

ANNUAL REVIEW- LEAD 1964

LEAD INDUSTRIES ASSOCIATION, INC.

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EXECUTIVE VICE PRESIDENT

SUMMARY OF U.S. LEAD STATISTICS*

(in thousands of short tons of lead content)

	Mine Production	Secondary Production	Imports			U.S. Stockpile Reserves	Total Supply	Pig Exports	Domestic Consumption	Imports of Lead Products*
			Ore Metal, etc.	Pig Bulion	Total					
1960	247	470	146	214	360	—	1,077	2	1,021	30
1	262	453	147	262	409	—	1,124	2	1,027	32
2	237	444	139	265	404	—	1,083	2	1,110	30
3	253	493	148	241	389	—	1,135	1	1,163	33
4*	283	500	123	214	337	50	1,170	10	1,197	28

* Source: U.S. Bureau of Mines, Bureau of Census

* Estimated

LEAD 1964

Introduction

Considering that they are dealing with one of the oldest metals known to man, the lead industries showed remarkable vitality in 1964. Consumption of lead in both the U.S. and the Free World has increased each year for the last five years and is at or near an all-time high. With this encouraging market situation and resulting profitable prices, lead producers have been spending unprecedented sums to expand their productive capacity and to explore for and develop new mines. They have been so successful that, despite the temporary shortage of lead that currently exists due to rapidly expanding world consumption, it should be relieved soon. Ample supplies of lead may be expected by consumers five years to come.

Following is a detailed discussion of lead production, stocks and consumption with supporting statistical data, and a review of the major events that have had an influence on the situation or resulted from it.



Lead Around the World

The year 1964 in the food industries of the United States was one of continued increase in consumer demand, increased production, and further improvement of product innovation to achieve almost break-even minimum. These conditions resulted in substantial strengthening of the price structure and strengthening of competition in the more organized by commodities in the world food market. Abnormal consumption continued to outpace production, and we had to create a larger stockpile than in the U.S. Consequently, the

stretched the New York price by several cents a pound much of the time compared with the London price, and without taking into consideration the U.S. duty and shipping costs.

Thus some foreign producers, at least in particular countries (among them the U.S.), are allowed to raise their bids by 15 to 20 percent over the London price. In other countries, where no bid limit is set, the bids are not allowed to exceed the London price by more than 10 percent of both upward and downward movements.

As a result, an overall Agreement of 1971 between the U.S. and the European Community, the U.S. Government took the position that the European producers had to pay the duty on their exports if it is decided that any shipment from a country was unable to get the lowest price.

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The 1980 wheat production of 14.4 million metric tons was a record for the United States during a relatively cool season of unusual dry periods and was the highest in 70 years. This increase was in part due to a stable harvest area and in part to the increased productivity of the farmer of the 1980s. The U.S. wheat yield in 1980 was 40 bushels per acre, the highest in the world. In early 1981, however, frost killed many wheat plants, and the 1981 wheat production declined to 13.4 million metric tons.

market 1 percent. Europe, Mexico, Peru and Australia were responsible for the decline while most other producing countries showed increases. On the other hand refined production of both primary and secondary metals increased about 3 percent in the Free World and about 5 percent in the United States. Mexico, Canada and Australia showed modest declines. In the U.S. both primary and secondary lead contributed to the increase, although exports of scrap due to higher prices prevailing abroad were increased 11,000 tons level.

Producers' stocks of refined lead continued the decline started several years ago when consumption began to surpass supply substantially. In the U.S. they dropped to those in Mexico, which remained around the level of consumption. The latter part of the year, free to export producers' stocks, including the U.S., were down 175,000 tons at the year's end. With consumption increasing at even faster rates, the U.S. had to draw on its first high levels in its history to meet the largest stock move by way of supplementing demand from those low producer inventories. Free consumers' stocks in the U.S. took time to rebuild during the winter of 1980, but by the end of 1981 were at the level of 1970. However, the production of

In August, 1964, KENNEDY took a boat to an rocky is-land from the U.S. Government's biologic point of view. Kennedy was the first president to do this. Kennedy was the first president to do this. Kennedy was the first president to do this.

and waive the first of 1965 Congress has approved sale of another 30,000 tons, if necessary, for gradual release to industry. In addition, government agencies have been given the right to buy 50,000 tons from the stockpile for their direct use.

During 1964 the U.S. continued to rely heavily on imports of both cottonseed and refined seed to supplement domestic seed production and meet domestic demand for seed. Despite its producing enough seed for its own use, the U.S. continued to export seed to other nations. In 1964, the U.S. exported 1,014,000 bushels of seed to other nations, a 10% increase over 1963. The U.S. also imported 1,014,000 bushels of seed from other nations, a 10% increase over 1963. The U.S. also imported 1,014,000 bushels of seed from other nations, a 10% increase over 1963.

asked the U.S. Tariff Commission again to review the economic effects of possible changes in the import quota system. The Commission's report had been published as of March 31, 1965.

Imports of certain lead products were also a factor of some importance in 1964. Particularly does this apply to imports of lead metal from Mexico which would be Mexican export tax on pig lead sold at the same time as our country's U.S. import quota. U.S. industry and exporters have made concerted efforts to have quotas placed on manufactured products so long as they export pig lead and concentrates had no tariff to deal with foreign countries.

ing Division, experimental hydraulic vessels, and use of bonded plastic sand barrier materials. Lead and bonded products for soundproofing are also finding use in substructural work, office partitions, and industrial equipment.

Consumption

U.S. lead consumption increased another 3 percent in 1964, making the fifth consecutive annual increase and bringing consumption up to about 1,200,000 tons. Free World consumption including the U.S. increased almost 6 percent. Biggest gains outside the U.S. were in Europe and Asia (primarily Japan). Five important non-regional major consumption increases in the U.S. in 1964: lead anti-leak compounds showed a substantial increase of about 100,000 tons of over 15 percent while automotive production showed a new post-war record production in Western Automotive industry. Short lead and lead oxides (other than battery anodes, all important tribological lead consumers) also showed with increases of 70,000 tons (14 percent), 20,000 tons (19 percent), and 4,000 tons (16 percent) respectively. Chalcogen lead with a decline of 100,000 tons (16 percent) and storage batteries of 100,000 tons (12 percent) showed an appreciable fall-off. The latter material previously accounted for 30 percent of total lead consumption resulting from its use in various other non-ferrous alloy systems at a rapid rate. Annual lead chalcogen consumption to

be the leading lead consumer (it has been reasonably stable in the U.S. for the last few years) but both lead anti-leak compounds and storage batteries are growing rapidly as foreign consumers of lead.

Prices

With consumption in both the U.S. and Free World outstripping production for several years, a situation that continued through 1964, and producers drawing heavily on their inventories to satisfy customer demand, there naturally was strong upward pressure on prices. In the U.S. lead was from 12 1/2¢ to 14¢ at New York on January 2 and then in the last four months of the year advanced in three 1¢ increments to 16¢, at which level it closed the year.

Lead Price Changes

(cents per lb. N.Y.)

November 20, 1963	12 50
January 2, 1964	13 00
September 1, 1964	14 00
October 15, 1964	15 00
December 11, 1964	16 00

Quarterly U.S. Lead Use*

(in short tons)

	1963	1964
1st quarter	273,300	291,250
2nd quarter	287,500	291,250
3rd quarter	271,500	293,500
4th quarter	313,500	317,500
	1,145,800	1,195,500

* U.S. Bureau of Mines
* As revised to reflect final year and figures
* As revised to reflect estimated year and figures

Normally, the London Metal Exchange price is a couple of cents lower than New York, showing the U.S. lead and freight. During the first half of the year this situation prevailed but for most of the second half the London price exceeded New York and even reached about 15 1/2¢ in mid-December, after which it fell back to about the New York quotation. The effect of this situation on attracting lead away from the U.S. has already been discussed, but to discount it probably will cause domestic refiners to have difficulty lead to avoid foreign prices.

U.S. LEAD SUPPLY AND DEMAND*

(Short tons of lead content)

	1964*	1963
SUPPLY		
Basic production	275,000	251,000
Secondary production	500,000	493,500
Quota imports		
De matte etc. recoverable	120,000*	112,000
Lead boron, etc.	213,000*	220,100
Other imports mainly by shipyard		
De matte etc. recoverable	—	12,800
Lead boron, etc.	—	12,800
Recovered from scrap	50,000	—
	1,149,700	1,178,700
Changes in stocks of primary		
Imports and releases	31,000 short	61,000 short
Exports	1,203,500	1,187,000
	9,500	1,100
Total available	1,140,200	1,146,500
DEMAND		
Industrial Consumption	1,195,500	1,151,000
Unrecovered from scrap	—	25,250
Consumer and secondary market stocks	4,300 short	24,600 short
Unaccounted for	1,140,200	1,146,500

* Based on U.S. Bureau of Mines and American Bureau of Mineral Statistics
* Estimated
* Import quotas and lead

TRENDS and the F

The strong sustained demand of the last few years, coupled with higher prices, has encouraged lead producers to search vigorously for new lead deposits and to develop known but undeveloped ore bodies. Fortunately for the consumer relief from any possible long continued pinch is clearly in sight.

In the first place several old non-operating lead mines have been or are being reopened. In Canada the new Pine Point mine of Cominco has started production. In the U.S. St. Joe Lead is well along with the work of approximately doubling the capacity of its Herculaneum smelter in Missouri. Development of its new Fletcher mine is progressing, a new shaft is to be sunk at Indian Creek, and the full effect of all this St. Joe expansion should be felt some time next year. All in all it should add some 20,000 to 100,000 tons a year to Missouri production. The new Viburnum mine which only came into production last November has already reached its expected capacity.

In Missouri also American Metal Chemical and Haverstick are developing a new mine expected to produce 50,000 tons of lead content per year and Denver Industries and Cominco another new mine of similar capacity. Amer. and Haverstick will build a 100,000 ton smelter to handle the ore of both operations. All this is expected to be in production around the end of 1967.

In Missouri too, Kennecott Copper is sinking an exploration shaft on another lead property and National Lead and Bunker Hill are reactivating on a

large scale mine.

In Europe a similar situation is under development. The discovery of another recently announced in Australia the great expected to double the next two or three should be obvious consumption consumption growth, production pace.

What can be expected in the United States? In the present major application of lead does not appear to be by substitution. Lead will the most common source of packaging, mobile and for other like industrial carriers, and standard industrial uses are increasingly better logical advances, last longer while battery the rapid population and car to ensure a growth the economy is here.

Growth in the lead has been predicted for two years. Such growth is expected to continue particularly in view of growing new operations still bigger and more on the lead should high levels.

The growing demand is motivated by the broad

MODERN LEAD USES - A SAMPLING

TOP LEFT - Many tons of lead shield these technicians as they work remote control manipulators at the hot cells of Battelle Memorial Institute.

TOP RIGHT - This three-inch lead-shielded telephone cable will handle more than 5000 simultaneous telephone calls.

LEFT - Soldering techniques have been developed to meet the needs of automation. This unit completes 30,000 soldered connections a day.

RIGHT - More and more sheet lead is being used to waterproof swimming pools. This one covers the lobby of Denver's Civic Hall.

manufacturers are becoming more and more popular with the general public as it has more time for recreation and in trip and street shopping are being made more convenient for city dwellers. The history of lead in ammunition has been one of constant growth, both in total and per capita, and should continue to be.

The principal industries using solder — automotive, electronic, and tanning — are all growth industries, while new automated soldering techniques are keeping solder competitive with adhesives and other methods of joining in these and other industries. As industry grows so should the use of solder. Casting lead on the other hand is meeting intense competition from mechanical joints in the unitary sizes of cast iron pipe for plumbing. Although this only affects a relatively small part of the casting lead market, casting lead may be faced with some curtailment of usage.

Cable sheathing has been comparatively steady in its lead consumption for several years, indicating that the substantial infrastructure has already been placed. However, in some areas it is possible that new growth with private homes may be expected.

Solder lead gave a good account of itself recently probably due to several factors. Contributing to this increased use were lead wires providing for increased strength, greater architectural interest, and growth industries such as chemical equipment linings and auto radiators. Lead continued improvement in this product should be expected.

Expansion of the use of lead compounds in the tire and rubber and for making various traffic marking paints has been notable and should continue. Some new organic products like

potteries, enamels, aluminum, lead zinc, and lead ferrites may be expected to add further to the total used in more conventional applications like glass and wire glass.

Ahead continued large-scale growth in the use of lead for anti-leads and storage batteries can be expected as the world's automobile population grows. Cable sheathing, particularly if the price of lead remains high, may be in for some of the substitution in other countries that has already taken place here. Currently cable sheathing is lead's most important use in Europe.

In brief so long as business activity and prosperity permit, the consumption of lead should remain at high levels with new production gradually easing the squeeze and reaching to ample supplies in the next couple of years. Meanwhile the lead industries are reworking and promoting their products on a world-wide basis more vigorously and aggressively than ever before, and industrial shortages and research projects in other industries are usually conscious of what lead can do for them and of the new technical knowledge being developed. This applies to old and new products alike.

Who can predict when the use of lead for sound alternatives may make a major break through? High lead content ferries are threatening to take over a big market in permanent magnets. When and how will the many organized compounds that are being thoroughly researched lead major industrial applications? Scores of other questions can be asked that open the way to new lead as the market the industries dealing with the old metal lead are showing amazing vitality.

UNITED STATES CONSUMPTION OF LEAD*

(in short tons)

	1960	1961	1962	1963	1964*
Automotive	43,577	45,037	47,779	49,994	57,000
Bearing metals	20,717	17,757	16,072	21,713	22,300
Breets and bruses	24,485	20,114	20,607	21,943	23,100
Cable covering	60,350	57,458	54,678	57,707	54,100
Cable lead	64,537	67,379	72,648	76,308	71,500
Casting metals	7,023	6,073	7,355	7,856	6,000
Collapsible tubes	8,705	11,270	11,972	14,832	15,200
Fel	3,684	2,964	3,770	3,952	4,000
For, traps and boots	22,119	19,078	19,819	20,100	19,200
Sheet lead	26,607	26,102	26,540	26,495	26,000
Solder	60,013	54,838	64,873	67,945	70,000
Storage batteries	33,196	30,798	419,905	479,041	420,000
Term metal	1,705	945	1,402	1,943	1,800
Type metal	28,199	26,493	26,700	26,049	25,000
Waste lead	8,432	7,615	11,001	8,346	8,500
Red lead and litharge	74,901	72,027	76,335	70,649	75,000
Perman colors	11,445	11,273	11,680	11,767	12,000
Other pigments	3,793	4,380	3,802	7,313	8,400
Gasoline additives	157,478	165,802	164,676	192,411	223,500
PVC** 111	2,806	2,119	2,715	432	0
Basic chemicals					
Aluminum	5,151	5,066	5,306	4,947	5,500
Catalyzing	1,363	1,444	1,146	1,431	1,600
Lead pigging	218	243	226	270	300
Brignt and buffnt	9,045	8,890	10,330	12,707	12,000
Other uses not included	17,273	17,069	17,479	16,037	16,000
	1,021,177	1,027,216	1,109,635	1,163,304	1,194,500

* Source: U.S. Bureau of Mines
* Estimated by I.I.A.
* Included in "Other uses"

WORLD LEAD MINE PRODUCTION*

(In thousands of short tons)

	America's	Europe	Africa	Asia	Australia	Total
1960	897	418	247	95	337	1,994
1	892	448	215	100	293	1,948
2	886	416	226	108	406	2,042
3	890	392	219	107	446	2,054
4*	903	378	212	111	415	2,019

* Source: International Lead Zinc Study Group. Lead content by analysis of lead ores and concentrates plus the lead content of other ores and concentrates known to be intended for treatment for lead recovery.

* Estimated

WORLD REFINED LEAD PRODUCTION*

(In thousands of short tons)

	America's	Europe	Africa	Asia	Australia	Other	Total
1960	1,176	944	70	105	229	9	2,533
1	1,296	924	66	113	200	8	2,607
2	1,204	926	62	124	229	8	2,553
3	1,277	979	59	135	264	10	2,726
4*	1,309	993	101	140	245	11	2,799

* Source: International Lead Zinc Study Group. Total production by smelters or refineries of refined pig lead, plus the lead content of antimonial lead — including production in kind in the reporting country — regardless of the type of source material, i.e., whether ore, concentrate, bullion, alloy, scrap, residue, sludge or scrap. Antimonial pig lead and antimonial lead are excluded.

* Estimated

WORLD REFINERY STOCK FIGURES*

(In short tons)

	Dec. 31, 1964	Dec. 31, 1963
United States	49,884	72,436
O.E.C.D. Countries	45,517	
All other	78,553	131,703
Total	173,954*	204,139*

* Based on American Bureau of World Statistics — "Summary of Lead Refining Statistics in U.S. and Outside U.S."

* Outside the U.S. figures not directly comparable to 1964 figures represent 85 per cent of the Western World or 75 per cent of the World total in 1963; the figures are about 84 per cent and 79 per cent respectively.

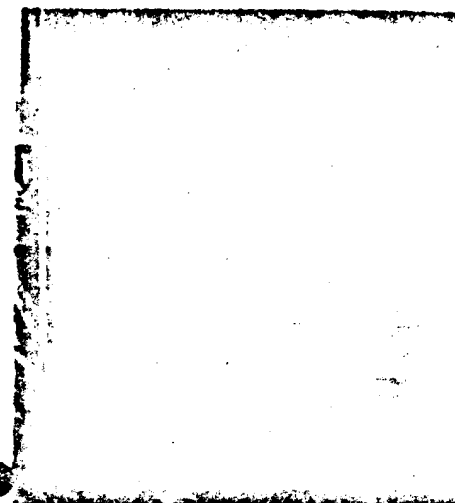
WORLD REFINED LEAD CONSUMPTION*

(In thousands of short tons)

	America's	Europe	Africa	Asia	Australia & New Zealand	Other	Total
1960	1,038	1,170	18	143	61	8	2,434
1	1,091	1,174	18	174	50	7	2,522
2	1,145	1,199	23	175	57	7	2,526
3	1,221	1,218	24	192	72	7	2,734
4*	1,253	1,273	36	248	70	8	2,888

* Source: International Lead Zinc Study Group. Includes consumption of the types of lead reported under "World Refined Lead Production" tabular.

* Estimated



The driving tunnel, operational in some versions and with improved models still under development, is typical of the assets used in which lead-aid techniques are being put. One larger version, capable of descent to 12,000 feet, employs 1 1/2 tons of equipment.

LEAD INDUSTRIES ASSOCIATION, INC.

The Lead Industries Association, Inc. is a non-profit organization of lead mining, smelting, refining and fabricating companies throughout the Free World and is incorporated under the Membership Corporation Law of the State of New York. Among other things, its purposes are to disseminate accurate information regarding lead products and how they may be used, to develop methods for the improvement of the welfare of those engaged in the lead industries, or in the use of its products and, in general, to promote the serviceability of lead industries to the community at large.

As such it has a broad list of publications available on many applications of lead and a well-informed technical service staff to help users and potential users of lead to use lead effectively and efficiently in the solution of their problems. A partial list of publications follows below.

PAVEMENTS

The future needs of power bottoms
Track construction as a job

CONSTRUCTION

Roofing and Building Handbook
H. J. Trenchard's Lead and Zinc
Modern chemical construction
Waterproofing with lead
Decorating the beauty of lead
How to use lead
Pipes and gutters
Removal of lead from lead-bearing
parts of buildings from old paint
Sewer construction with
Laboratory drainage systems
Lead and its modern plumbing
Lead plumbing systems
Sewer systems for roofing
Sheet lead for moisture protection
Lead in a structure's joint zone
Lead in water and industrial pipes

ENGINEERING

Design engineering data
P.T. and ultrasonic cleaning
High speed lead plating
Importance of lead in glass
New electrical uses of lead
Soldering and soldering alloys
Lead sheathing for power cables
Welding of construction steels
Corrosion data -- lead and lead alloys
Methods of lead lining tanks
Radiation protection
Lead alloy standards for cathode protection

POTTERIES
Lead and systems for bridges
Decorative functions for lead
Lead and bonded panel systems
Purposes of lead
Uses for bricks

INTERNATIONAL LEAD ZINC RESEARCH ORGANIZATION

This organization of lead producers throughout the Free World is associated with the Lead Industries Association, Inc., and is concerned with sponsoring research on a great variety of subjects related to lead, its products and uses. It is dedicated to broadening the market for lead through the development of new products or new applications for existing products. It currently is sponsoring more than 65 research projects on lead both in the United States and abroad.

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Lead ahead with Lead

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