

LEAD INDUSTRIES ASSOCIATION

480 LEXINGTON AVENUE
NEW YORK 17, N. Y.

February 5, 1948

To Members of the Lead Industries Association:

SUBJECT: ADDRESS BEFORE THE COLORADO MINING
ASSOCIATION ON "THE COMPETITIVE POSITION OF LEAD"

Attached please find copy of an address to be delivered by your secretary at the Convention of the Colorado Mining Association in Denver, Colorado, on February 6, on "The Competitive Position of Lead."

Very truly yours,

Robert L. Ziegler
Secretary



COMPETITIVE POSITION OF LEAD *

By: Robert Lindley Ziegfeld, Secretary
Lead Industries Association

To the average lead miner the only marketing problem with which he is directly involved is the disposition of his ores and concentrates. Yet the miner's interest goes far beyond that because it is the market for pig lead and lead products which is the very foundation of the success or failure of his own business. The extent of the demand for pig lead is what determines price and price, or at least the price-cost ratio, is what determines whether you can operate a mine at a profit or not.

In today's complex society producers of any one commodity or article are not just in competition with each other, but they are in competition with producers of other commodities or articles which may be used for the same purposes. In fact they compete with every other producer of goods or services for the consumer's dollar.

The position of lead in the world's markets is particularly complex because I know of no other metal which is used in so many different forms for such a wide variety of purposes. About a third of all the lead used isn't even recognizable as lead since it is employed in the form of chemical compounds like white lead, red lead, litharge, tetraethyl lead, lead arsenate, lead chromate and scores of others.

NEW DEVELOPMENTS IN RECENT YEARS

The pattern of usage is constantly subject to change resulting from technological developments and economic conditions. It has been only about thirty years since Charles Kettering first put a lead-acid storage battery to

*Presented at the Convention of the Colorado Mining Association,
Denver, Colorado, February 6, 1948.

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use to start and light an automobile. Today batteries use about a third of all the lead consumed in the United States. In fact, the consumption of lead in batteries about equals the 1947 mine production of lead in this country. I think you can readily see that, even though you only market lead ore or concentrates it is vitally important to you what happens to the market for lead in batteries.

Likewise, it was only about 20 years ago that Thomas Midgely, working under Kettering, found tetraethyl lead to be the most efficient to use as a commercial antiknock ingredient in gasoline. Now, even though only a few cubic centimeters of tetraethyl lead go into a gallon of gas, nearly 70,000 tons of lead are consumed in making tetraethyl lead each year. That's mighty important to the lead miner.

SOME DECLINING USES

On the other side of the ledger we have lead foil. Practically all cigarettes were at one time wrapped in tin foil, which is just lead foil with a thin coating of tin. Some 30,000 to 40,000 tons of lead were used to make foil before the war, but the use of lead for cigarette packaging was prohibited by the Government during the war and now with aluminum more plentiful and cheaper, lead has never regained that market. Thus only 3,000 or 4,000 tons of lead a year are now used to make foil, about one-tenth of what it used to be.

Then, there is white lead, for years a big consumer of lead and the finest pigment for house paints. But newer paint pigments that cost the manufacturer less to put in his paint have come onto the market. This competition has resulted in lead consumption for the manufacture of white lead reaching a peak about 20 years ago. Still an essential pigment in good outside paint, nevertheless the amount of lead used today for white lead is much less than it was 20 years ago.

I have here a table showing estimated lead consumption by uses in 1947

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compared with 1929. I'd like to run over it to see what changes have occurred and to view the present competitive position of lead in some of its major applications. I have chosen 1929 because per capita consumption of lead in that year was 15.8 lb. or almost the same as in 1947 when it was 15.9 lb. Total consumption in the former year was slightly under 1,000,000 tons and in the latter it is estimated at 1,141,000 tons.

STORAGE BATTERIES

Storage batteries are the biggest consumer and increased from 210,000 tons in 1929 to 360,000 tons in 1947. That is to be expected when we realize that three-fourths of it goes into automobiles and that for automobile batteries lead as yet has no serious competitor. Nickel-iron alkaline batteries have competed with lead-acid batteries for years in the larger stand-by types or those used in locomotives, but they are much more expensive. A newer type is the cadmium-nickel battery but it is doubtful if it will ever be suitable for automotive starting and lighting, or, if it were, whether there'd be enough cadmium to satisfy the demand. We estimate it would require some 10,000 tons of cadmium to do the job and peak production of cadmium in any one year has been only 4,400 tons.

While batteries are lead's biggest consumer, they also supply about three-fourths of the scrap each year from which secondary lead is made. About 85 per cent of the lead used in batteries comes back again in useful form, so actually batteries remove from the market a much smaller amount of lead than appears at first glance.

CABLE SHEATHING

The use of lead for cable sheathing, which in 1929 was the biggest application, has declined. There are probably several reasons, the most important of which is that in 1929 the public utility companies of this country were in the midst of what was probably the greatest expansion program in their history. Long distance telephone lines were being greatly extended and power lines in

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cities were going underground where they require lead sheaths. More recently the lead shortage has resulted in considerable research to find a substitute for lead sheaths but, with minor exceptions. I know of the development of nothing so satisfactory as lead. For instance, neoprene is being used to some extent for small, low voltage cables but is by no means a general substitute for lead. Aluminum is also employed to a very limited extent but these substitutes are now used only to eke out the limited lead supply, and if more lead were available, it would probably be used.

TETRAETHYL LEAD

I have already mentioned the huge expansion in the use of tetraethyl lead as the antiknock ingredient in gasoline. Even more was used during the war when such tremendous quantities of high test aviation gasoline were employed. Tetraethyl lead for many years was marketed by only one company but since the first of this year there are two marketers of this product. This is at least an indication that further expansion in the use of lead in tetraethyl lead is a good bet.

WHITE LEAD

White lead in paint has been the target for intense competition for the last generation. Newer pigments, like titanium dioxide, have entered the field and this, plus the strict limitations placed by the Government on white lead during the latter part of the war, have resulted in a marked decline in the use of lead to make white lead. But it still is a virtual impossibility to make good outside paint without a generous portion of white lead.

LEAD OXIDES

Red lead also has had to meet new competition from such pigments as zinc chromate, but it is still the outstanding pigment in the field of metal primers. Meanwhile litharge, for use other than in storage batteries, has made rapid strides. For example, litharge is used to make lead arsenate, and this insecticide is being used by farmers in quantities greater than ever. That is despite

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the competition of such new insecticides as EDT and many others.

BUILDING AND EQUIPMENT

Under the classification of building are included the lead pipe and sheet used in plumbing and sheet metal work, and the same products used to construct chemical processing equipment. The competition with lead here is intense. A variety of piping and sheet metal materials, some old and some new, is used in the construction of homes and other buildings. In chemical equipment the list of other materials includes plastics, glass, ceramics, stainless steel, rubber, monel metal. The intense competition and the obstacles to building construction today have resulted in some decline in the use of lead for these purposes.

Calking lead is a building product that has shown a substantial increase over the years. Yet it is always competing with various nonmetallic jointing materials such as sulphur and sand compounds and cement.

BEARINGS

Lead-base bearing metals have shown an increase but they, too, are subject to competition. There is tin-base babbit among the older competitors, and aluminum alloys among the newer. There are also different kinds of bearings, like roller and ball bearings, that compete with lead-base bearings under many conditions. Railroad freight cars, for instance, are the biggest consumer of lead in bearings, but roller bearing manufacturers are going after that market aggressively. You've probably seen some of their national magazine advertising.

DEVELOPING AND PROTECTING MARKETS

I'm not going down the whole list of lead's uses but these examples will serve to illustrate my point. I hope that citing them doesn't leave you with a dark impression of lead's future. I merely want to emphasize that the use of lead by industry isn't just automatic. Somebody must be on guard to see that industry knows about lead and how they can use it to advantage.

That is one of the big jobs that trade associations representing specific materials must do. Your great mining association has many fields of activity,

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common to all kinds of mining, that are essential to you. But they can't represent one specific material.

Over the years the Lead Industries Association has tried to perform that function for the lead mining industry of the West. We have tried to help in the establishment of markets for lead that will make it profitable for you to operate your mines. We have spent some \$2,000,000 solely for education and promotion to develop and protect those markets for your product. And I think that the Lead Industries Association is unique among the metal associations in that miners, smelters and refiners - the producers - have banded together with manufacturers - the consumers - to protect and promote their mutual interests.

Thus, even though you sell ore and concentrates your interests are the same as those who sell pig lead and lead products. The battle for markets never ceases.

WHAT OF THE FUTURE?

But by reviewing what has happened in the past we can look to the future of lead with a considerable degree of confidence. It naturally raises the question of what, if anything, will be the important new applications of the future. Will there be anything like the storage battery of 30 years ago or tetraethyl lead of 20 years ago?

Perhaps the use of lead as a protective material in atomic energy may be the answer. We know that that has already required sizable tonnages of lead in just the last few years. Or, perhaps, the use of lead compounds, like the silicates or salicylates, as a stabilizer in plastics may account for larger tonnages than they do today. Or, will the amount of lead used for coatings on steel ever approximate the important tonnages of zinc used for galvanizing? Or, maybe there will be some use as yet completely unknown that in the next generation will develop as did batteries and tetraethyl lead? Or, what new materials or methods will displace some of today's established uses for lead? Aluminum has done in the case of lead foil?

I don't know. But I do know that the ever shifting scene must be constantly watched in the interests of a healthy lead mining industry.

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LEAD CONSUMPTION(In Short Tons)

	<u>1929 (a)</u>	<u>1947 (Estimated)</u>
White Lead	119,700	56,000
Red lead and litharge (b)	30,000	72,000
Storage batteries	210,000	360,000
Cable covering	220,000	155,000
Building, (c)	96,000	65,000
Tetraethyl	3,000	63,000
Automobiles	13,000	1,000
Ammunition	41,100	40,000
Terne plate	4,200	4,200
Foil	39,800	3,600
Bearing metal	33,000	42,000
Solder	37,000	56,000
Typemetal	18,000	26,000
Calking	31,500	50,000
Other Uses	<u>71,000</u>	<u>147,000</u>
TOTAL	972,300	1,140,800

(a) American Bureau of Metal Statistics

(b) Exclusive of oxides for storage batteries

(c) Chiefly pipe, sheet and extrusions.

Includes lead used in chemical construction.