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LEAD INDUSTRIES ASSOCIATION

60 EAST 42ND STREET

NEW YORK 17, N. Y.

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SUBJECT: DEPENDABILITY
OF FUTURE LEAD SUPPLIES

To Members of the Lead Industries Associations:

Attached is a reprint of a paper presented by the Association at the annual meeting of the American Ceramic Society in April, 1956. It appeared in full in the American Ceramic Society "Bulletin" of July 15, 1957.

This is a part of our program to encourage greater use of lead in the ceramic industry, which intensified its search for substitutes during periods of lead shortages and high prices since the war.

Sincerely yours,



Secretary



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Dependability of Future Lead Supplies

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Temporary shortages of lead which have occurred in the past were the result of artificial controls and government stockpiling. It is not likely that such conditions will again prevail because of the large stockpile now existing and because lead reserves of the world are large and are being increased at a sufficient rate to replace the lead extracted from the ground annually. Detailed statistics to support these conclusions will be presented.

All industries are concerned about the dependability of their supplies of raw materials at reasonable and stable prices. This is particularly true when the raw material is one which imparts especially desirable properties to their products, properties which are difficult or impossible to obtain in other ways. The ceramic industries are no exception and lead is an important raw material to these industries. In fact, in most ceramic applications it falls in the category just described for it often offers the most practical and economical way of doing one or more of the following things: greater firing providing increased fluidity and wider softening range, reducing melting temperatures, excellent working characteristics, lowering surface tension, improved texture and smoothness of surface adding brilliance, high reflectance and index of refraction, controlled dispersion, high density and absorption of gamma radiation, desirable thermal expansion and elastic properties, providing highly desirable electrical properties and adding durability.

To the average business man published information about supplies and reserves of metals may often be misleading, or, at best, confusing, but this need not be so. In the case of lead, to put it in the simplest terms, the world produced about 1,200,000 tons of lead more than it consumed between 1947 and 1955.

That excess has gone into government stockpiles. The only reason that everyone may not always have been able to obtain all the lead he wanted at all times at reasonable prices is that stockpile purchases were often made when industrial consumption was at its highest point instead of when it was low. Also, unrealistic ceiling prices in periods of heavy consumption for defense production here and abroad diverted lead to foreign countries.

In short, in a free economy the world and domestic supplies of lead should be able to take care of all industrial needs. With probably more than a million tons of lead already stockpiled, it is unlikely that stockpiling will make any heavy demand on lead in the future and in the event of war, the stockpile would cushion the impact on civilian supplies.

What about the long term outlook?

Presented at the Fifty-Eighth Meeting of The American Ceramic Society in New York, N. Y., April 23, 1956 (Materials and Equipment Division, No. 13).

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The reserves of any metal are difficult to estimate and figures on reserves must be used with the greatest caution or they may be dangerously misleading. For economic reasons, it is not generally practical for a mining company to block out its reserves for more than a few years ahead of its mining operations. The usual practice is to try to find through new development work each year enough reserves to replace the amount extracted.

Furthermore, reserves change from time to time with changes in economic and technological conditions. For example, a favorable economic climate may add considerable amounts of low grade material to reserves and vice versa. This does not change the amount of metal content actually in the ground but merely what may be profitably extracted under any given set of economic conditions.

Also, technology may add large amounts of ore to reserves either through better recovery or lowering costs. An example was the development of flotation some years ago. This process enabled operators to class as reserves large tonnages of material from which metal could not previously have been profitably extracted. Right at the moment a great amount of development work is being expended in chemical processes of metal refining to replace, at a saving, fire refining.

With the foregoing qualifications, known world reserves of lead contained in ore are estimated by government authorities in the neighborhood of 50,000,000 tons. That is some 25 times annual world consumption.

In Canada several new mines have opened and at least two very large new lead producing districts have been discovered. These are the remarkable discoveries in New Brunswick and at Great Slave Lake. Several new properties and enlarged smelter capacity are adding to Peru's production. Morocco, Southwest Africa and East Africa are all important new sources of lead. Australia has proved reserves to last into the next century at potentially increased production rates. A new mine will soon go into production in Greenland.

In this country two large new mines have been put into production in Missouri, and intensive exploration in Idaho has resulted in the finding of important new ore bodies. Both here and abroad major discoveries of zinc have been made which will also produce sizable tonnages of lead.

Of great importance is the fact that new reserves in this country are being added each year at a rate to replace or even exceed the lead actually extracted. Thus, if reserves are estimated 5 to 10 years hence, they will probably not differ much from today, just as estimates 5 to 10 years ago were not greatly different.

For instance, in 1947 hearings before the Subcommittee on Investigation of National Resources of the Senate Committee on Public Lands were published. In these hearings representatives of the U. S. Bureau of Mines and the U. S. Geological Survey estimated recoverable lead contained in reserves in the ground in the United States at about 6,500,000 tons in 1944, or about 13 times the average 1935-44 rate of production.

In the report of the President's Materials Policy Commission, however, published in June, 1952, reserves are estimated

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at about 7,000,000 tons in 1950, or about 16 times 1950 production. Thus estimated reserves were somewhat higher in 1950 than in 1944 despite the fact that nearly 2,500,000 tons of lead had been mined from United States mines in the intervening six years. This clearly indicates the danger of using reserve figures as of any particular date as a guide to the life of the reserves because they cannot of necessity take into account the new reserves opened up each year.

Also, there need be little concern about the fact that in periods of good business we need sizable amounts of foreign lead to piece out our domestic supply. Most of our imports come from Mexico and Canada, our neighbors on the North American Continent. Those two countries have accounted

for about 60 per cent of our imports since the war.

The past year exemplifies the point I am trying to make. Lead consumption of the United States was a little more than 1,200,000 tons, or only a few thousand tons less than the all-time peak of 1950. Yet no consumer of lead or lead products wanted for supplies of lead and the market showed amazing price stability under conditions of such heavy demand. Even at that some 50,000 or 60,000 tons of lead went into the government stockpile and consumption abroad was heavy.

With ample supplies of lead metal thus assured, the ceramic industries should have little concern about the availability of the lead products they consume. Manufacturing capacity is capable of providing for even a sizable increase in demand.