⁶ At the Blendevale ore body, Western and joint-venture partner Acacia Resources proceeded at yearend with construction of an access decline to the zinc-lead deposit. Results of feasibility studies determined reserves at Blendevale to be 15 million tons grading 7.5% zinc and 2.4% lead. Production at Blendevale was expected to begin during 1998, yielding 106,000 tons of zinc and 33,000 tons of lead in concentrates annually.¹⁷

CRA Ltd., Melbourne, Australia, approved interim funding in April 1995 for completion of development studies on its Century zinc-lead-silver deposit in Queensland, Australia. By yearend, CRA had approved development of the project, subject to a final agreement with the local aboriginal communities. It was anticipated that mine production would begin in late 1997. Indicated resources at the Queensland deposit are 118 million tons averaging 10.2% zinc, 1.5% lead, and 36 grams per ton silver.

BHP Minerals, Melbourne, Australia, announced in late September that it planned to develop the Cannington lead-zinc-silver deposit, southeast of Mount Isa in Queensland, Australia. Underground mining was expected to begin in late 1997, provided contracts for the lead and zinc concentrates could be finalized and satisfactory rail and port charges could be arranged. Total measured, indicated, and inferred resources at Cannington are estimated to be 45 million tons averaging 11.1% lead, 4.4% zinc, and 500 grams per ton silver.¹⁸

Boliden Mineral AB, Boliden, Sweden, announced plans in August to develop the Los Frailes polymetallic deposit near Boliden's Aznalcollar zinc-lead-copper mine in Sevilla, Spain. Aznalcollar is expected to be depleted of its reserves by the end of 1996. Thus the development of the Los Frailes ore body will serve to continue Boliden's source of zinc, lead, and copper in this region. It was estimated that 3.8 million tons of ore per year would be mined at Los Frailes beginning in early 1997, yielding 90,000, 40,000, and 5,500 tons annually of zinc, lead, and copper, respectively.¹⁹

Closings.—Brazil's only primary lead producer, Plumbum Mineração e Metalurgia SA, halted production indefinitely at its Paraná smelter in late 1995, as a result of an insufficient supply of primary feed material. Plumbum began using imported feed material after the last of its two mines was depleted in February 1995. Reportedly, the high cost associated with transporting the imported material eliminated it as an alternative source of supply for the smelter. By yearend, Plumbum was importing refined lead bar to supply the needs of its end users, most of whom were producers of lead-acid batteries.²⁰

Closure of Kazakstan's primary lead-zinc smelter works at Ust-Kamenogorsk was reported to be imminent by yearend. Accumulation of significant debt at the plant and the lack of a supply of concentrate from Western companies for whom Ust-Kamenogorsk provided toll conversion service were said to be major factors contributing to the potential closure. Lead production capacity at the Ust-Kamenogorsk facility is about 140,000 tons per year.²¹

Reopenings and Expansions.—Counter to the closure

activities, The Nerchinsk Polymetal Co. in the Chita region of Russia resumed full operation at its lead-zinc concentrator in early 1995, after having been closed for nearly 1 year. The temporary closure of the plant in 1994 reportedly had resulted from monetary difficulties caused by the failure of its principal customers to pay in a timely manner for concentrates received.²²

Anvil Range Mining Corp., Toronto, Canada, restarted its Faro lead-zinc mine and mill, Yukon Territory, Canada, in August. The Faro Mine was closed by its previous operator, Curragh, Ltd., Toronto, Canada, in April 1993 and its assets placed in receivership in September 1993. In November 1994, Anvil, after obtaining appropriate funding, began the process of reopening the facilities. The company planned to mine about 4.2 million tons of ore annually, producing 500,000 tons of concentrate containing zinc and lead in a 60:40 ratio.

Results of a feasibility study conducted by Sweden's Boliden Contech on Bolivia's state-owned Karachipampa primary lead-silver smelter in Potosí Department, were favorable for opening the facility. Construction of the smelter, which has a lead production capacity of 24,000 tons annually, was completed in 1985, but it was not placed into production because of an insufficient source of concentrate from Bolivian mine production. In recent years, however, Bolivian mine production had increased to a level adequate to supply 80% to 90% of the Karachipampa smelter's demands, thus prompting a reevaluation of the smelter's status.²³

In September, Mexican mining and metals group Industrias Peñoles SA. de CV. reopened its La Negra polymetallic mine in the State of Querétaro. By November, output of the mine was near its capacity of 300,000 tons, yielding 5,000 tons of zinc and 2,000 tons of lead annually.²⁴

During 1995, plans were made to expand two existing lead facilities. In Sweden, Boliden Mineral AB announced its intentions to expand mine production at its polymetallic Petiknas Mine in Sweden's Boliden/ Kristineberg District. Output from the mine would be increased by 135,000 tons per year from the current 365,000 tons per year by 1997.²⁵ In China, expansion of the Shaoguan primary lead-zinc smelter in Guangdong Province was expected to add about 31,000 tons per year of refined lead production to the current annual capacity of 65,000 tons. The expansion program was to be completed by early 1996.²⁶

Transfers of Ownership and Sales Offerings.—In Africa, offerings were made for the sale of two lead mining interests. Zambia Consolidated Copper Mines opened bidding in mid-January for the sale of its Kabwe lead-zinc mining complex. The mine was closed in June 1994 as a result of declining reserves and a regional drought that contributed to making the operation unprofitable. Lead production from the Kabwe Mine totaled 521 tons in the 12 months just prior to closure, down 42% compared with that of the previous 12 months.²⁷

Namibian miner Imcor Zinc Ltd. invited bids on the purchase of its Rosh Pinah lead-zinc mine in southwestern Namibia in mid-January 1995. The bankrupt company, a joint mining venture between Iscor, a South African steel company, and Namibian Moly-Copper, had been forced to liquidate its assets

as a result of a court ruling handed down in mid-1994. Offers for the purchase of this fully operational mining and beneficiation facility were to be received by April 1995, but by yearend it had remained unsold. Concentrate production capacity at the beneficiation plant was between 1,300 and 2,000 tons per month, grading 44% lead, at the time of liquidation. The Rosh Pinah Mine has proven ore reserves of 422,800 tons grading 2 to 2.7% lead.

In completed sales transactions during 1995, Glencore International, Zug, Switzerland, purchased Brazilian group Companhia Paraibuna de Metais' 45% interest in the Izcaycruz zinc-lead mining project near Lima, Peru. This acquisition, along with the purchase of an additional 15% interest in the project by Glencore's subsidiary Perubar S.A., Lima, Peru, from Cia. de Minas Buenaventura S.A., Lima, Peru, gave Glencore a 75% controlling interest in the project. The remaining 25% interest was held by state-owned Corporación Empresa Minera del Peru S.A. (Minero Peru), Lima, Peru. It was expected that the Izcaycruz Mine and mill would be fully operational by early 1996, with about 8,000 tons of lead concentrate scheduled to be produced annually. In a further acquisition in October, Glencore purchased a 15% interest in Metaleurop to expand its lead and zinc holdings. Glencore also began conducting a feasibility study in late 1995 at its newly acquired Dalpolymetal lead-zinc mine complex near Vladivostok, Russia. Through the study, Glencore, a majority shareholder in Dalpolymetal, hoped to justify modernization of the complex to continue concentrate production at the current levels of 60,000 tons per year zinc and 40,000 tons per year lead.²⁸

Two sales involving Australian lead-zinc miners also were transacted in late 1995. Western Metals signed a memorandum of understanding with Thailand's zinc-lead producer Padaeng Industry to sell 20% of its operations in Western Australia to Padaeng. The sale secured additional funding for Western to develop its Blendevale mining project, as well as to increase its presence in the growing Southeast Asian market. In the other transaction, North Ltd., Melbourne, Australia, finalized the purchase of Belgian metal producer Union Minière SA's Swedish mining subsidiary, Ammeberg Mining AB, which owns the Zinkgruven zinc-lead-silver mine in Sweden. Lead in concentrate recovered from the mine is about 16,400 tons per year. At current mining rates, reserves are sufficient for another 15 years of operation.²⁹

Renovation and Modernization.—Cominco Ltd., Vancouver, BC, Canada, began the engineering changes at the beginning of the year to replace its QSL lead smelter system with a Kivcet system at the company's Trail, BC, facility. Processing problems had resulted in a shutdown of the QSL smelter shortly after it had been placed in operation in late 1989. Efforts to resolve these problems were unsuccessful, prompting Cominco to abandon further attempts to restart the QSL smelter in late 1990. The new Kivcet smelter was expected to be placed in operation by late 1996.

Metaleurop, SA, Paris, France, initiated construction at yearend to replace the conventional blast furnace smelter with a new Ausmelt process smelter at its facility in Nordenham,

Germany. Using the new smelter, Metaleurop planned to increase the quantity of secondary feed material to the smelter from the existing 42% to about 50%. Conversion to the new system was expected to be completed in late February 1996. In November, Metaleurop also announced a plan to modernize its Noyelles-Godault primary lead and zinc smelter in Pas-de-Calais over the next 2 years. The plan included the closing and restructuring of certain departments as well as the making of financial investments in the smelter to reduce costs and increase productivity. Production capacity at the facility currently is about 150,000 tons of lead and 100,000 tons of zinc annually.³⁰

During 1995, the Organization for Economic Cooperation and Development (OECD) continued its efforts toward the formulation of a Council Act for reducing the hazard of exposure to lead worldwide. A draft Council Act was made available in April to the OECD member countries, identifying high-risk products and end uses of lead that should be phased out in an internationally coordinated manner. Subsequent to the issuance of the draft Council Act, members of the lead industry voiced concerns about the act and proposed alternative plans for reducing lead risk worldwide. At a joint meeting of the OECD chemicals group in late June, the OECD members considered these concerns and proposals as part of their Council Act discussions, but were unable to reach agreement on a satisfactory approach to lead risk reduction. During the remainder of the year, the OECD directed its efforts toward developing a consensus among the involved parties before taking any further action on lead risk reduction.

Worldwide reserves of lead contained in demonstrated resources from both producing and nonproducing deposits at yearend were estimated at 68 million tons by the USGS. Reserves for the two largest producers in the world, Australia and China, were about 19 million and 7 million tons, respectively. The United States, the third largest producer in the world in 1995, had reserves of 8 million tons. The reserve base (reserves plus marginal economic deposits, measured and indicated) for Australia and China was 34 million tons and 11 million tons, respectively. The reserve base for the United States was 20 million tons. The total world reserve base at the end of 1995 was estimated to be 120 million tons.

Outlook

According to industry analysts, the demand for lead in both original equipment and replacement lead-acid automotive batteries is expected to grow steadily in the United States over the next 5 years. By the year 2000, original equipment battery shipments should grow by about 10% from the 1995 level of 15.6 million units. During the same period, replacement batteries are expected to grow at an average rate of 3% per year from the 1995 level of 77.1 million units. Projected growth in the demand for replacement batteries is associated not only with the increase since 1990 in the total number of vehicles being used, but also with the decrease in battery life in these vehicles. Battery life has been shortened as an increasing number of vehicles are being driven more miles per year and are being

powered by smaller engines, which operate at higher temperatures. In addition, the drain on batteries as a result of a greater number of electronic components in the vehicles also has shortened battery life.

Domestic mine production should increase by about 10% in 1996 as a result of continued higher production at some of the larger facilities. Total metal production from primary and secondary refineries in 1996 is expected to remain at about the level of 1995. A decline in primary refinery production as a result of the closure of one facility in midyear should be countered by an increase in secondary production owing to an adequate supply of battery scrap for the secondary smelters and sufficient capacity at the smelters to accommodate this increase.

The tighter world lead market of 1995 is likely to continue in 1996 and into 1997 as world consumption continues to increase while world production remains relatively stable. As in 1995, industry stocks are expected to be drawn down to compensate for this shortfall. The extent of the shortfall in the industrialized world will be dependent, to some extent, on the supply of lead available from developing countries.

¹Federal Register. State and Community-Based Childhood Lead Poisoning Prevention Program and Surveillance of Elevated Blood Lead Levels in Children, Notice of Availability of Funds for Fiscal Year 1995. (Centers for Disease Control and Prevention). V. 60, No. 20, Jan. 31, 1995, pp. 5935-5940.

²_____. Grants to Develop and Carry Out Authorized State Accreditation and Certification Programs for Lead-Based Paint Professionals. (Environmental Protection Agency). V. 60, No. 38, Feb. 27, 1995, pp. 10583-10586.

³_____. Universal Waste Rule (Hazardous Waste Management System; Modification of the Hazardous Waste Recycling Regulatory Program). (Environmental Protection Agency). V. 60, No. 91, May 11, 1995, pp. 25492-25551.

⁴_____. National Emission Standards for Hazardous Air Pollutants From Secondary Lead Smelting. (Environmental Protection Agency). V. 60, No. 121, June 23, 1995, pp. 32587-32601.

⁵_____. Lead-Soldered Food Cans. (Food and Drug Admin., Dept. Health and Human Services). V. 60, No. 123, June 27, 1995, pp. 33106-33109.

⁶_____. Guidance on Identification of Lead-Based Paint Hazards; Notice. (Environmental Protection Agency). V. 60, No. 175, Sept. 11, 1995, pp. 47248-47257.

⁷_____. Occupational Exposure to Lead. (Occupational Safety and Health Admin., Dept. Labor). V. 60, No. 196, Oct. 11, 1995, pp. 52856-52859.

⁸Kennecott Minerals (press release). Joint Venture Approves Redevelopment of Greens Creek Mine. May 17, 1995, 1 p.

⁹Platt's Metals Week. N. American Lead Recyclers Form Alliance. V. 66, No. 9, Feb. 27, 1995, p. 3.

¹⁰Metal Bulletin. RSR Kills Aiken Lead Smelter Project. No. 7967, Mar. 30, 1995, p. 14.

¹¹American Metal Market. RSR Plans to Boost Lead Output. V. 103, No. 218, Nov. 10, 1995, p. 1.

¹²International Lead and Zinc Study Group (London). Lead and Zinc Statistics. Monthly Bull., V. 36, No. 7, July 1996.

¹³Metal Bulletin. News Brief—The National Lead Smelting Co. of Saudi Arabia. No. 7997, July 17, 1995, p. 13.

¹⁴_____. Lisheen Partners in Lengthy Permitting. No. 8017, Oct.

2, 1995, p. 6.
¹⁵_____. Kapok Pb-Zn Mine Due On Stream in 1997. No. 7973, Apr. 24, 1995, p. 12.
¹⁶_____. Progress and Profit for Western Metals. No. 7997, July 17, 1995, p. 17.
¹⁷_____. Blendeval Zinc-Lead Deposit Gets Go-Ahead. No. 8032, Nov. 23, 1995, p. 7.
¹⁸_____. BHP Set to Develop Cannington Deposit. No. 8016, Sept. 28, 1995, p. 5.
¹⁹_____. Boliden to Develop Los Frailes Mine. No. 8007, Aug. 24, 1995, p. 5.
²⁰American Metal Market. Plumbum Halts Lead Output. V. 103, No. 236, Dec. 8, 1995, p. 12.
²¹Platt's Metals Week. Ust-Kamenogorsk Plant Future in Question. V. 66, No. 32, Aug. 7, 1995, p. 11.
²²_____. Nerchinsk Plant Floats 20% of Its Shares--Will Return to 1993 Output Levels. V. 66, No. 7, Feb. 13, 1995, p. 6.
²³_____. Bolivia Studying Karachipampa Smelter Restart. V. 66, No. 27, July 3, 1995, p. 11.
²⁴Metal Bulletin. News Brief--The La Negra Polymetallic Mine. No. 8029, Nov. 13, 1995, p. 11.
²⁵_____. Petiknas Mine Expansion Approved. No. 7961, Mar. 9, 1995, p. 5.
²⁶Platt's Metals Week. China's Shaoguan to Boost Lead-Zinc Output. V. 66, No. 19, May 8, 1995, p. 5.
²⁷Metal Bulletin. ZCCM Auctions Kabwe Lead-Zinc Complex Assets. No. 7944, Jan. 9, 1995, p. 5.
²⁸_____. Glencore to Modernize Russian Zn-Pb Mines. No.

8025, Oct. 30, 1995, p. 11.

²⁹American Metal Market. Union Miniere Selling Ammeberg. V. 103, No. 165, Aug. 28, 1995, p. 20.

³⁰_____. Lead-Zinc Smelter Upgrading. V. 103, No. 213, Nov. 3, 1995, p. 2.

OTHER SOURCES OF INFORMATION

U.S. Geological Survey Publications

Lead. Ch. in Mineral Commodity Summaries, annual.

Lead. Mineral Industry Surveys, monthly.

Morris, H.T., Heyl, A.V., and Hall, R.B., 1973, Lead, *in* Brobst, D.A., and Pratt, W.P., United States Mineral Resources: U.S. Geological Survey Professional Paper 820, p. 313-332.

Other Sources

ABMS Non-Ferrous Metal Data.

American Metal Market (daily paper).

Battery Council International, special reports.

DNSC News Releases.

International Lead and Zinc Study Group, special reports.

Metal Bulletin (London).

Platt's Metals Week.

U.S. Department of Commerce News.

TABLE 1
SALIENT LEAD STATISTICS 1/

(Metric tons unless otherwise specified)

	1991	1992	1993	1994	1995	
United States:						
Production:						
Mine, recoverable lead content 2/	466,000	397,000	355,000	363,000	386,000	
Value	thousands	\$344,000	\$307,000	\$249,000	\$298,000	\$359,000
Primary lead (refined):						
Domestic ores and base bullion	324,000	284,000	310,000	328,000	374,000	
Foreign ores and base bullion	21,900	20,800	24,900	23,400	W	
Secondary lead (lead content)	885,000	916,000	893,000	931,000 r/	972,000	
Exports (lead content):						
Lead ore and concentrates	88,000	72,300	41,800	38,700	65,500	
Lead materials, excluding scrap	114,000	71,700	60,300	74,200	65,300	
Imports for consumption:						
Lead in ore and concentrates	12,400	5,310	483	473	2,600	
Lead in base bullion	419	218	18	577	31	
Lead in pigs, bars, and reclaimed scrap	117,000	191,000	196,000	231,000	264,000	
Stocks, Dec. 31:						
Primary lead 3/	9,090	20,500	14,300	9,270	14,200	
At consumers and secondary smelters	71,700	82,300	80,500	68,800 r/	76,000	
Consumption of metal, primary and secondary	1,250,000	1,240,000	1,290,000	1,450,000	1,600,000	
Price: North American Producer average, delivered, cents per pound 4/	33.48	35.10	31.74	37.17	42.28	
World:						
Production:						
Mine	thousand metric tons	3,330	3,070 r/	2,780 r/	2,810 r/	2,710 e/
Refinery 5/	do.	3,080	2,950	2,980 r/	2,960 r/	2,910 e/
Secondary refinery	do.	2,690	2,470 r/	2,390 r/	2,420	2,490 e/
Price: London Metal Exchange, pure lead, cash average, cents per pound 4/		25.30	24.50	18.42	24.83	28.60

e/ Estimated. r/ Revised. W Withheld to avoid disclosing company proprietary data; included in "Domestic ores and base bullion."

1/ Data are rounded to three significant digits, except prices.

2/ Lead recoverable after smelting and refining. Number in Table 10 represents lead in concentrate.

3/ American Bureau of Metal Statistics Inc.

4/ Platt's Metals Week.

5/ Primary metal production only; includes secondary metal production, where inseparable.

TABLE 2
MINE PRODUCTION OF RECOVERABLE LEAD IN
THE UNITED STATES, BY STATE 1/

(Metric tons)

State	1994	1995
Missouri	290,000	359,000 2/
Montana	9,940	W
Other States 3/	63,100 2/	26,600
Total	363,000	386,000

W Withheld to avoid disclosing company proprietary data; included in "Other States."

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes Alaska.

3/ Includes Colorado, Idaho, Illinois, New York, and Tennessee.

TABLE 3
LEADING LEAD-PRODUCING MINES IN
THE UNITED STATES IN 1995, IN ORDER OF OUTPUT

Rank	Mine	County and State	Operator	Source of lead
1	Red Dog	Northwest Arctic, AK	Cominco Alaska Inc.	Zinc ore.
2	Fletcher	Reynolds, MO	The Doe Run Co.	Lead-zinc ore.
3	Sweetwater	do.	ASARCO Incorporated	Lead ore.
4	West Fork	do.	do.	Do.
5	Buick	Iron, MO	The Doe Run Co.	Lead-zinc ore.
6	Casteel 1/	do.	do.	Do.
7	Viburnum No. 29	Washington, MO	do.	Do.
8	Lucky Friday	Shoshone, ID	Hecla Mining Co.	Do.
9	Montana Tunnels	Jefferson, MT	Pegasus Gold Corp.	Zinc ore.
10	Viburnum No. 28	Iron, MO	The Doe Run Co.	Lead-zinc ore.
11	Leadville Unit	Lake, CO	ASARCO Incorporated	Zinc ore.
12	Balmat	St. Lawrence, NY	Zinc Corporation of America	Do.
13	Pierrepoint	do.	do.	Do.
14	Rosiclare	Hardin, IL	Ozark-Mahoning Co.	Fluorspar.
15	Coy	Jefferson, TN	ASARCO Incorporated	Zinc ore.

1/ Includes Brushy Creek Mill.

TABLE 4
REFINED LEAD PRODUCED AT PRIMARY REFINERIES
IN THE UNITED STATES, BY SOURCE MATERIAL 1/ 2/

(Metric tons unless otherwise specified)

Source material	1994	1995
Refined lead:		
Domestic ores and base bullion	328,000	374,000
Foreign ores and base bullion	23,400	W
Total	351,000	374,000
Calculated value of primary refined lead 3/	\$288,000	\$348,000

W Withheld to avoid disclosing company proprietary data; included in "Domestic ores and base bullion".

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Total refined lead: American Bureau of Metal Statistics Inc.; domestic and foreign ores: U.S. Geological Survey calculations.

3/ Value based on average quoted price.

TABLE 5
LEAD RECOVERED FROM SCRAP
PROCESSED IN THE UNITED
STATES, BY KIND OF SCRAP
AND FORM OF RECOVERY 1/

(Metric tons)

	1994	1995
Kind of scrap:		
New scrap:		
Lead-base	45,900 r/	38,600
Copper-base	8,290	7,840
Tin-base	--	--
Total	54,200 r/	46,400
Old scrap:		
Battery-lead	831,000 r/	867,000
All other lead-base	36,800 r/	48,900
Copper-base	8,390	9,230
Tin-base	--	--
Total	877,000 r/	926,000
Grand total	931,000 r/	972,000
Form of recovery:		
As soft lead	527,000 r/	588,000
In antimonial lead	371,000	348,000
In other lead alloys	16,100	19,200
In copper-base alloys	16,700	17,100
In tin-base alloys	1	1
Total	931,000 r/	972,000
Value 2/ thousands	763,000 r/	906,000

r/ Revised.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Value based on average quoted price of common lead.

TABLE 6
U.S. CONSUMPTION OF LEAD, BY PRODUCT 1/

(Metric tons)

SIC Code	Product	1994	1995
	Metal products:		
3482	Ammunition: Shot and bullets	62,400	70,900
	Bearing metals:		
35	Machinery except electrical	W	W
36	Electrical and electronic equipment	288	298
371	Motor vehicles and equipment 2/	4,190	5,270
37	Other transportation equipment	W	W
	Total bearing metals	5,560	6,490
3351	Brass and bronze: Billets and ingots	6,320	5,260
36	Cable covering: Power and communication	16,000	5,640
15	Calking lead: Building construction	764	935
	Casting metals:		
36	Electrical machinery and equipment	W	W
371	Motor vehicles and equipment	W	W
37	Other transportation equipment	2,650	3,480
3443	Nuclear radiation shielding	W	W
	Total casting metals	18,900	18,100
	Pipes, traps, other extruded products:		
15	Building construction	3,370	2,210
3443	Storage tanks, process vessels, etc.	(3/)	(3/)
	Total pipes, traps, other extruded products	3,370	2,210
	Sheet lead:		
15	Building construction	14,900	18,000
3443	Storage tanks, process vessels, etc.	(3/)	(3/)
3693	Medical radiation shielding	6,620	9,960
	Total sheet lead	21,500	27,900
	Solder:		
15	Building construction	2,680	3,220
	Motor vehicles, equipment, metal cans and shipping containers	3,020	8,260
367	Electronic components and accessories	5,370 r/	4,190
36	Other electrical machinery and equipment	1,180	482
	Total solder	12,200 r/	16,200
	Storage batteries:		
3691	Storage battery grids, post, etc.	797,000 r/	823,000
3691	Storage battery oxides	425,000 r/	533,000
	Total storage batteries	1,220,000	1,360,000
371	Terne metal: Motor vehicles and equipment	(4/)	(4/)
27	Type metal: Printing and allied industries	(5/)	(5/)
34	Other metal products 6/	5,330	5,220
	Total metal products	1,370,000	1,520,000
	Other oxides:		
285	Paint	W	W
32	Glass and ceramics products	W	W
28	Other pigments and chemicals	10,200	7,880
	Total other oxides	62,700	61,700
	Miscellaneous uses	12,000	21,900
	Grand total	1,450,000	1,600,000

r/ Revised. W Withheld to avoid disclosing company proprietary data; included in appropriate totals.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes "Terne metal: Motor vehicles and equipment."

3/ Included with "Building construction" to avoid disclosing company proprietary data.

4/ Included with "Bearing metals: Motor vehicles and equipment."

5/ Included with "Other metal products" to avoid disclosing company proprietary data.

6/ Includes lead consumed in foil, collapsible tubes, annealing, galvanizing, plating, and fishing weights.

TABLE 7
U.S. CONSUMPTION OF LEAD IN 1995, BY STATE 1/ 2/

(Metric tons)

State	Refined soft lead	Lead in antimonial lead	Lead in alloys	Lead in copper-base scrap	Total
California, Oregon, and Washington	49,500	40,600	62,300	--	152,000
Florida and Georgia	8,600	142	1,590	--	10,300
Illinois	23,700	40,100	11,000	544	75,400
Iowa, Michigan, and Missouri	62,300	43,100	32,000	--	137,000
Ohio and Pennsylvania	125,000	39,600	40,400	1,220	206,000
Arkansas and Texas	56,500	24,700	7,770	--	89,000
Alabama, Louisiana, Mississippi, and Oklahoma	11,400	281	--	--	11,600
Colorado, Indiana, Kansas, Kentucky, Minnesota, Nebraska, Tennessee, Wisconsin	468,000	230,000	79,900	1,050	778,000
Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, North Carolina, Rhode Island, South Carolina, Vermont	70,600	43,000	24,300	--	138,000
Total	805,000	461,000	259,000	2,810	1,600,000

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes lead that went directly from scrap to fabricated products.

TABLE 8
U.S. CONSUMPTION OF LEAD IN 1995, BY CLASS OF PRODUCT 1/ 2/

(Metric tons)

Product	Soft lead	Lead in antimonial lead	Lead in alloys	Lead in copper-base scrap	Total
Metal products	61,100	82,900	12,200	2,750	159,000
Storage batteries	724,000	352,000	281,000	--	1,360,000
Other oxides	61,700	--	--	--	61,700
Miscellaneous	18,700	879	2,230	--	21,800
Total	865,000	435,000	296,000	2,750	1,600,000

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes lead that went directly from scrap to fabricated products.

TABLE 9
STOCKS OF LEAD AT CONSUMERS AND SECONDARY SMELTERS
IN THE UNITED STATES, DECEMBER 31 1/

(Metric tons, lead content)

Year	Refined soft lead	Lead in antimonial lead	Lead in alloys	Lead in copper-base scrap	Total
1994	32,500 r/	26,400 r/	9,710 r/	175	68,800 r/
1995	35,900	21,500	18,400	174	76,000

r/ Revised.

1/ Data are rounded to three significant digits; may not add to totals shown.

TABLE 10
LEAD: WORLD MINE PRODUCTION OF LEAD IN CONCENTRATES, BY COUNTRY 1/ 2/

(Metric tons)

Country 3/	1991	1992	1993	1994	1995 e/
Algeria e/	1,150 r/	900	900	700 r/	700
Argentina	23,697	17,956	11,826	12,000 e/	12,000
Australia	579,000	577,000	519,000	537,000	455,000 4/
Austria	1,152	920	1,340	-- e/	--
Bolivia	20,810	20,002	21,220	19,679 r/	20,387 4/
Bosnia and Herzegovina e/ 5/	XX	800 r/	200 r/	200 r/	200
Brazil	7,273	2,517	117 r/	806 r/	1,000
Bulgaria e/	43,600	39,000	39,000	43,000 r/	43,000
Burma e/	2,750	2,800	2,200	2,300	2,400
Canada	276,528	343,808	182,234 r/	167,584 r/	210,415 4/
Chile	1,050	298	344 r/	1,008 r/	1,010
China e/	352,000	330,000	338,000	462,000 r/	430,000
Colombia	611	620	447	290 r/	275
Czech Republic e/ 6/	XX	XX	1,000	500 r/	--
Czechoslovakia e/ 7/	3,430	2,800	XX	XX	XX
Ecuador e/	200	200	200	200	200
Finland	1,400	576	--	-- e/	--
France	1,725	--	--	-- e/	--
Georgia e/ 8/	XX	800	500	400	300
Germany	5,933	1,485	--	-- e/	--
Greece	31,700	28,300	26,400	22,800	20,000
Honduras	8,719	10,797	3,551	2,810 r/	2,000
India	25,068	30,500	26,000	30,500 r/	28,500 4/
Iran e/ 9/	16,000	25,000	25,000	20,000 r/	20,000
Ireland	39,900	42,900	48,300 r/	53,700 r/	46,100 4/
Italy e/	14,200 4/	16,000	7,400	6,500	6,000
Japan	18,329	18,839	16,470	9,946	9,659 4/
Kazakhstan e/ 8/	XX	170,000	160,000	57,000 r/ 4/	40,000 4/
Kenya e/	--	--	396	200	100
Korea, North e/	80,000	75,000	80,000	80,000	80,000
Korea, Republic of	12,633	13,628	14,800 e/	15,000 e/	15,000
Macedonia e/ 5/	XX	15,000	15,000	15,000	15,000
Mexico	167,684	169,610	154,000	170,322	164,348 4/
Morocco	73,720	76,605	81,684	73,164	73,000
Namibia	15,000 e/	15,000 e/	11,600	13,917 r/	16,115 4/
Nigeria e/	100	100	100	100	100
Norway	3,517	3,767	1,698	3,096 r/	3,000
Peru	217,864	195,743	217,088	233,510 r/	232,540 4/
Poland	63,600	70,100 r/	68,400 r/	67,000 r/ e/	67,000
Romania	16,177	16,697 r/	16,929 r/	23,838 r/	20,506 4/
Russia e/ 8/	XX	22,000 r/	19,500 r/	17,000 r/	16,000
Saudi Arabia e/	250	250	250	250	250
Serbia and Montenegro 5/	XX	22,661 r/	9,229 r/	7,500 r/	12,000
Slovakia e/ 6/	XX	XX	1,800	1,800	1,800
Slovenia e/ 5/	XX	2,000	--	-- r/	--
South Africa	76,262	75,806	100,171	95,824	87,965 4/
Spain	49,200	31,000	25,300	23,753 r/	25,000
Sweden	91,127	105,295	111,709	112,787	100,000
Tajikistan e/ 8/	XX	2,000	1,600	1,200	1,000
Thailand	16,680	11,880	6,050	7,950	9,680 4/
Tunisia	1,285	1,362	1,300 e/	1,300 e/	1,300
Turkey	15,317	10,800 e/	11,448 r/	11,158 r/	11,000
U.S.S.R. 10/	380,000	XX	XX	XX	XX
United Kingdom	1,020	1,000 r/ e/	1,000 r/ e/	2,000 r/	1,600
United States	477,000	407,000	362,000	370,000	394,000 4/
Uzbekistan e/ 8/	XX	35,000 r/	25,000 r/	15,000 r/	10,000
Yugoslavia 11/	90,000 e/	XX	XX	XX	XX
Zambia 12/	9,084	4,446	7,027	--	--
Total	3,330,000	3,070,000 r/	2,780,000 r/	2,810,000 r/	2,710,000

See footnotes at end of table.

TABLE 10--Continued
LEAD: WORLD MINE PRODUCTION OF LEAD IN CONCENTRATES, BY COUNTRY 1/ 2/

e/ Estimated. r/ Revised. XX Not applicable.
1/ World totals, U.S. data, and estimated data are rounded to three significant digits; may not add to totals shown.
2/ Table includes data available through Aug. 1, 1996.
3/ In addition to the countries listed, Uganda may produce lead, but available information is inadequate to make reliable estimates of output levels.
4/ Reported figure.
5/ Formerly part of Yugoslavia; data were not reported separately until 1992.
6/ Formerly part of Czechoslovakia; data were not reported separately until 1993.
7/ Dissolved Dec. 31, 1992.
8/ Formerly part of the U.S.S.R.; data were not reported separately until 1992.
9/ Year beginning Mar. 21 of that stated.
10/ Dissolved in Dec. 1991.
11/ Dissolved in Apr. 1992.
12/ Pb content of ore milled in year beginning Apr. 1 of that stated. Mine closed in June 1994.

TABLE 11
LEAD: WORLD REFINERY PRODUCTION, BY COUNTRY 1/ 2/

(Metric tons)

Country	1991	1992	1993	1994	1995 e/
Algeria: e/					
Primary	1,000	1,000	1,500	1,000 r/	800
Secondary	3,500	3,500	3,500	3,500	3,500
Total	4,500	4,500	5,000	4,500 r/	4,300
Argentina: e/					
Primary	10,000	14,597 3/	15,000	15,000	15,000
Secondary	13,697 3/	15,000	14,500	14,000	14,000
Total	23,700	29,600	29,500	29,000	29,000
Australia:					
Primary	220,000	215,000	221,000	212,000 r/	215,000 3/
Secondary	19,000	17,000	22,000	20,500 r/	20,400 3/
Total	239,000	232,000	243,000	232,500 r/	235,400 3/
Austria:					
Primary	6,346	5,727	4,779	-- e/	--
Secondary	16,333	18,203	17,857	17,165 r/	18,000
Total	22,679	23,930	22,636 r/	17,165 r/	18,000
Belgium:					
Primary	78,124	75,297	75,880	97,200 r/	100,000
Secondary	32,560	41,000	51,000	26,300 r/	25,000
Total	110,684	116,297	126,880	123,500 r/	125,000
Brazil:					
Primary	22,023	24,533	27,663	14,602 r/	15,000
Secondary	42,000	38,267	47,027	3,453 r/	5,000
Total	64,023	62,800	74,690	18,055 r/	20,000
Bulgaria:					
Primary e/	46,000	43,000	47,000 r/	52,300 r/	53,000
Secondary e/	10,200	10,100	10,000	10,000	10,000
Total	56,223	53,099	56,994 r/	62,300 r/	63,000
Burma: Primary	2,177	2,122	1,561	1,797 r/	1,753 3/
Canada:					
Primary	106,420	151,252	147,907 r/	153,035 r/	173,731 3/
Secondary	105,946	101,633	69,107	98,605 r/	103,641 3/
Total	212,366	252,885	217,014 r/	251,640 r/	277,372 3/
China: e/					
Primary	290,000	325,000	372,000	408,000 r/	370,000
Secondary	40,000	40,000	40,000	59,900 r/	50,000
Total	330,000	365,000	412,000	467,900 r/	420,000
Colombia: Secondary e/	3,600	3,600	3,600	3,500	3,500
Czech Republic: 4/ Secondary e/	XX	XX	20,000	20,000	20,000
Czechoslovakia: 5/ Secondary	17,835	24,000	XX	XX	XX
France: e/					
Primary	154,500 3/	161,000	158,000	160,000	150,000
Secondary	284,000	284,000	280,000	284,000	275,000
Total	438,000 r/	445,000	438,000	444,000	425,000

See footnotes at end of table.

TABLE 11--Continued
LEAD: WORLD REFINERY PRODUCTION, BY COUNTRY 1/ 2/

(Metric tons)

Country	1991	1992	1993	1994	1995 e/
Germany:					
Primary	160,810	175,322	174,595	189,435	190,000
Secondary	201,700	179,000	159,561	142,249	145,000
Total	362,510	354,322	334,156 r/	331,684 r/	335,000
Hungary: Secondary e/	100	100	100	100	--
India: e/					
Primary	30,600	40,800	32,500 r/	38,600 r/	34,600
Secondary	17,200	22,900	18,200 r/	21,700 r/	19,500
Total	47,800	63,700	50,700 r/	60,300 r/	54,100
Iran:					
Primary	--	--	--	10,000	10,000
Secondary e/	8,000	7,800	8,000	8,000	8,000
Total e/	8,000	7,800	8,000	18,000	18,000
Ireland: Secondary	11,600	12,000	12,000 e/	10,000 e/	10,000
Italy:					
Primary	111,696	102,000	89,900	91,700 r/	90,000
Secondary	96,500	84,300	92,900	114,200 r/	115,000
Total	208,196 r/	186,300	182,800	205,900 r/	205,000
Jamaica: Secondary e/	1,000	1,000	800	800	800
Japan:					
Primary	220,331	218,787	212,145	182,621	149,523 3/
Secondary	112,100	111,374	97,307	109,641 r/	137,011 3/
Total	332,431	330,161	309,452	292,262	286,534 3/
Kazakstan: e/ 6/					
Primary	XX	180,000	125,000 r/	75,000 r/	60,000
Secondary	XX	30,000	25,000	20,000	10,000
Total	XX	210,000	150,000 r/	95,000 r/	70,000
Korea, North: e/					
Primary	75,000	70,000	75,000	75,000	75,000
Secondary	5,000	5,000	5,000	5,000	5,000
Total	80,000	75,000	80,000	80,000	80,000
Korea, Republic of: e/					
Primary	40,600	63,000	88,000	76,000	75,000
Secondary	40,000	25,000	10,000	15,000	15,000
Total	80,600	88,000	98,000	91,000	90,000
Macedonia: e/ 7/					
Primary	XX	6,000	6,000	6,000	6,000
Secondary	XX	2,000	2,000	2,000	2,000
Total	XX	8,000	8,000	8,000	8,000
Malaysia: Secondary e/	24,000	28,500	29,000	33,200 r/	33,100 3/
Mexico:					
Primary	151,817	167,000	178,419	170,322 r/	164,348 3/
Secondary e/	10,000	10,000	10,000	10,000	10,000
Total e/	162,000	177,000	188,000	180,000 r/	174,000
Morocco: e/					
Primary	70,000	68,000	69,000	65,000 r/	65,000
Secondary	2,000	2,000	2,000	2,000	2,000
Total	72,000	70,000	71,000	67,000 r/	67,000
Namibia: Primary 8/	33,367	31,655	31,236	23,813	26,752 3/
Netherlands: Secondary	33,700	24,300	24,200	25,000 e/	25,000
New Zealand: Secondary e/	5,000	5,000	3,000	6,000 r/	6,000
Pakistan: Secondary e/	2,500	3,000	3,000	3,000	2,500
Peru:					
Primary	74,510	83,951 r/	87,197 r/	88,071 r/	89,577 3/
Secondary e/	5,000	5,000	5,000	5,000	5,000
Total e/	79,500	89,000 r/	92,200 r/	93,100 r/	94,600
Philippines: Secondary	16,100	19,100	24,300	17,200 r/	17,200
Poland:					
Primary e/	35,800	38,700	47,300	46,300	47,000
Secondary e/	15,000	15,000	15,000	15,000	15,000
Total	50,800	53,700	62,300	61,300	62,000
Portugal: Secondary e/	5,000	7,400	8,000	8,000	8,000

See footnotes at end of table.

TABLE 11--Continued
LEAD: WORLD REFINERY PRODUCTION, BY COUNTRY 1/ 2/

(Metric tons)

Country	1991	1992	1993	1994	1995 e/
Romania:					
Primary	13,205	14,416	11,800 r/	22,000	22,000
Secondary	4,000	1,750	5,610 r/	4,000	4,000
Total	17,205	16,166	17,410 r/	26,000	26,000
Russia: 6/					
Primary	XX	18,000 r/	17,500 r/	15,700 r/	15,000
Secondary e/	XX	14,500 r/	14,100 r/	12,700 r/	12,000
Total e/	XX	32,500 r/	31,600 r/	28,400 r/	27,000
Serbia and Montenegro: 7/					
Primary	XX	23,265	6,393	4,458	12,500
Secondary	XX	390	--	--	--
Total	XX	23,655	6,393	4,458	12,500
Slovenia: e/ 7/					
Primary	XX	1,000	1,000	1,000	--
Secondary	XX	3,000	3,000	3,000	3,000
Total	XX	4,000	4,000	4,000	3,000
South Africa: Secondary	32,200	29,000	31,800	31,900 r/	32,100 3/
Spain: e/					
Primary	110,400	62,000	62,400	70,400	70,000
Secondary	59,000	58,000	62,400	69,600	70,000
Total	169,000	120,000	125,000	140,000	140,000
Sweden:					
Primary	49,168	54,111	46,752	46,600 e/	46,000
Secondary	38,835	37,078	37,764	36,000 e/	36,000
Total	88,003	91,189	84,516 r/	82,600 e/	82,000
Switzerland: Secondary	5,000	6,400	6,000	6,350	6,400
Taiwan: Secondary e/	20,000	--	--	--	--
Thailand: Secondary	12,843	18,906	17,060	16,904 r/	19,070 3/
Trinidad and Tobago: Secondary	1,800	1,800	1,700	1,600	1,600
Tunisia: e/					
Primary	750	913	900	900	1,000
Secondary	250	250	250	250	250
Total	1,000	1,160	1,150	1,150	1,250
Turkey: e/					
Primary	5,400	3,000	3,000	4,000 r/	4,000
Secondary	3,100	2,100	2,000	2,100	2,000
Total	8,500	5,100	5,000	6,100 r/	6,000
U.S.S.R.: e/ 9/					
Primary	380,000	XX	XX	XX	XX
Secondary	250,000	XX	XX	XX	XX
Total	630,000	XX	XX	XX	XX
Ukraine: Secondary e/ 6/	XX	20,000 r/	17,000 r/	12,000 r/	14,000
United Kingdom:					
Primary	164,338	198,805	209,560	191,036 r/	190,000
Secondary	146,676	147,990	154,453	161,430	160,000
Total	311,014	346,795	364,013	352,466 r/	350,000
United States:					
Primary	346,000	305,000	335,000	351,000	374,000 3/
Secondary	885,000	916,000	893,000	913,000	972,000 3/
Total	1,230,000	1,220,000	1,230,000	1,260,000	1,350,000 3/
Venezuela: Secondary e/	15,000	15,000	14,000	15,000	15,000
Yugoslavia: e/ 10/					
Primary	70,000	XX	XX	XX	XX
Secondary	18,000	XX	XX	XX	XX
Total	88,000	XX	XX	XX	XX
Zambia: Primary 11/	2,637	3,033	2,002	--	--
Grand total	5,770,000	5,420,000 r/	5,380,000 r/	5,380,000	5,400,000
Of which:					
Primary	3,080,000	2,950,000	2,980,000 r/	2,960,000 r/	2,910,000
Secondary	2,690,000	2,470,000 r/	2,390,000 r/	2,420,000	2,490,000

See footnotes at end of table.

TABLE 11--Continued
LEAD: WORLD REFINERY PRODUCTION, BY COUNTRY 1/ 2/

e/ Estimated. r/ Revised. XX Not applicable.

1/ World totals, U.S. data, and estimated data are rounded to three significant digits; may not add to totals shown.

2/ Table includes data available through Aug. 1, 1996. Data included represent the total output of refined lead by each country, whether derived from ores and concentrates (primary) or scrap (secondary), and include the lead content of antimonial lead, but exclude, to the extent possible, simple remelting of scrap.

3/ Reported figure.

4/ Formerly part of Czechoslovakia; data were not reported separately until 1993.

5/ Dissolved Dec. 31, 1992. All production in Czechoslovakia for 1991-92 came from the Czech Republic.

6/ Formerly part of the U.S.S.R; data were not reported separately until 1992.

7/ Formerly part of Yugoslavia; data were not reported separately until 1992.

8/ Includes products of imported concentrate.

9/ Dissolved in Dec. 1991.

10/ Dissolved in Apr. 1992.

11/ Data are for fiscal year beginning Apr. 1 of that stated. Smelter operation closed Mar. 1993. Production in 1993 includes secondary output and may all be simply remelt.

TABLE 12
PRODUCTION AND SHIPMENTS OF LEAD PIGMENTS AND OXIDES IN THE UNITED STATES 1/ 2/

(Metric tons unless otherwise specified)

Product	1994				1995			
	Production		Shipments		Production		Shipments	
	Gross weight	Lead content	Quantity	Value 3/	Gross weight	Lead content	Quantity	Value 3/
White lead, dry	W	W	W	W	W	W	W	W
Litharge and red lead	75,600	70,100	70,400	\$56,100,000	8,950	8,330	15,700	\$13,000,000
Leady oxide	292,000 r/	277,000 r/	NA	NA	537,000	510,000	NA	NA
Total	367,000 r/	347,000 r/	NA	NA	546,000	518,000	NA	NA

r/ Revised. NA Not available. W Withheld to avoid disclosing company proprietary data; not included in "Total."

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Excludes basic lead sulfate to avoid disclosing company proprietary data.

3/ At plant, exclusive of container.

TABLE 13
U.S. IMPORTS FOR CONSUMPTION OF LEAD PIGMENTS
AND COMPOUNDS, BY KIND 1/

Kind	Quantity (metric tons)	Value (thousands)
1994:		
White lead carbonate	121	\$209
Red and orange lead	84	189
Chrome yellow and molybdenum orange pigments and lead-zinc chromates	5,970	14,100
Litharge	19,700	12,600
Leady litharge	401	307
Glass frits (undifferentiated)	10,400	16,200
Total	36,700	43,600
1995:		
White lead carbonate	27	63
Red and orange lead	63	174
Chrome yellow and molybdenum orange pigments and lead-zinc chromates	5,770	13,600
Litharge	18,500	14,200
Leady litharge	514	442
Glass frits (undifferentiated)	12,200	13,600
Total	37,000	42,000

1/ Data are rounded to three significant digits; may not add to totals shown.

Source: Bureau of the Census.

TABLE 14
U.S. EXPORTS OF LEAD, BY COUNTRY 1/

(Lead content unless otherwise specified)

Country	1994		1995	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Ore and concentrates (lead content):				
Australia	114	\$40	103	\$32
Belgium	13,900	3,410	23,100	6,540
Canada	10,800	4,100	27,000	8,840
Germany	125	39	--	--
India	--	--	790	106
Japan	2,880	707	8,670	2,450
Korea, Republic of	7,740	1,980	5,830	1,650
Mexico	3,130	934	5	10
Other	5 r/	5 r/	62	19
Total	38,700	11,200	65,500	19,600
Ash and residues (lead content):				
Belgium	13,600	6,460	5,580	3,450
Canada	6,810	4,530	2,260	1,150
India	126	60	124	124
Other	64 r/	65 r/	75	30
Total	20,600	11,100	8,040	4,760
Unwrought lead and lead alloys (lead content):				
Belgium	86	525	1,190	1,880
Brazil	44	76	--	--
Canada	5,100	3,200	2,850	2,440
Chile	1,100	2,190	496	895
Germany	18	66	470	413
Hong Kong	3	53	110	256
India	26	18	6	8
Indonesia	2,230	1,180	231	142
Israel	1,410	747	1,320	1,020
Japan	2,820	1,800	2,970	2,040
Korea, Republic of	23,400	12,100	19,800	12,800
Malaysia	1,230	624	752	493
Mexico	522	660	1,040	1,280
Morocco	--	--	158	55
Pakistan	--	--	26	29
Panama	6	13	33	69
Philippines	47	180	90	150
Taiwan	9,910	5,400	16,200	10,400
Thailand	107	65	9	5
Other	176 r/	663 r/	506	639
Total	48,200	29,500	48,200	35,000
Wrought lead and lead alloys (lead content):				
Brazil	67	89	10	54
Canada	1,110	3,350	3,400	3,890
China	29	45	(2/)	57
Costa Rica	108	240	109	212
Dominican Republic	21	18	144	137
Egypt	--	--	371	1,680
France	49	280	225	469
Germany	265	138	45	272
Guyana	19	12	144	85
Hong Kong	1,330	2,670	634	2,330
India	163	158	21	1,030
Indonesia	43	55	5	26
Japan	109	555	132	521
Korea, Republic of	160	558	360	1,100
Kuwait	--	--	81	646
Malaysia	41	269	24	426
Mexico	871	7,850	1,860	6,420
Netherlands	251	343	55	256
New Zealand	138	213	120	259
Saudi Arabia	115	305	331	1,620
Singapore	2	76	386	609
Sweden	(2/)	19	37	122

See footnotes at end of table.

TABLE 14- Continued
U.S. EXPORTS OF LEAD, BY COUNTRY 1/

(Lead content unless otherwise specified)

Country	1994		1995	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Wrought lead and lead alloys (lead content)--Continued:				
Taiwan	82	\$290	104	188
Thailand	50	86	2	180
United Kingdom	101	703	112	485
Venezuela	15	44	67	128
Vietnam	--	--	37	55
Other	204 r/	976 r/	211	1,210
Total	5,340	19,300	9,020	24,500
Scrap (gross weight):				
Antigua and Barbuda	91	16	(2/)	11
Belgium	22	64	33	106
Brazil	4,110	936	13	492
Canada	68,400	13,000	95,600	17,800
Cayman Islands	100	10	--	--
China	458	288	93	122
Costa Rica	558	208	--	--
Georgia	30	3	--	--
Germany	15	119	47	610
Guatemala	38	131	(2/)	7
Hong Kong	49	19	83	80
India	941	156	407	104
Israel	(2/)	3	187	41
Jamaica	34	3	1	5
Japan	127	321	59	147
Korea, Republic of	9,440	6,070	6,110	6,860
Mexico	903	1,140	501	446
Panama	137	37	2	41
Russia	34	78	76	173
Singapore	782	292	(2/)	45
Taiwan	250	113	277	388
United Arab Emirates	268	27	--	--
United Kingdom	903	292	299	461
Venezuela	315	83	609	1,220
Other	91 r/	1,080 r/	107	1,890
Total	88,100	24,500	105,000	31,000

r/ Revised.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Less than 1/2 unit.

Source: Bureau of the Census.

TABLE 15
U.S. IMPORTS FOR CONSUMPTION OF LEAD, BY COUNTRY 1/

(Lead content unless otherwise specified)

Country	1994		1995	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Ore and concentrates (lead content): 2/				
Belgium	184	\$57	--	--
Canada	163	40	--	--
Korea, Republic of	126	39	--	--
Mexico	(3/)	3	2,380	\$1,890
Peru	--	--	88	25
Other			126	47
Total	473	138	2,600	1,960
Base bullion (lead content):				
Canada	575	278	--	--
Other	2	7	31	27
Total	577	284	31	27

See footnotes at end of table.

TABLE 15
U.S. IMPORTS FOR CONSUMPTION OF LEAD, BY COUNTRY 1/

(Lead content unless otherwise specified)

Country	1994		1995	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Pigs and bars (lead content):				
Australia	500	\$191	--	--
Belgium	704	1,470	25	\$46
Bulgaria	31	18	1,910	1,110
Canada	159,000	92,300	182,000	123,000
China	167	131	--	--
France	252	366	25	47
Germany	4,460	3,040	3,140	2,270
India	--	--	207	191
Korea, Republic of	2,000	1,020	--	--
Mexico	31,900	16,500	54,300	33,800
Morocco	300	187	--	--
Peru	25,600	14,400	22,100	14,600
Russia	1,150	629	--	--
South Africa	39	38	--	--
Sweden	799	477	5	8
United Arab Emirates	261	977	210	838
United Kingdom	10	28	128	82
Venezuela	332	178	364	233
Other	3,260 r/	2,100 r/	51	32
Total	231,000	134,000	264,000	176,000
Reclaimed scrap, including ash and residues (lead content): 4/				
Canada	128	39	75	36
Other	16	9 r/	--	--
Total	144	48	75	36
Grand total	232,000	134,000	267,000	178,000
Wrought lead, all forms, including wire and powders (gross weight):				
Canada	2,590	4,020	2,500	4,480
China	85	509	79	507
France	62	163	53	86
Germany	193	1,060	242	1,370
Hong Kong	170	463	269	727
India	144	259	--	--
Italy	389	553	42	226
Japan	317	1,510	162	1,040
Mexico	1,490	1,460	1,970	1,800
New Zealand	2	129	46	538
Peru	18	13	17	14
Taiwan	197	732	253	685
United Kingdom	99	746	93	822
Other	67 r/	615	916	1,420
Total	5,820	12,100	6,600	13,700

r/ Revised.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Also includes other lead-bearing materials containing greater than 5 troy ounces of gold per short ton, or greater than 100 troy ounces of total precious metals per short ton.

3/ Less than 1/2 unit.

4/ Also includes other lead-bearing materials containing greater than 10% by weight of copper, lead, or zinc (any one).

Source: Bureau of the Census.