

## LEAD INDUSTRIES ASSOCIATION

400 LEONINGTON AVENUE

NEW YORK 17, N. Y.

Pigments and Chemicals Division

### SUBJECT TO REVISION

### PIGMENTS AND CHEMICALS DIVISION

Chicago, Ill.

April 23, 1954

A meeting of the Pigments and Chemicals Division of the Lead Industries Association was held on April 23, 1954 at the Drake Hotel, Chicago, Ill. The following individuals attended:

#### Members

|               |                                                    |
|---------------|----------------------------------------------------|
| R. Hornsdorf  | American Metal Co., Ltd.                           |
| L. V. Whiton  | Consolidated Mining & Smelting Co. of Canada, Ltd. |
| G. C. Wilson  | " " " " " "                                        |
| M. M. Zoller  | Eagle-Picher Co.                                   |
| A. R. Knight  | Easton Lead Co.                                    |
| D. A. Merson  | National Lead Co.                                  |
| C. E. Rabuse  | " " " "                                            |
| W. T. Isbell  | St. Joseph Lead Co.                                |
| L. A. Creglow | United States Smelting, Refining & Mining Co.      |
| R. E. Quenell | Western Lead Products Co.                          |

#### Guests

|                      |                             |
|----------------------|-----------------------------|
| Dr. R. L. Carmichael | Battelle Memorial Institute |
| Dr. P. S. Richards   | Memorial Medical Center     |

#### Staff of Lead Industries Association

R. L. Ziegfeld, Secretary-Treasurer  
M. Bouditch  
Dr. L. L. Carriek  
C. E. Cherry Jr.

The meeting was called to order at 9:30 A.M. with Mr. Ziegfeld acting as temporary chairman.

Mr. Ziegfeld announced that Mr. Alex Stewart of the National Lead Co. would no longer be able to continue as chairman of the Pigments and Chemicals Division and called for the election of a new chairman. Mr. Miles Zoller was duly nominated, seconded and unanimously elected chairman of the division.

Dr. L. L. Carriek, Director of Red Lead Research, then reported on the technical activities of the division during the previous year. Following this, C. E. Cherry Jr. reported on the promotional activities of the division. Summaries of both of these reports are appended to these minutes, as Exhibit "A" and "B" respectively.



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Mr. Ziegfeld then reported on the status of the joint Navy-L.I.A. project on evaluation of environmental exposure from welding operations over lead painted steel surfaces. He said that although no report has yet been received on the laboratory phase of the project, which was completed in November at the Harvard School of Public Health, it is known that the results indicate that, where red lead painted steel is welded, approximately twice the ventilation rate required by the Navy as minimum would be required with the present maximum allowable concentration.

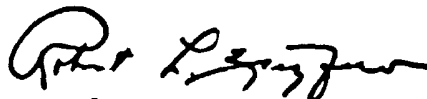
Meanwhile, Mr. Ziegfeld continued, field tests are underway at the Boston Navy Yard. One fact that has come to light there is that actual exposure of a welder is two hours a day, rather than eight, as provided for in the laboratory tests. There also are indications that the Navy is already using ventilation rates in excess of the minimum required, in which case the rates may already be adequate or at least require less of an increase.

Further, Mr. Ziegfeld pointed out, strength of weld tests conducted by the Navy at the Philadelphia Navy Yard have indicated that welding over any painted surface is undesirable. While these tests have not been accepted by the Bureau of Ships, a similar program is being planned at the Boston Navy Yard. Should these tests confirm the Philadelphia results, it is quite possible that the Navy would change standard practice so that all welding would be done on bare steel. In that event, of course, red lead would be at no disadvantage.

Even should the final results prove unfavorable for lead, Mr. Ziegfeld explained, it would not necessarily rule red lead out of consideration, in that there is indication the Navy would use it, at least in some instances, strictly on its merits. Whatever the outcome, Mr. Ziegfeld felt the Association could do nothing one way or the other at present and must await further developments before pursuing any course of action.

Mr. Zoller then commented on the excellence of the cooperative efforts of the Red Lead Technical Committee. He added that there apparently was a need for new projects suitable for the Committee's undertakings. Mr. Ziegfeld, on the same subject, accented that the lead people must constantly employ research to keep ahead of their competitors. As an illustration he pointed out porcelain enamel, which now appears a very promising field for lead oxides, but only if the industry keeps one step ahead of such developments by other interests as are very likely to materialize.

There being no further business, the meeting was adjourned at 10:30 A.M.

  
Secretary

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Exhibit "A"  
April 23, 1954

Report of Dr. L. L. Carriek  
Director of Red Lead Research

1. Steel Structures Painting Council

The Lead Industries Association became a supporting member of the Steel Structures Painting Council in 1952 and has participated actively in the work of its Research Committee. The Research Committee has made a significant contribution to the industrial users of steel. In the first volume of a two volume series of the industrial painting practices, published early this year, they have reviewed the art of cleaning and painting steel structures from (1) a comprehensive literature survey which is rich in illustrations of the anti-corrosive characteristics of red lead; (2) a critical study of the present day practices in surface preparation of steel to receive anti-corrosive paints; and (3) an economic study of the uses of anti-corrosive red lead in comparison with other anti-corrosive pigments.

In the first volume of the book, the SSPC has recommended 33 anti-corrosive primer paints for structural steel. Of these 33 paints, 45% contain lead pigments (mostly red lead) as the principal anti-corrosive pigment. Twenty-five percent of these paints contain zinc chromate as the anti-corrosive pigment, while 30% contain either none or no major anti-corrosive pigment. This group of paints is intended for use as shop coats, field coats and primer coats in general for specific and special purposes.

The manual is written from the users viewpoint. It is an encyclopedia of paint systems and practices that are most widely used by the industrial steel producers and consumers. These paints are designed to give the greatest protection at the lowest maintenance cost.

A second volume is in the process of compilation and should be issued in 1954.

2. Red Lead Research

The Red Lead Technical Committee of the Lead Industries Association has, since its inception, inaugurated 20 research projects which have been designed to show the necessity, advisability and the economy in using red lead as an anti-corrosive pigment.

The general scope of these projects includes primers for all types of steel installations whether they are subjected to atmospheric, tide range or total immersion environments. In addition, projects have been inaugurated to show that red lead is a suitable pigment to use in the coating of galvanized steel which is subjected to atmospheric exposure. New materials, as aluminized steel, have also been painted. The results from all of these tests show that red lead is a suitable pigment to use with a vehicle which meets the desired drying characteristics of the consumer. As an illustration of this use, we cite the Navy's adoption of Formula 116 and 1160 as a maintenance paint on steel vessels of the U. S. Navy. If we consider that to apply a primer coat to a 10,000 ton displacement steel vessel that 1,633 gallons of primer paint are required or 3.08 tons of lead are required, we can see that this would make quite an item when we recall that the U. S. Navy is the largest in the world. A further example of the lead required may be gleaned from the fact that a

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Exhibit "A"  
April 23, 1954

Report of Dr. L. L. Carriek  
Director of Red Lead Research

45,000 ton battleship to be covered with one coat of primer paint which contains 4 pounds of red lead per gallon would require 66.6 tons of metallic lead. Now that we are building aircraft carriers of greater tonnage than the battleship, we can see that the demand for red lead will be greatly augmented. If only half of the U. S. Navy ships were painted each year with red lead primer, it would require pretty close to 5,000 tons of lead per year.

A new market which the Lead Industries Association is trying to capture is that dealing with the painting of steel rolling stock for the American Railways. This market should consume at least 2,500 tons of metallic lead per year. Paints which will meet the cost requirements and furnish better protection than the average steel rolling stock paint are shown in Technical Letter No. 8 which has just been released from the press. These formulations are based upon the research program of the Lead Industries Association.

It is hard to estimate the amount of lead that will be consumed in making red lead for use in the preparation of paints to be used on the galvanized iron gutters, downspouts, roofs and side walls of buildings. With the increased construction of houses, it would appear that this market could be expanded to a larger extent. The formulation that we have in mind for this purpose will carry about 9 pounds of metallic lead or 10 pounds of red lead per gallon of paint. This should constitute a rather good market as it may be used on rusted galvanized iron or on weathered or pretreated galvanized iron. A red lead paint may be followed by any desired top coat and should afford protection as long as the top coat is intact.

The Signal Section of the American Association of Railways has commenced to evaluate their signal paint formulations which have been in use for a number of years. They have retained in their specification TT-P-66a, Type 177 as a primer paint for the steel surfaces. This paint carries 12 pounds of red lead per gallon. They have room for a quick drying, two hour tack free time, primer paint which they desire to use in place of a much slower drying anti-corrosive paint which they have had in their specifications for a number of years. As a substitute, the Navy's Formula No. 116 which carries 4 pounds of red lead has been submitted for their consideration and evaluation. It meets all their performance requirements and has an excellent service record. It may be used as a maintenance paint in the field or it may be used as a primer paint in the factory which may be applied either by brush or spray methods.

The Potential Market

The American Railways have approximately 18,000 signals and catenary bridges which span from 2 to 10 tracks. The catenaries have a total length of 900,000 feet and weigh 120,000 gross tons. Their light construction means that they have a relatively large paintable surface.

There are in addition -- 1,200,000 roadway signs  
490,000 switch stands  
250,000 signal poles  
350,000 relay boxes  
200,000 cable posts  
much other signal equipment all of which  
must be kept painted.

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Exhibit "A"  
April 23, 1954

Report of Mr. L. L. Carrick  
Director of Red Lead Research

Switch targets should be painted, due to required visibility, at least once each year.

This market is not as large as any of the others mentioned above, but it would be an excellent foothold to maintain red lead in the American Railways painting specification manual for signal section paints.

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Exhibit "B"  
April 23, 1954

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Report of C. E. Cherry Jr.

Activities of the division during the year were divided between promotional work and research, the latter either directly by the association or in cooperation with other agencies.

Red Lead Technical Letter No. 8, titled "Primers for Railroad Structures and Rolling Stock" was published in April of the current year with initial distribution of approximately nine thousand copies.

Red Lead Technical Letter No. 9, resulting from L.I.A. Project No. 20, is in the draft stage. The letter contains formulations for use on rusted galvanized surfaces and is scheduled for publication in September.

Throughout the year many technical inquiries were handled either by the office of the association or by the Red Lead Technical Committee. These may be by mail or phone, and range from individual consumer inquiries up through requests for complete specifications by large industrial users.

Numerous requests for Red Lead Technical Letters and the various other literature offered by the division were promptly filled. Additional distribution of literature took place through member companies who requested bulk quantities from the association. Listings of individuals requesting literature were circulated to red lead manufacturers.

Field visits were made to industry, the military, and public agencies. These visits accentuated the adaptability of red lead base paints to a wide variety of applications as a result of development by the association of formulations containing many of the newer, more durable vehicles.

The association continued its support of the Steel Structures Painting Council. In January Dr. L. L. Carrick, Director of Red Lead Research for the association replaced Mr. Vander Valk on the Research Committee of the Council.

The first volume of the Steel Structures Painting Manual, "Good Painting Practice," was published early this year. Red lead and other paints are contained liberally in the recommended practices of the Council. Copies of the manual were distributed to members through the association offices.

During the year the former technical director continued to serve as secretary to the Government Advisory Committee on Chromate Pigments sponsored by the Corps of Engineers, U. S. Army. This committee was organized to evaluate metal protective paints based on lead chromate and other chromate pigments as well as standard and specification paints based on red lead. An elaborate exposure project was initiated to determine the relative merits of the various paints over steel, aluminum and magnesium surfaces.

Highly favorable results for red lead have come out of the two joint projects with the Navy. The final report on the Navy-L.I.A. project on bottom paints was issued on April 14, 1953. In the conclusions of this report two systems were selected as the best among thirty-seven. Both of these contained red lead base primers, one with a vinyl-type vehicle and the other a coal-tar type vehicle. During the summer patch tests were initiated on a destroyer bottom. This ship is now in service and performance reports should be forthcoming during the year.

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Exhibit 99  
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Report of C. E. Cherry Jr.

The cooperative tests with the Philadelphia Navy Yard are still in progress. The exposure results to date have clearly indicated the superiority of red lead over zinc chromate in sea water immersion. This has been helpful in establishing a trend to red lead-vinyls for all parts of ships undergoing continuous or intermittent sea water immersion.

The position of Navy Formula 116 (a red lead base primer containing approximately 4 lb. red lead per gallon) was strengthened considerably by the issuance on March 27, 1953 of a Military Specification covering this formula. This paint is now used almost exclusively as the maintenance primer for ships' topsides. A second specification was issued on April 1 covering a dark shade of the same primer to offer contrast in multiple coat systems. These specifications were designated MIL-P-17545 and MIL-P-17546, respectively.

Conventions of the American Society for Testing Materials, and the Federation of Paint and Varnish Production Clubs were attended both to maintain contacts with persons interested in protective coatings and to keep up with the latest technical developments touching on areas where our products are or may be involved.

A paper on metal protective paints was presented by the technical director before the Southern New England and Eastern Wisconsin Sections of the National Association of Corrosion Engineers.

The association established relations with the subcommittee on painting practices, Signal Section, the American Association of Railroads, Dr. Carrick attending the last meeting of the group, which is considering lead base paints in its specifications.

Regular inspections of all L.I.A. and Navy cooperative panel projects were made. The technical director also participated in group paint inspections of various structures under the auspices of the U. S. Corps of Engineers and the Steel Structures Painting Council.

The Red Lead Technical Committee met regularly, directing the evaluation of existing projects, initiating new work, compiling the Technical Letters and providing technical assistance in answer to inquiries. In March of this year a project was initiated to evaluate the performance of a red lead-flaked lead primer in comparison with more widely used formulas containing metallic pigments.

Each issue of "Lead", published twice annually by the association, contained a staff-prepared article concerning lead base paints.

The division exhibited at the annual Paint Industries Show in Atlantic City the week of October 26. The exhibit demonstrated by illustrations and test panels the benefits and proper usage of red lead and white lead in paints.