LEAD INDUSTRIES ASSOCIATION
60 EAST 42nd STREET
NEW YORK 17, N. Y.

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SUBJECT: AIME PAPER BY LIA SECRETARY

To Members of the Lead Industries Association:

Attached is a copy of the paper delivered by the Secretary of LIA at the annual meeting of the Society of Mining Engineers of AIME, at its last annual meeting on February 19, 1958.

It outlines briefly the highlights of the Association's program to enlarge the markets for lead and its products.

Sincerely yours,

Secretary

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SOCIETY OF MINING ENGINEERS
OF AIME
29 WEST 39TH STREET NEW YORK 18, N.Y.

AN EXCITING FUTURE AHEAD WITH LEAD - AN INDUSTRY PROGRAM

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An Exciting Future Ahead With Lead - An Industry Program

By

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It has often seemed to me that people are too prone to turn to new and untried materials in an effort to solve their problems, without giving sufficient consideration to the old stand-bys, except as a last resort. It's a little like middle-aged men who are swept off their feet by the fresh beauty of a young girl without first considering the many advantages that a more mature woman has to offer. Maybe it's because, like the older woman, the older materials have to make a determined effort to keep themselves looking young and attractive.

That's just about the situation with which the lead industry is faced. We have to make a determined effort to keep lead looking young and attractive to industry. However, there is one difference and it is important. Lead can not only be kept looking young, but it can, in fact, actually be kept young.

This results from two things. First, industry and technology are constantly changing. For example, we have known for years that the density of lead makes it ideal to stop gamma rays, but it is only recently that atomic fission as a source of gamma radiation has become an important tool of industry. That makes old knowledge about lead useful in developing a new market for it.

Second, although lead has been the subject of research for many years, changing industry and technology make it necessary for us to learn new things about lead that we didn't have to know before. Again as an example, we didn't have to find out that certain lead compounds could act as a modifier of certain rocket fuels until rockets and fuels reached their recent stages of development.

In support of these views I would like to point out that lead has been around for several thousand years, yet some two-third of its current consumption is in uses developed in the last fifty years. Certainly the automotive industry can not be considered antiquated, but about half the lead used goes into automotive batteries and tetraethyl lead for gasoline. Lead shielding for atomic ships, submarines, laboratories and the like is a new developed in much less than the last generation. We think of plastics as being about the newest of materials. Thousands of tons of lead compounds are now employed as stabilizers in vinyl plastics each year. Literally hundreds of lead compounds, both organic and inorganic, are known and can be made, but only relatively few have yet been put to work commercially. Who knows what the future holds in store for them?

Our industry therefore has decided to "reach ahead with lead" to the exciting future that it can enjoy if we keep abreast of industrial and technological development. This future of course won't just take care of itself. The industry must do its part, and it is with that realization that the largest and most diversified program of research and promotion has been approved for 1958, with plans being laid for even more far-flung activities in the future.

This program has many facets. It involves magazine and direct mail advertising, publicity, technical service, research, and will probably also include motion pictures. It involves the protection of existing markets and a search for new uses for both existing products and for new products. And there is nothing static about our approach. We are constantly making market and technical surveys to guide us in the proper direction of these activities. Thus we hope to take advantage of new opportunities and to avoid wasting ammunition on efforts that may prove fruitless.

One such study was recently completed for us by Battelle Memorial Institute. It took six months and was an evaluation of our research needs. Out of the information and recommendations contained in the report of this study we expect to initiate a number of specific applied and basic research programs which we hope will develop new markets and new products. This new research, as well as that already under way, has the benefit of the guidance of a Technical Steering Committee composed of the research directors or a dozen large lead producing and consuming companies, as fine an array of technical brains as the industry could assemble.

Another survey of a somewhat different nature is now being made for us by the internationally famous firm of architects and engineers - Skidmore, Owings and Merrill. This study is to determine how best to develop the market for lead products in building construction and to recommend new products that might help in the solution of building problems. We expect this study to take three or four months to complete and that it will give us an authentic picture of just where we stand in the gigantic building industry which already uses a large tonnage of lead products but which may well be a market for a lot more.

A third study being made is a market survey of the shipbuilding industry in this country. Indications are that this industry may enjoy increased activity of major proportions and if this is to be the case, it should offer a substantially increased market for an old stand-by lead

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product -red lead paint- as well as other lead products. However, our research since the last war, partly in cooperation with the Navy, has developed new red lead paint formulations with many advantages which place us in a better competitive position than ever before and have given a "new look" to red lead paints.

In fact we have already greatly expanded our research and promotional programs on red lead paints to take advantage of the huge new Federally-aided highway construction program which should require substantially increased amounts of red lead. Last year we added trade paper advertising in this field to our previous direct mail and research efforts, and all of these are being further expanded in 1958. Field work with users and specifiers of metal protective paints is also being initiated.

We are particularly enthusiastic about the future for lead in the ceramics industries which includes a variety of applications such as glass, glazes, porcelain enamels for aluminum, steel and other metals, ceramic bodies, glass colors and others. The only really successful porcelain enamels for aluminum developed so far, and this is of comparatively recent development, have a high lead content, and the industry is seeking to lower the firing temperatures of enamels for steel, which again involves lead. Lead adds valuable electrical and other characteristics to ceramics for electronic applications, a new and growing field. Clay sewer pipe manufacturers are just beginning to use lead glazes on their product - a potentially large market for lead. These are only a few of the interesting new developments in ceramics in which lead may play an important part.

A new program to develop this ceramic market was started less than three years ago. We first issued a comprehensive data book on "Lead in the Ceramic Industries." This has been followed with advertising and publicity in ceramic magazines which is being further increased this year, and with supplements to the data book to keep it up to date. Three graduate research fellowships dealing with different phases of lead in ceramics have been established at three different universities, and six more will be established this year. Permanent exhibits to be donated to all accredited ceramic schools in the country are under construction. We believe we have under way a well-rounded research and technical promotion program in ceramics, which offer a major growth potential for lead.

I have already mentioned the study we are having made of the use of lead in building construction. This does not mean that we are not already active in that field. We have been promoting lead to the plumbing industry very aggressively since the early 1930's. In the last couple of years we have expanded this to include architects and builders. For example, starting with this year we have two four-page inserts in Sweet's Architectural and Light Construction Catalogs dealing with lead plumbing and hard lead sheet for roofing and flashing. These catalogs go to some 40,000 architects and builders. We also offer a service of detailing and writing specifications for architects for lead in building construction. A recent example of the effectiveness of this service was installation of over 3,000 sq. ft. of 3-lb. hard sheet lead gutter linings, detailed by us, on a new dormitory at Duke University.

Nor are we forgetting the great possibilities of atomic energy where lead provides the most compact gamma-ray shield at economical cost. A member of our staff is secret "Q" cleared. Through atomic plant visits and by other means he gathers as much authentic information as possible on the best use of lead in this industry and assists those involved with the design of atomic installations in the proper use of lead shielding so that it may compete as effectively as possible with other materials.

In the field of cable sheathing we have a committee composed of both lead producers and cable manufacturers which is working closely with manufacturers of lead extrusion presses to perfect the continuous, instead of intermittent, extrusion of lead alloy cable sheath. If this is successfully accomplished, we expect that it will aid materially in preserving this market of more than 100,000 tons of lead per year.

Chemical construction is another big market for lead that has growth potentialities as the use of chemicals continues to grow. But this is complicated by increased competition with such materials as rubber and plastics. For many years we have been gathering and disseminating technical information on this use of lead and working with chemical engineers to design with lead for best results.

These are some of the specific areas in which we are now working. But this is not all. As I have said, people need to be taught to think of lead in terms of the future and be made to realize its broad general potentialities for future developments. That it has these potentialities cannot be denied because lead has found so many completely new applications in the last few years. I have already mentioned lead compounds as rocket fuel modifiers, but I can't say more because of security reasons. A lead compound is also used in the electronic brain of guided missiles. Certain lead compounds add brilliance and clarity to motion picture screens.

particularly the 3-D type.

I have mentioned the use of lead as a stabilizer in plastics which can already be numbered in thousands of tons, and I have told you of our enthusiasm about the future of lead in porcelain enamels. I have also indicated the part that lead is playing in ceramic bodies in the electronics industry. Just by contrast I would like to mention a new use as an expansion joint in monolithic concrete floors developed by the Portland Cement Association.

Just in my last few sentences I have tried to indicate a few, and only a few, new developments in lead that I imagine only a handful of people know about. They range from missiles to movie screens, plastics to porcelain enamels, electronics to expansion joints. None is yet a major consumer of lead. Perhaps none of these particular applications may ever be. But they do establish the fact that something new is coming out of lead every day and no one can foretell when one new thing may become another tetraethyl lead or when, in the aggregate, a multiplicity of new uses may accomplish the same thing.

This, of course, is the direction in which our research program will be directed. But research can not be expected to do the job single-handed. That is why we are expanding our technical service work by adding trained men to our staff who can go out in the field and help manufacturers work out their problems in terms of lead. We hope that these men can find new applications for lead by supplying industry with knowledge we already have, or by bringing problems back to us as bases for research on lead, or by encouraging others to undertake lead research on their own or in cooperation with us.

And through our quarterly publication, "Lead," with a circulation of 50,000 to 60,000, we intend to keep lead and what it is and can do before industry generally so that it will "Look ahead with lead" and realize what a vital, useful metal it is.

We are also close to completion of a Monograph on Lead to be published by the American Chemical Society. We hope that this comprehensive volume will supply industry much needed technical information about lead that will encourage people to explore its merits. It covers the whole field of lead production, manufacture, properties and uses, with each chapter written by a top expert in his particular field.

No discussion of our efforts on behalf of lead would be complete without some mention of our lead hygiene activities. It is well known that lead, like many other industrial materials and metals, is toxic, which merely means that if an individual takes too much of it into his system, it may be harmful. In the same sense, even coffee, alcohol or candy may be toxic.

Nevertheless, the toxicity of lead often militates unnecessarily against its use. I say, "unnecessarily" because sometimes fears are imagined rather than real and because, through proper precautions, lead can almost always be used with complete safety. Therefore an important and costly part of our work is devoted to education of industry and the public in this field. It involves assisting people to use lead safely, maintaining friendly relations with Government agencies that issue regulations concerning toxic materials, combating unfavorable and often erroneous publicity, and educating people generally to the real truth. Just one example is the lead hygiene conference which we are planning to hold in Chicago next fall, the third of its kind we have sponsored. At this conference medical people and others concerned will be brought up to date on every phase of the lead hygiene problem by top medical men, toxicologists and industrial hygienists, and by exchange of experience and ideas of those in attendance.

In summary, our industry is committed to a vastly expanded program of research and development geared to modern industrial needs. This program is a many sided thing designed, on the one hand, to protect existing valuable markets, and on the other, to find new ones. It is impossible here to outline every phase of our program, existing or planned, but we expect to use every tool at our command - research, advertising, technical service, publicity.

To me the future of lead is tremendously exciting. Our present major uses are in such modern and huge industries as the automotive, electrical andconstruction industries. New markets are developing in the atomic, electronic, plastic and other industries with great growth potential. What we must most carefully guard against is falling into a state of lethargic self-satisfaction and I am convinced that the industry's present attitude is far from that. In the last three years the funds for research and promotion provided by the producers of pig lead have nearly quadrupled, but a number of new projects are still under consideration. This is certainly strong evidence of the confidence the industry has if it "reaches ahead with lead."