

February 5, 1947

To Members of the Lead Industries Association:

SUBJECT: ADDRESS BEFORE THE COLORADO MINING  
ASSOCIATION ON "WHY MORE LEAD PRODUCTION IS NEEDED"

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 "Why More Lead Production is Needed."

Very truly yours,

*K. J. C. W. J. C.*  
Secretary.



For Release  
February 7, 1947

Address before  
Colorado Mining Association  
Denver, Colorado  
February 6, 1947

WHY MORE LEAD PRODUCTION IS NEEDED

by

Felix Edgar Wornaser  
Secretary  
Lead Industries Association  
New York City

I want to take a little time today to tell you what happens to your lead after the smelter settles with you and why it is highly important nowadays to redouble your efforts to mine existing lead ore deposits and to discover new ones. Miners generally are not as well acquainted as they should like to be with the market for their metals. This is quite understandable as miners have enough problems turning out metal under a constantly fluctuating economic background besides worrying about what happens to the metal after they obtain a smelter settlement.

It will be no surprise to you that there is currently a world wide lead shortage well advertised by the fact that today the price of lead is a record-breaking 13¢ per lb. New York, brought about largely by an intense demand for the metal from various sources, together with a diminished supply. Perhaps you have tried to buy some white lead recently, or a storage battery, only to have to do an extraordinary amount of shopping in the process before being successful. These are but two illustrations of the use of lead

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which typify the shortage. Many other important uses of which the public seldom hears are just as vital to our economy, such as the use of lead for cable sheathing and gasoline, but more about them and their importance later on.

Last year, I tried to tell you about the impediments to a free operation of the lead industry in the form of government controls on prices, uses and imports. All of that we can now happily dismiss. Once again we are almost entirely on our own. The future is largely up to us. I shall, therefore, try to tell you briefly something about our peacetime position with respect to the use of lead.

I don't know of any other metal that has the wide diversity of uses of lead, both in metallic and chemical form, nor for that matter any other metal which has so many important outlets each representing a large volume of production for public consumption with only a modest amount of replaceability by other materials. I refer, for example, to the use of lead in storage batteries. This is at once the largest single use of lead. Practically no substitute is available, largely because it is a staggering problem to serve the 26,000,000 cars on the road and the product to do the job must be in plentiful supply. To be sure, some competitive products such as the nickel-iron battery and the cadmium battery, are known, but they have different electrical characteristics and are not available in sufficient quantity to do the job. Therefore, look to the continued use of large amounts of lead for storage batteries for an indefinite period. At the same time, from a conservation standpoint, the storage battery industry returns to the lead smelting industry a large part of the metal manufactured into storage batteries each year - at least three fourths of it. On balance, therefore, its importance as a permanent lead consumer is not great. I think it is fair to estimate the battery requirements as about 300,000 tons of lead per year but of this vast tonnage only about 75,000 tons is new lead.

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The second largest use of lead is by the electric cable industry, both for telephone toll cable, which is so well known in our metropolitan centers and may be found stretched on poles alongside railroads through the United States, or buried in the ground, and also electric power conductors for underground high tension power communication. The large growth in the use of telephones in the United States, and the prospect of still further growth, will require extraordinarily large amounts of lead.

The American Telephone & Telegraph Co. recently announced that it would expend about \$2,000,000,000 to enlarge its facilities in the United States and that, within the next three to five years, some 20,000 miles of toll cable will be required, 12,000 miles of it coaxial cable for television purposes, as well as for phone messages. I am reliably informed that this program alone will necessitate a consumption of about 125,000 tons of lead per year for telephone cable sheathing. This estimate does not take into consideration the requirements of the power cable industry for high tension underground installations. About 75,000 tons of lead could be utilized for power cable construction this year. Substitution for lead in cable manufacture can only be done with great difficulty and inconvenience.

All in all it looks as if the cable industry will require for the next few years some 200,000 tons or more per year. Although 200,000 tons of lead may appear record-breaking, it is approximately the tonnage consumed by cable manufacturers back in 1929 and 1930 but it is far greater than the cable requirements of recent years when construction of all kinds fell off.

From time to time you hear of substitutes to take the place of lead but none, so far as I know, are practical, considering the engineering requirements of a good cable installation whether for telephone or power use with emphasis on longevity or durability. This is not to conclude that satisfactory substitutes may not be ultimately forthcoming.

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I now wish to talk to you about an old friend of the lead miners which has been a standby for years and formerly comprised the largest outlet for the miner, namely white lead. As recently as 1924 white lead was the leading outlet but, owing to drastic restrictions on its use during the war, and the inability of the white lead corrodors to procure an adequate supply of pig lead today, the white lead industry has suffered more than perhaps any other lead using industry in being restored to a peacetime economy. Without difficulty 100,000 tons of white lead, or more, could be sold today. It remains a market of great importance to the lead mining industry. The miners are justified in going to extraordinary measures to protect its competitive position. White lead remains unexcelled for exterior painting, but because of its relatively high cost compared with other paint pigments there is a tendency on the part of paint manufacturers to use as little as possible of it in their formulations. Let me show you what I mean.

I have here a booklet which shows the analysis of some paints and varnishes sold in the State of North Dakota, where the regulations require the formulas to be printed on the can, a practice which numerous other states have since followed. The reason for such a regulation is obvious. So many abuses occurred in the marketing of inferior paint among the farmers that, in self defense, North Dakota passed labeling laws and occasionally publishes results of its paint investigations. Here are several examples of exterior paints manufactured by large companies that contain water and excessive amounts of extenders.

I think you will see from this brief exposé how important it is to acquaint the American public with the merits of white lead. Hundreds of thousands of people insist on having nothing but pure white lead on their homes because they know by experience that white lead provides durability in paint. We must do a lot more to educate the people of the United States to the merits of white lead and the responsibility in part

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must rest upon the mining industry for, after all, the paint manufacturer can use other and cheaper ingredients in his paint.

In this connection, you will be interested to know that the Lead Industries Association has been working closely with the U. S. Office of Education and the State educational departments of nearly every state in the United States, seeking to assist them in establishing courses on paint instruction which would help the universities, colleges and high schools of the United States in developing an appreciation of good paint. Here is a manual entitled, "Painting Farm Buildings and Equipment" which was prepared with the cooperation of the U.S. Office of Education, and which has been widely distributed in the United States.

Here is another manual entitled, "Instructor's Manual for Teaching Exterior Painting of Farm Buildings and Equipment," designed specifically for the use of instructors and prepared for us by Professor G. A. Schmidt of the Colorado A & M College.

As a result of all of these efforts, I am glad to say that many technical courses and text books used throughout the United States for instructional purposes have been improved in their treatment of paints and painting. But, above all, we must mine and produce as much lead as possible to satisfy the great unfilled demand for white lead from the public.

Red lead is also important in the paint industry for protecting steel work from corrosion. In fact about 20,000 tons are used annually for the purpose. Competition is keen for business and our industry has mobilized its technical resources to make sure that the preeminent position of red lead will be maintained. Recently we have made some remarkable advances in the use of red lead for marine painting which are being disclosed currently.

Besides being applied to the exterior of buildings as paint, substantial amounts of lead are used elsewhere, in plumbing, in shower pans, and even in flashings. Indeed, lead plumbing, which has been known for

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centuries, still accounts for some 20,000 tons of lead per year in the form of pipe, sheet and solder. If to this is added the substantial tonnage of lead used for calking cast iron pipes in buildings and in the distribution system of waterworks, we must provide another 35,000 tons. Needless to say, these are highly competitive outlets, for lead, and it will be interesting to see how they survive the intense period of competition ahead in the changed relationship in the price of lead with brass, iron and copper and nonmetallic calking compounds.

We have not been altogether asleep and have developed a unit type of lead plumbing, illustrated in the photograph I have here, which has the merit of permitting the plumber to fabricate part of the plumbing installation in his shop and then adjusting it on the job by virtue of the flexibility inherent in lead.

Sheet lead is widely used in hospitals, in x-ray rooms, and wherever x-ray equipment may be found, it is the most efficient barrier, known to science, to x-rays and kindred radiation.

Wherever sulphuric acid is used, and sulphuric acid is the commonest acid used in industry today, one is apt to find lead in the form of vats, sheet or pipe to convey the acid from point to point. Hence, rayon plants, oil refineries, coke plants and other large industries are constant users of lead. Often the mining industry, itself, in many leaching and electrolytic operations involving sulphuric acid, use large tonnages. But, competition here from glass, rubber and alloy steels will be keen. Perhaps 50,000 tons of lead are consumed annually for x-ray protection and for use in the chemical industry.

I haven't yet mentioned another fertile field for lead, namely its use in alloys. The commonest lead alloy known to you is solder, which requires about 50,000 tons annually. Then the ammunition industry, which generally uses an alloy of lead and arsenic requires about 50,000 tons of lead annually. The printing industry uses type metal to the tune of some

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30,000 tons of lead annually. Then, we have bearing metals for railroads, automobiles and other machinery, which probably require about 40,000 tons of lead annually. Then, the copper industry, in various bronzes and brasses, uses substantial quantities of lead, perhaps 35,000 tons of lead a year. The steel industry uses it both in production and as a constituent of free machining steel.

There are so many minor uses of lead that we could spend the better part of an hour discussing their fascinating applications. For example, the use of lead in glazes for ceramic ware, glassware, fluorescent tubes, gasoline refining, brake linings, and the like. Many of these uses have been found indispensable with no substitutes available. Often the lack of a small quantity of lead may mean failure to produce an important component part of, say, an automobile. Recently the officer of an important pottery company told me that \$1,000 of lead pigments mean \$500,000 in employment in his factory where the lead was used in glazes.

But I want to devote a moment to a rather spectacular comparatively new and large use of lead which has grown increasingly important to the lead industry, namely the use of tetraethyl lead in gasoline which did yeoman service during the war in providing the high octane gas for airplane operation and is year by year contributing to the production of better automotive fuels in the United States. About 60,000 tons of lead are needed yearly for ethyl fluid. Indeed, if lead becomes plentiful we shall soon have gasolines of such high antiknock value that we shall be able to run cars with higher compression ratios at comparatively high speeds, that is 50 to 60 miles or more per hour, with economies double that of prewar days. This is one good reason why we should increase our efforts to cure the lead shortage - we are helping the American standard of living constantly to grow.



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There are still other important uses, for example, insecticides.

Lead arsenate, which is so important in the economy of the northwest apple and fruit industry, should consume about 20,000 to 25,000 tons of lead per year. When I recently spoke to the convention of the Agricultural Insecticide and Fungicide Association in New Jersey, and told them about the lead shortage, I felt that perhaps here was one use which we would have to kiss goodbye because of the advent of DDT but, to my surprise, I was informed that DDT is not yet a complete answer to insect pest control. Apparently it controls the codling moth but not the orchard mite. This was confirmed by a private communication from the Department of Agriculture which estimates that DDT may displace 1/3 the lead arsenate used in the northwest this year.

I think this brief analysis indicates why there is such a huge demand for lead today. If you were to add it up with me you will find that the total accounts for over 1,000,000 tons and as the figures I have given are purely approximations I think the overall figure should be used with some reservation.

The markets I have described to you are the result of research, invention and evolution reaching back deep in our history. They illustrate what can be done with one of nature's great natural resources. We want to keep these markets, and to develop others if need be. Indeed, that is the traditional American way - to depend on our own resourcefulness in creating a market for our wares so strong that the lead mines will operate steadily and profitably rather than to depend on a Government subsidy to keep us going.

Last year only 330,000 tons of lead were mined domestically, the lowest output since 1934. In fact, lead produced from scrap was larger than that coming from our domestic mines, or about 350,000 tons. If it had not been for imports of 125,000 tons, which were unfortunately limited

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by the Government as the sole importer, and for heavy withdrawals from lead stocks in the hands of private industry and the Government we would indeed be in a serious jam today. As it was, the total available supply outside of stocks in the hands of manufacturers and refiners was only about 805,000 tons to meet requirements of roughly 1,000,000 tons. The government and private withdrawal from stocks is estimated at 150,000 tons in 1946. Larger imports as well as increased domestic mine production are needed to help us out of our difficulties and to hold our markets, as the stocks of all description in the country have been severely depleted.

The United States is now on a different lead economy than it was before the war. Then domestic production and consumption were approximately in balance, but now, consumption has grown to such an extent that we shall need imports to supplement domestic output. The tariff to protect the domestic mining industry frankly becomes a needed revenue measure and a subsidy to the domestic miner to compensate him in part for his higher cost of production compared with low cost foreign operators, but it is a subsidy paid by the consumer and not by the public at large.

I place my faith in the operation of a free market to cure the lead shortage speedier than any form of Government control. The price of lead will ultimately settle at a value which will create a balance between effective supply and demand. No one knows what price will do the job. In this connection I think we shall have to revise our conception of what constitutes a high price for lead in the light of the great rise in the cost of farm commodities, house furnishings, wages, in fact everything relating to our economy except possibly rents, which are still under control. In looking at the Index of the Bureau of Labor Statistics recently, I was struck by the fact that lead is certainly not out of line with farm commodities and other items.

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I hope you will share with me the conclusion that all the energies of the lead mining, smelting and refining industry must be centered at once upon the problem of increasing our lead production through the intensive working of known deposits and prospecting for new supplies. The high price of lead today warrants extraordinary efforts on the part of prospectors or miners in looking for new deposits and demonstrating to the consumers that we are not a "have-not-nation" but that in Colorado and elsewhere there is lead waiting the enterprise of the miner.

Some people, without thinking, had the impression that once Government controls disappeared the lead shortage would likewise vanish. But you and I know that it takes time to bring a new mine into production, not to mention the difficulty of increasing production in mines that operated during the war on a scale that subordinated necessary development and exploration. Let us now use extraordinary efforts to stimulate output from every conceivable source. By doing so we shall hold our priceless markets and serve our own best interests, as well as the public's. We cannot afford to lose our markets. Once gone they may never be recaptured. Therefore, in conclusion I urge all my mining friends in this wonderful Rocky Mountain area, so bountiful in lead in the past, to demonstrate what they can do in increasing lead production as quickly as possible.