

LEAD INDUSTRIES ASSOCIATION

60 EAST 42ND STREET

NEW YORK 17, N. Y.

SUBJECT TO REVISIONINDUSTRY DEVELOPMENT COMMITTEE MEETING MINUTES

New York, N. Y.

August 19, 1958

A meeting of the Industry Development Committee of the Lead Industries Association was held at the office of the Association on Tuesday, August 19, 1958.

Present

J. J. Lennon
S. D. Strauss
Clarence Glass
S. E. Sweet

R. H. Cutting
A. R. Mers
Robert Hendricks

C. R. Ince

Representing

The American Metal Climax, Inc.
American Smelting & Refining Co.
Anaconda Sales Co., Inc.
Broken Hill Associated Smelters Pty Ltd.
(C. Tennant, Sons & Co., Agents)
The Bunker Hill Co.
Cerro de Pasco Corp.
Consolidated Mining & Smelting Co. of
Canada, Ltd.
St. Joseph Lead Co.

Robert L. Ziegfeld, Secretary-Treasurer
Schrade F. Radtke, Director of Research
David M. Borcina, Asst. to Secretary

The meeting was called to order at 11:00 A.M.

The minutes of the previous meeting of April 3, 1958 were approved.

Schrade F. Radtke, newly appointed Director of Research of the expanded L.I.A. - A.Z.I. research program was formally introduced to the Committee.

REPORT OF THE SECRETARY

The secretary presented a report of industry development activities for the period January 1, to August 19, 1958, attached as Exhibit "A".



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RADIATION SHIELDING

In connection with the section on radiation shielding in the secretary's report, it was reported that Alfred P. Knapp of Knapp Mills, Inc., has had several meetings with officials of insurance companies on the problem of gamma radiation shielding in atomic reactor installations. After some discussion it was recommended that Mr. Knapp be invited to present his views to the Technical Steering Committee of the Lead Industries Association to see if the industry could be of assistance.

REPORT OF THE TREASURER

The treasurer presented a report on the breakdown of the approved Industry Development Fund for 1958 together with an estimate of the amounts that will actually be spent by the end of this year. Exhibit "B" attached.

INDUSTRIAL STORAGE BATTERIES

The secretary reported on his discussion with officials of the Electric Storage Battery Co. on the feasibility of conducting a promotional program in an effort to expand the use of lead-acid battery-powered industrial trucks. He stated that they were most cooperative and offered us case history information that could be valuable in such a program.

A report on the lead potential for motive power batteries, prepared by Electric Storage Battery Co., is attached as Exhibit "C".

The secretary further stated that he estimated roughly that such a program would probably involve an expenditure of approximately \$10,000 to \$15,000 a year.

It was the recommendation of the committee that the secretary prepare a detailed program for discussion at the next meeting. It was further recommended that such a program include the preparation of a "Buyers' Guide" pamphlet that could be used by the purchasing agents of the various member companies.

STUDY OF TOXICITY OF PAINTS FOR POTABLE
WATER TANK INTERIORS

The secretary reported that a committee of the American Water Works Association responsible for the paint specifications for the interior of potable water tanks, which now require the use of red lead based paints, had received an objection to the use of red lead from a paint company because of its toxicity.

As a result the American Water Works Association would like to undertake a full study of toxicity of paints for potable water tanks and have requested the financial support of the L.I.A. up to \$1,000.00. Others being asked to cooperate are the tank manufacturers and the American Zinc Institute.

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A motion was thereupon made, seconded and unanimously approved that the secretary be authorized to expend up to \$1,000.00. on a research study of the toxicity of paint for potable water tanks in conjunction with the American Water Works Association.

BATTILLE RESEARCH STUDY REPORT

The secretary reported that he has available about 40 copies of the Battelle research study report and requested the committee's opinion as to how these should be distributed.

It was generally agreed that the secretary should supply extra copies of the report, as requested, to members who supported the study, and to other members of the Association when requested, if copies are available.

SKIDMORE, OWINGS & MERRILL, REPORT

The secretary reported that the study on lead in the building field being made for the Association by the architectural firm of Skidmore, Owings & Merrill, had not yet been received but was expected later this week.

When received, it was recommended that the report be circulated to members of the Industry Development Committee, Technical Steering Committee, and to the Advisory Committee of the Metallic Lead Products Division.

BASIS OF ASSESSMENT

The committee recommended that the basis of assessment for ^{research} ~~development~~ activities be the actual smelter output including that metal produced for consumption within members' own organization.

NEXT MEETING DATE

The next meeting of the Industry Development Committee was tentatively scheduled for November 25, 1958.

There being no further business, the meeting adjourned at 12 noon.

Robert L. Zengler

Secretary.

Exhibit "1"
August 19, 1958

REPORT OF INDUSTRY DEVELOPMENT ACTIVITIES

JANUARY 1 to AUGUST 19, 1958

RESEARCH

CERAMICS - Last December a \$27,000 appropriation for nine graduate research fellowships in ceramics was approved at an average of \$3,000 each. Three of these were to continue for another year, fellowships previously granted at Rutgers, Illinois and Ohio State. In addition to these, arrangements have been made for six new fellowships. As of now, we will have two fellowships at Rutgers and Illinois, and one each at Ohio State, Penn State, Alfred, the University of California at Berkeley, and Clemson, during the 1958-1959 academic year at a total cost of \$27,000.

We have so far received four progress reports on the work done at Rutgers and a thesis from the fellow at Illinois on the work done in the past year. Also a couple of papers have been presented at American Ceramic Society meetings on the Rutgers work. Rutgers is also preparing a supplement to be published this Fall for our data book, "Lead in the Ceramic Industries."

CABLE SHEATHING - In order to accomplish commercial continuous extrusion of lead alloy cable sheath, we have entered into a cooperative test program with the John Robertson Company, press manufacturer. An experimental press has been built at the Robertson Company expense, and starting with early May, 1958, and continuing to the end of the year, we have agreed to pay a total of not more than \$12,000 for operating a test program on commercial cable sheath alloys. A first progress report has been received.

HEAT DISSIPATION STUDIES - Based on information gathered in the field which indicates that certain lead compounds have exceptional ability to increase emission of heat, we have established a graduate research fellowship at New York University for the 1958-1959 academic year and have arranged for expert faculty supervision of the work. The cost will be \$9,600. It is hoped that this study will reveal the basic science behind this phenomenon, what lead compounds are most effective, and commercial applications in both the heating and refrigeration fields.

REINFORCED LEAD - Samples of lead reinforced with glass fibers have been supplied by Owens-Corning Fiberglas Corp. and are on test at the Research Laboratories of American Smelting and Refining Co. It was hoped that they might show improved creep and fatigue resistance. Preliminary results are not encouraging. A proposal from Armour Research Foundation on the reinforcement of lead with a steel fiber mat is under consideration by a subcommittee of the Technical Steering Committee, and Battelle Memorial Institute has suggested still another approach to this problem.

LEAD CEMENTED MATERIALS - We have contracted with Battelle for a six months' study of improving the properties of lead by suspension in the mushy state of materials insoluble in lead. The cost will be \$12,000 and the work started around July 1, to be completed around the end of the year.

LEAD ALLOYS - A contract was signed a few weeks ago with Armour Research Foundation for a study of lead alloys based on new theories developed within the last few years. It calls for a one-year study at a cost of \$20,000. The purpose is to develop new alloys with improved physical properties for commercial applications.

Report of Industry
Development Activities

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LEAD CHEMICALS - A proposal from Arthur D. Little, Inc., for research in the field of lead chemicals with particular reference to organo-lead compounds, is now under consideration by a subcommittee of the Technical Steering Committee. It contemplates a four to five months program at a cost of \$25,000, but is naturally subject to modification or rejection by the committee.

CORROSION TESTS - We are cooperating in two privately conducted series of corrosion tests at no cost to us other than supplying test samples of various types and thicknesses of lead coatings. One is being conducted by Combustion Engineering Company and relates to power plants. The other is being conducted by Hammermill Paper Company and has to do with corrosion in corrosive plant atmospheres, particularly paper plants.

MISCELLANEOUS - A number of other technical problems has been considered by the Technical Steering Committee which has requested the staff to investigate and gather more information. In addition, our day-to-day activities have brought us into contact with many new developments which are being investigated. Among the areas in which the staff is now working are semi-conductors, can soldering techniques,terne plate for can manufacture, vibration attenuation by the use of lead, leaded steels, lead hydride, organo-lead compounds and many others. It is expected that some of these investigations will result in research recommendations, others in recommendations for market development, and that still others will be dropped.

MARKET DEVELOPMENT

CERAMICS - Eighteen permanent educational exhibits depicting the use of lead in ceramics of all kinds have been placed in ceramic schools from coast to coast. These are at Rutgers, Illinois, Ohio State, Alfred, Penn State, California at Berkeley and Los Angeles, Missouri School of Mines, Toledo, Washington, Georgia Tech., Clemson, North Carolina State College, Virginia Polytechnic Institute, West Virginia University, University of Texas, Iowa State College, and the University of Utah.

A second supplement to our data book, "Lead in the Ceramic Industries," has been distributed and a third is in preparation for distribution this Fall. Our advertising has been appearing monthly in "Ceramic Industry," "Bulletin of the American Ceramic Society," and "Ceramic Age," and bi-monthly in "Ceramic News." All of this has generated a large number of technical inquiries which we are becoming hard pressed to handle.

RED LEAD - Our advertising featuring red lead paints for highway structures has been appearing monthly in "Engineering News Record." Our field man, employed half time, has been making personal calls on highway engineers, railroads, oil companies, and other large users of metal protective paints. Our exposure test program has developed a new red lead-zinc dust-iron oxide paint for galvanized surfaces (a field in which red lead has heretofore enjoyed only a limited market.) This new paint not only performs as well as or better than anything now on the market but is unique in that it may be used on both new and rusted galvanized surfaces, greatly simplifying the painting problem. "Red Lead Technical Letter No. 13" describing this paint, has been prepared and will be published in the early Fall.

Two new exposure test programs have been started this year.

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BUILDING CONSTRUCTION - Early this year the architectural-engineering firm of Skidmore, Owings and Merrill was engaged to make a study of the construction industry's use of lead and recommend ways and means of improving our market in that important industry. The report has been delayed somewhat, with my approval, to permit them to investigate some of their new ideas with some of their suppliers. It should be in our hands by the end of this month.

Pending receipt of this report, we have proceeded as in the past. Our field work with plumbers, architects and builders has continued. We have two four-page insertions in Sweet's Catalog for architects and builders and on recommendation of Skidmore, Owings and Merrill have renewed this contract for 1959 to be paid from the 1958 budget. We have exhibited this year at the Home Builders Show and Plumbing Show.

SOLDER - Our Solder Committee has completed the manuscript for the Handbook of Soldering to be published by the American Welding Society. The draft has been circulated for final approval of that society's Brazing and Soldering Committee and will be ready for publication when that approval is obtained.

CHEMICAL CONSTRUCTION - An important paper on lead for chemical construction with particular reference to acid-brick lead-membrane construction was delivered before the National Association of Corrosion Engineers. It was largely intended to correct misstatements about lead made in an N.A.C.E. committee report. Another paper on lead in petroleum refining equipment was printed in "Petroleum Refiner" and reprints given wide distribution. We have prepared an exhibit for the National Chemical Exposition next month.

RADIATION SHIELDING - We have continued to gather information on this application of lead and to publicize it as widely as possible. In addition, the data obtained are proving helpful in answering inquiries which we are now receiving on how best to utilize lead for the purpose. We are in the process of obtaining secret "QC" clearance for a second staff member.

STORAGE BATTERIES - At the suggestion of Electric Storage Battery Company, we have been investigating the possibility of extending the use of lead industrial batteries. The present annual market for lead in batteries for industrial trucks and mine locomotives is estimated at about 13,000 tons, but nickel-iron batteries are depriving us of an additional 2,500 ton a year market, and gas and propane powered industrial trucks another 17,000 tons a year. Exide has suggested that we encourage the use of lead-acid battery power among our members and that we also go after the big market now being served by internal combustion engines. They believe, and will supply case history data to support the belief, that lead-acid batteries can compete economically and performance-wise with gasoline and propane. A detailed program will be presented at a later meeting.

TECHNICAL SERVICE - This activity has been materially expanded with the addition of another technical man to our staff earlier this year. The wisdom of this step has been demonstrated by the greater number of interesting developments we are encountering through work with users and potential users of lead in the field. It has uncovered work that is being done with lead by others and has enabled us to follow up interesting inquiries about lead and its products through personal contact.

Report of Industry
Development Activities

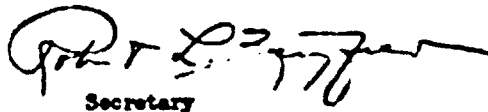
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LEAD - This publication continues to be a major source of inquiries, most of which are followed up through correspondence, but the more interesting of which we are now able to follow up personally. Often articles in "Lead" are reprinted in other trade papers.

PUBLICITY - This program has been stepped up and a number of feature articles emanating from the Association have been published this year. There has also been a large increase in publication of short press releases dealing either with uses of lead or activities of the Association.

GENERAL - I have not attempted to cover every detail of our promotional and research activities in this report. In addition to companies I have already mentioned, we are currently cooperating in one way or another on technical matters with such organizations as American Can Co., Cleveite Corp., Minneapolis-Honeywell, the New York Central Railroad, Goodrich Tire and Rubber Co., IBM, and a number of others. I am convinced that an adequately financed and properly designed program, including research by ourselves and by others with our technical assistance and cooperation, and technical promotion of both old and new products, can result eventually in major expansion of the markets for lead.

Respectfully submitted,



Secretary

Exhibit "B"
August 19, 1958

INDUSTRY DEVELOPMENT FUNDTREASURER'S REPORTAUGUST 19, 1958

The following is a breakdown of the approved Industry Development Fund for 1958 together with an estimate of the amounts that will actually be spent by the end of this year.

	<u>Approved</u>	<u>Estimated Expenditures</u>
Metallic Lead Products	\$47,000	\$50,000
Pigments and Chemicals	42,800	42,200
Ceramics	63,000*	61,600*
Radiation Shielding	5,000	4,000
Technical Service	15,000	14,000
Building Construction Survey	20,000	20,000
"Lead" Magazine	12,000	10,000
Cable Sheath Research	12,000	12,000
Emissivity Research	10,000	7,700**
Reinforced Lead Research	5,000	-
Lead Alloy Research	50,000	22,000***
Chemical Compound Research	25,000	-
Contingencies, Research	1,000	-
Design Engineering Show, 1959	5,000	5,000
	\$312,800	\$248,500
Committed for 1959 (see footnotes)		11,900
		\$260,400

- * Includes \$27,000 for graduate research fellowships.
 ** Additional \$1,900 to be spent in first half of 1959.
 *** Additional \$10,000 to be spent in first half of 1959.

NOTE: Proposals are currently being entertained for research on reinforced lead, chemical compounds, and additional work on lead alloys.

RECAPITULATION

	<u>Approved</u>	<u>Estimated Expenditures</u>
Research	\$130,000	\$68,700
Promotion and Technical Service	182,800	179,800
	\$312,800	\$248,500
Committed for Research in 1959		11,900
		\$260,400

EXHIBIT C.

August 19, 1958

LEAD POTENTIAL FOR MOTIVE POWER BATTERIESIndustrial Trucks-Rider Type

In an average year, about 5,000 new rider-type battery-powered industrial trucks are sold. These trucks average 1.3 batteries, each of which averages 1,300 pounds of lead (or equivalent in nickel-iron).

About 85% of these trucks are actually equipped with lead batteries. This means a total of about 3,600 tons of lead annually is being used for batteries for new rider-type industrial trucks.

About 15% of these trucks are actually equipped with nickel-iron batteries. Therefore about 600 tons of lead potential is being lost each year to nickel-iron for new trucks.

In an average year about 20,000 gasoline or propane powered rider-type industrial trucks are sold. The vast majority of these trucks could be battery-powered. If they were, this would represent about 17,000 tons of lead potential annually.

The replacement battery market for rider-type industrial trucks averages about 8,000 tons of lead potential annually. However, about 1,500 tons is lost to nickel-iron.

Industrial Trucks-Walkie Type

In an average year, 7,000 electric walkie trucks are sold. These average 1.25 batteries per truck, each of which averages 300 pounds of lead (or equivalent nickel-iron).

About 95% of these trucks are actually equipped with lead batteries. This means a total of about 1,250 tons of lead annually is being used for batteries for new walkie-type industrial trucks.

5% of these trucks are actually equipped with nickel-iron batteries. Therefore, over 60 tons of lead potential is being lost each year to nickel-iron for new trucks.

There is no significant gasoline competition for the walkie-type truck business.

The replacement battery market for walkie-type truck batteries averages about 1,200 tons annually and is growing rapidly. About 60 tons is being lost each year to nickel-iron.

EXHIBIT C.

August 19, 1958

LEAD POTENTIAL FOR MOTIVE POWER BATTERIES. (CONTINUED).Mining and Tunneling

Because of the wide range of battery sizes, it is not possible to give average numbers of vehicles or battery sizes in this market. However, we estimate that the lead potential for new vehicles which are battery powered in this market is about 500 tons annually.

Of this total, some 70 tons of lead potential is being lost each year to nickel-iron.

It is impossible to estimate the amount of potential lost here to gasoline, diesel and other forms of power. Conservatively, however, it must be more than the 500 tons annually which now is used for battery-powered vehicles. Tunneling is going almost 100% to diesel locomotives, and the number of mine vehicles being operated by trolley and cable is certainly very substantial.

For replacement batteries, this market represents about 1,200 tons of lead potential annually for battery-powered vehicles. Of this total some 170 tons of lead potential is being lost each year to nickel-iron.

It is also impossible here to estimate the amount of potential represented by gasoline, diesel and other non-battery power except to say it is probably more than 1,200 tons annually.

Summarizing

	<u>Tons of Lead Potential Per Annum</u>		
	<u>Actually Used</u>	<u>Lost to Nickel-Iron</u>	<u>Lost to Other Power</u>
New Rider Trucks	3,600	600	17,000
Replacement	6,500	1,500	None
New Hand Trucks	1,190	60	None
Replacement	1,160	60	None
New Mine Vehicles	430	70	Unknown but substantial
Replacement	1,030	170	" " "
Total	13,890	2,460	Well over 17,000

These figures are all on the conservative side and do not include nearly all industrial battery applications. However, they are the applications most pertinent to the Lead Industries Association.