LEAD INDUSTRIES ASSOCIATION

60 EAST 42nd STREET

NEW YORK 17, N. Y.

SUBJECT TO REVISION

LEAD PIGMENTS TECHNICAL COMMITTEE MEETING MINUTES

New York, N.Y. June 30, 1959

A meeting of the Lead Pigments Technical Committee of the Lead Industries Association was held in the offices of the Association on June 30, 1959.

PRESENT	REPRESENTING
L. L. Carrick, Chairman	Lead Industries Association
H. E. Elmore	The Bunker Hill Co.
Paul Whitford	The Eagle-Picher Co.
E. H. Butzow	Hammond Lead Products, Inc.
E. P. Bates	National Lead Co.
E. K. Zimmermann	National Lead Co.

Robert L. Ziegfeld, Secretary-Treasurer
David H. Borcina, Secretary to Committee
Owen F. Shobe, Consultant to Lead Industries Assoc.
Bruce Fader

The meeting was called to order at 9:30 A.M.

The minutes of the previous meeting of January 27, 1959, were approved.

CHEMICAL SUBCOMMITTEE OF EXPANDED RESEARCH PROGRAM

The chairman reported on the formation of a Chemical Subcommittee in the Expanded Research Program of L.I.A.-A.Z.I., of which this committee will serve as a task group. As chairman of the Lead Pigments Technical Committee, he will serve on the Chemicals Subcommittee and act as liaison.

As a task group he stated this committee will recommend needed research in the paint field and review any research proposals that may come from outside agencies. Also, the task group will monitor any future research programs in the paint field.

The chairman then requested any suggestions as to needed research. It was generally agreed there is a definite need for additional basic information on calcium plumbate, basic lead silico-chromate and lead cyanamid. Further, if a lead pigment in a latex water emulsion or dispersible type vehicle could be developed, we could possibly open up the automobile finish field to lead pigments.

LIA10477

L.I.A. PROJECT 27

The secretary reported that L.I.A. Project 27 to test various wash primers and anticorrosive primers in sea water, total immersion and tide range, and fresh water, were placed on exposure at Sayville on March 25, 1959.

L.I.A. PROJECT 29

It was generally agreed that the test project on paints for galvanized iron be continued. However, because the purpose of continuing this project was to develop color variety in the paints, it was decided to assign the number L.I.A. Project 29 to the continuing tests.

L.I.A. PROJECT 29

It was decided that modifications of L.I.A. 9-2 paint to obtain color variety be placed on test. Mr. Bates submitted their weatherometer test data on such paints, attached as Exhibit "C."

It was agreed that Mr. Bates would supply his recommended paint formulations for this project and it was further agreed that at the suggestion of Mr. Davies, Associated Lead Manufacturers Export Company, Ltd., we include a calcium plumbate paint in the test.

L.I.A. PROJECT 25

It was generally agreed that this project be terminated and the final inspection reports for Joplin and New Orleans are attached as Exhibit "D." The Sayville inspection reports are not yet available and will be sent to members at a later date.

L.I.A. PROJECT 24

It was generally agreed that this project be terminated and the final inspection reports for Joplin and New Orleans are attached as Exhibit "E." The Sayville inspection reports are not yet available and will be sent to members at a later date.

L.I.A. PROJECT 23

It was generally agreed that the total immersion and tide range phase of this project be terminated with the exception of paints L.I.A. 511, L.I.A. 512 and L.I.A. 515. It was requested that Mr. Bates provide the committee with a summary of the test results.

It was further agreed that the other phases of the test project be continued and that Messrs. Bates and Whitford provide the committee with a summary of the test results to date.

An inspection report from New Orleans on this project is attached as Exhibit "F."

L.I.A. PROJECT 28

The secretary reported that he had received wet samples of machinery enamels from the highway departments of Colorado, Florida, Maryland, Missouri, Ohio and Texas, from the U.S. Army Ordnance and from Winpower Co. and the Deere Co.

The secretary was thereupon requested to obtain a copy of the Federal Specification Paint Color Book from Mr. Ken Milliken, Federal Supply Service, General Services Administration, Washington, D. C. Upon receipt of the book, the secretary was to determine specific colors, matching the wet samples received so that formulations meeting color requirements using lead pigments could be developed at the next meeting.

RED LEAD TECHNICAL LETTER NO. 14

The committee reviewed the proposed Red Lead Technical Letter No. 14 - L.I.A. Formula 328, A Red Lead - Coumarone Primer, and suggested several changes which have been incorporated in Exhibit "G" attached. It was also decided to continue the use of the term "Red Lead Technical Letter" rather than change it to "Lead Pigments Technical Letter" at this time. It was felt that the change could be made when the compilation of all previous "Letters" is prepared.

INSPECTION OF WRENTHAM, MASS. TANK

The report of the inspection made in June, 1959, of the Wrenthan, Mass. potable water tank painted in 1949 with TT-P-86a, Type IV paint, was presented as Exhibit "H" attached. (Referring to Page), attached Exhibit "H," we have since determined that tank II, which had failed completely, was painted with the following: Basic lead chromate, 33-38 per cent, zinc chromate, 13-18 per cent, ferric oxide, 10-15 per cent and the balance, inert and suspended pigments. The vehicle was phenolic resins and oil.)

REPORT ON SUPPLIERS OF PHENOLIC RESIN PENETRATING LIQUID

The secretary reported that the Association had been officially notified on June 4, 1959, that the Sherwin Williams Co. was now licensed to manufacture the phenolic resin penetrating liquid.

PAPERS FOR AASHO AND THE NATIONAL ASSOCIATION OF CORROSION ENGINEERS

It was generally agreed that a paper on the results of our research activities, particularly those resulting from L.I.A. Projects 21, 22, 23 and 25, would be of interest to the National Association of Corrosion Engineers, and the secretary was requested to contact Dr. Ivy Parker of that organization, offering to present such a paper at their next annual meeting.

RED LEAD TECHNICAL LETTER NO. 12 - PROPOSED SUPPLEMENT

The committee suggested that rather than publish a supplement to Red Lead Technical Letter No. 12 and also to reprint other Technical Letters that are now out of print, an effort be made to publish a compilation of all previous "Letters" at the earliest opportunity.

LIA10479

STEEL STRUCTURES PAINTING COUNCIL REQUEST FOR COOPERATIVE TESTS

The chairman then referred to a letter received from the Steel Structures Painting Council dated April 29, 1959, requesting our cooperation in testing paints for fresh water immersion. A copy of this letter was attached to the agenda of this meeting which was sent to members on June 15, 1959.

The secretary was requested to reply pointing out that similar tests were planned and underway by our committee and in view of this, the committee felt it would be advisable to wait for our own test results before attempting any further tests.

REQUEST FOR ADDITIONAL FUNDS FROM STEEL STRUCTURES PAINTING COUNCIL

The secretary-treasurer stated that he had received an informal request fromthe Steel Structures Painting Council for an increase in 1960 of our $1,000.00 annual subscription. He requested the committee to consider our overall participation in the council's activities and whether or not we should continue our support on the present basis, increase it, or decrease it.

EXAMINATION OF SAMPLE L.I.A. 2612 PAINT

The committee then examined the 1 qt. sample of L.I.A. 2612 for shelf life. The secretary reported that the sample had been stored since September, 1958.

Upon inspection, the committee agreed that the can stability of L.I.A. 2612 after 9 months normal shelf service was better than red lead in oil. The committee agreed the test could be concluded.

THIXATROPIC RED LEAD PAINTS

Mr. Bates reported they had some data on this type of paint and would report to the committee at the next meeting.

DE VILBISS CO. LETTER

The secretary reported that he had received a letter from the De Vilbiss Co., sent to members on March 2, 1959, offering to test red lead paints for hot and cold spray applications.

The secretary was requested to accept their offer and to supply them with our newer formulations.

YELLOW TRAFFIC MARKING PAINT

The chairman reported that a large potential market for lead pigments was in yellow traffic marking paint.

The committee agreed that the Association should attempt to publicize

LIA10480

this use of lead pigments and suggested that Owen Shobe should concentrate on having highway departments adopt the use of yellow traffic marking paint.

There being no further business, the meeting adjourned at 5:30 P.M.

David M. Bercina

David M. Bercina
Secretary, Lead Pigments Technical Committee

Lead Pigments Technical Committee
Meeting Minutes

Exhibit "A"
June 30, 1959
Page 1.

LIA PROJECT # 26

Exposure: 45° South
Bayville, L. I., N. Y.

Exposed Aug. 11, 1958
Inspected June, 1959

LIA Paint	PRIMER (One Coat): Sand Blasted Chalk	Rust	Wire Brushed Chalk	Rust	PRIMER (Two Coats): Sand Blasted Chalk	Rust	Wire Brushed Chalk	Rust
#2601	7	10	7	10	8	10	7	10
#2602	6	9	7	8.5	5	10	6	10
#2603	10	10	10	10	10	10	10	10
#2604	10	10	10	10	10	10	10	10
#2605	10	10	10	6.5	10	10	10	10
#2606	10	10	9	9.5	10	10	9	10
#2607	6	10	5	9.5	6	10	5	10
#2608	6	10	5	9.5	5	10	5	10
#2609	10	10	10	10	10	10	10	10
#2610	9	10	10	10	9	10	10	10
#2611	9	10	10	10	9	10	10	10
#2612	8	10	7	9.5	10	10	8	10
#2613	10	10	7	8.5	10	10	7	10
#2614	6	10	6	10	6	10	5	9.
#2616	10	10	10	8.5	10	10	10	10
#2617	10	10	10	9.5	10	10	10	10

LIA #2601 - TT-P-86a, I
LIA #2602 - TT-P-86a, I + Glidden add.
LIA #2603 - TT-P-86a, II
LIA #2604 - TT-P-86a, II + Glidden add.
LIA #2605 - TT-P-86a, III
LIA #2606 - TT-P-86a, III + Glidden add.
LIA #2607 - TT-P-86a, IV
LIA #2608 - TT-P-86a, IV + Glidden add.
LIA #2609 - M-50 Primer
LIA #2610 - M-50 Primer + Glidden add.
LIA #2611 - T8060, R.L., ZnO, M-50
LIA #2612 - T8060, R.L., ZnO, M-50+ Glidden add.
LIA #2613 - T8136, R.L., Extender
LIA #2614 - T8136, R.L., Ext. + Glidden add.
LIA #2616 - M-50
LIA #2617 - M-50 + Glidden add.

LIA PROJECT #26

Exposure: 45° South
Joplin, Missouri

Exposed: November 1958
Inspected: June 1959

LIA Paint	PRIMER (One Coat): Sand Blasted Chalk	Rust	Wire Brushed Chalk	Rust	PRIMER (Two Coats): Sandblasted Chalk	Rust	Wire Brushed Chalk	Rust
#2601	10	10	9	9	10	10	9	9
#2602	7	9	7	9	7	9	7	9
#2603	10	10	10	9	10	10	10	9
#2604	9	9	10	9	9	9	10	9
#2605	8	9	7	9	8	9	7	9
#2606	8	10	7	8	8	10	7	8
#2609	10	10	10	10	10	10	10	10
#2610	9	10	9	9	9	10	9	9
#2611	10	9	10	9	10	9	10	9
#2612	9	9	9	9	9	9	9	9
#2613	9	10	9	8	9	10	9	8
#2614	7	9	7	9	7	9	7	9
#2616	10	10	10	10	10	10	10	10
#2617	10	10	10	9	10	10	10	9

No Failure on Topcoat Areas
Topcoat: LIA #2615

LIA #2601 - TT-P-86a, Type I
LIA #2602 - TT-P-86a, I + Cliddon add.
LIA #2603 - TT-P-86a, II
LIA #2604 - TT-P-86a, II + Cliddon add.
LIA #2605 - TT-P-86a, III
LIA #2606 - TT-P-86a, III + Cliddon add.
LIA #2609 - M-50 Primer
LIA # 2610 - M-50 Primer + Cliddon add.
LIA #2611 - T8060, R.L., ZnO, M-50
LIA #2612 - T8060, R.L., ZnO, M-50 + Cliddon add.
LIA #2613 - T8136, R.L., Extender
LIA #2614 - T8136, R.L., Ext. + Cliddon add.
LIA #2616 - M-50
LIA #2617 - M-50 + Cliddon add.

LIA PROJECT #26

Exposure: 45° South
Chalmette, Louisiana

Exposed: November 1958
Inspected: June 1959

LIA Paint	PRIMER (One Coat): Sand Blasted Chalk	Rust	Wire Brushed Chalk	Rust	PRIMER (Two Coats): Sand Blasted Chalk	Rust	Wire Brush Chalk	Rus
#2601	10	7	9	8	10	10	9	9
#2602	7	6	7	7	7	7	7	7
#2603	10	8	10	7	10	9	10	9
#2604	9	7	9	8	8	8	9	9
#2605	9	7	10	7	9	9	10	8
#2606	9	8	9	7	9	9	9	8
#2609	10	8	10	9	10	10	10	10
#2610	9	7	9	8	9	9	9	10
#2611	10	8	10	7	10	9	10	8
#2612	9	8	9	7	9	9	9	7
#2613	10	8	9	7	10	10	9	8
#2614	6	7	6	7	6	8	6	7
#2616	10	9	10	8	10	9	10	9
#2617	9	9	9	7	9	10	9	9

No Failure on Topcoat Areas
Topcoat LIA #2615

LIA #2601 - TT-P-86a, I
LIA #2602 - TT-P-86a, I + Glidden add.
LIA #2603 - TT-P-86a, II
LIA #2604 - TT-P-86a, II + Glidden add.
LIA #2605 - TT-P-86a, III
LIA #2606 - TT-P-86a, III + Glidden add.
LIA #2609 - M-50 Primer
LIA #2610 - M-50 Primer + Glidden add.
LIA #2611 - T8060,R.L., ZnO, M-50
LIA #2612 - T8060,R.L.,ZnO, M-50 + Glidden add.
LIA #2613 - T8136,R.L.Brt.
LIA #2614 - T8136, R.L.,Brt.+Glidden add.
LIA #2616 - M-50
LIA #2617 - M-50 + Glidden Additive

LIA10484

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Exhibit ___
June 30, 1959

MIAMI BOX TEST

Surfaces - Parker Panels, #100% rusted cold rolled steel
Paint System - 2 coats at 1.5 mils dry/coat + coats on rusted panels
Application - brush
Drying - 3 days between coats, 4 days before exposure

L.I.A. NO.	PAINT NO.	TYPE	BLISTER RATINGS DAYS 10	14	17
2601		TT-P-86a, I	10	10	10
2602	GL 69467	TT-P-86a, I + Rustmaster	10	10	10
2603		TT-P-86a, II	10	8F	8F
2604	GL 69468	" + Rustmaster	8M	6MD	6MD
2605		TT-P-86a, III	8F	8M	6MD
2606	GL 69469	" + Rustmaster	8F	8MD	8MD
2607	GL 69945	TT-P-86a, IV	10	10	10
2608	GL 69943	" + Rustmaster	10	10	10
2607 mod.	GL 69946	TT-P-86a, IV but using Phenolic V. from 2625 and 2612	10	10	10
2608 mod.	GL 69941	TT-P-86a, IV + Rustmaster	10	10	10
2609		No. 1 Defense in Depth	8F	8F	8F
2610	GL 68472	No. 1 + Rustmaster	8F	8F	8F
2611	T-8060	KL-M-50- Ext. Alk-Phenolic V. (L.O. for Rustmaster)	6MD	2MD	2MD
2612	GL 68473	KL-M-50-EXT- + Rustmaster	8M	6MD	6MD
2613	T-8136	KL-Ext. (90-10) same vehicle as 2611	10	10	10
2614	GL 69471	KL-Ext. + Rustmaster	10	10	10
2616	T-8061	M-50 in LIA 2611 Vehicle	8F	8F	6F
2617	GL 69565	" + Rustmaster	10	8F	8F
*2605		TT-P-86a, III	8F	8MD	8D
*2606		" + Rustmaster	8M	8MD	8MD
*2612			8M	8MD	8MD
*2614			8M	8MD	8MD
*2617			8D	8D	8D

6/29/59 National Lead Co., Research Labs.

LIA10485

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Exhibit #c
June 30, 1959

Modification of L.L.L. 9-2 to obtain color variety.

Weatherometer Affect on Color retention and peeling.

127½ Hours (EF Weatherometer - Continuous light with water spray for 18 min. every two hrs.

1. Red Lead - Zinc Dust 10 - Alkyd (9-2)	Considerable non-uniform carbonating, fading
5. M-50 by volume	OK
2. RL - Zn Dust BK 10	Slight carbonating, fading
6. M-50 by volume	OK
3. RL-Zn Dust-Chromium Oxide	Considerable non-uniform carbonating, fading
7. M-50 by volume	OK *
4. RL-Zn Dust - TiO_2	Much carbonating, fading
8. M-50 by volume	OK*

*Show noticable amount of rust stain adhering to film. This is caused by iron in water spray.

6/29/59
National Lead Co.
Research Labs.

Lead Pigments Technical Committee
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Exhibit "D"
June 30, 1959
Page 1

LIA PROJECT #25

45° South
Joplin, Missouri

Exposed: October 1957
Inspected: June 1959

100% Rust - Wire Brushed:

	Area 1		Area 2		Area 3		Area 4	
Paints (LIA)	Chalk	Rust	Chalk	Rust	Chalk	Rust	Chalk	Rust
#2501a	6	6	6	7	6	9	6	9
#2502	6	9	6	10	6	10	6	10
#2503	6	9	6	10	6	10	6	10
#2504	6	7	6	9	6	9	6	8
#2505	10	9	10	10	6	10	6	10
#2506	10	8	10	10	6	10	6	10
#2508	10	9	10	10	6	10	6	10

*Paint #2501 - Area 2 - 8 Crack

New Galvanized - Solvent Washed:

	Area 1		Area 2		Area 3		Area 4	
Paints (LIA)	Rust	Flake	Rust	Flake	Rust	Flake	Rust	Flake
#2501a	10	10	10	10	10	10	10	10
#2502	9	10	10	10	10	10	10	10
#2503	10	10	10	10	10	10	10	10
#2504	10	7	10	9	10	8	10	10
#2506	10	10	10	10	10	10	10	10
#2508	10	10	10	10	10	10	10	10

*Paint #2501 - Area 1 -7 Crack; Area 2-3 Crack

Note: All panels topcoated with LIA #2507 (Mass. Green).

(a) attached

LIA PROJECT #25

45° South

Chalmette, La.

Exposed: November 1957
Inspected: June 1959

100% Rust - Wire Brushed

Paints (LIA)	AREAS 1 Chalk	1 Rust	2 Chalk	2 Rust	3 Chalk	3 Rust	4 Chalk	4 Rust
#2501*	6	3	6	5	7	7	7	6
#2502	5	8	5	8	7	10	7	9
#2503	7	9	7	9	7	10	7	10
#2504	-	0	6	6	7	7	7	5
#2505	9	8	9	9	7	9	7	9
#2506	9	8	9	9	7	9	7	8
#2508	10	8	10	9	7	9	7	9

* Paint #2501: Area 2 - 5 Flake

New Galvanized - Solvent Washed

Paints (LIA)	AREAS 1 Rust	1 Flake	2 Rust	2 Flake	3 Rust	3 Flake	4 Rust	4 Flake
#2501*	10	4	10	2	10	10	10	10
#2502	9	10	10	10	10	10	10	10
#2503	10	10	10	10	10	10	10	10
#2504**	10	7	10	0	10	8	10	10
#2505	10	10	10	10	10	10	10	10
#2506	10	10	10	10	10	10	10	10
#2508	10	10	10	10	10	10	10	10

* Paint #2501 - Area 3-7 Creak; Area 4-9 Creak
** Paint #2504 - Complete loss of adhesion on Area 2

Note: All panels topcoated with LIA #2507 (Mass. Green).

(a) attached

(a) L.I.A. 2501 - Calcium Plumbate

L.I.A. 2502 - Red Lead replacing Calcium Plumbate on a volume basis

L.I.A. 2503 - Red Lead, Iron Oxide replacing Calcium Plumbate on cost basis

L.I.A. 2504 - Rustoleum

L.I.A. 2505 - L.I.A. 9-1

L.I.A. 2506 - L.I.A. 9-4

L.I.A. 2508 - TT-P-641b, Zinc Dust, Zinc Oxide

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Exhibit "E"
June 30, 1959

LIA PROJECT #24

45° South

Joplin, Mo.

Exposed: August 1957

Inspected: June 1959

Primer(One Coat)	Chalk	RUST Sand Blasted	RUST 100% Rust Wire Brushed	RUST 50% Rust Wire Brushed
TT-P-86a, I	5	8	9	9
Type I -PPG Pract. LO	5	9	9	8
Type I -O'Brien, Thermo. Tung	5	8	9	8
Type I -5% Pb Naphth.- Vehicle Solids	5	8	9	9
TT-P-86a, II	8	8	9	9
Type II - 5% Pb Naphth., Vehicle Solids	8	8	8	9
Blackled 6	Complete Failure	-	-	-

LIA PROJECT #24

45° South

Chalmette, La.

Exposed: August 1957

Inspected: June 1959

Primer(One Coat)	Chalk	RUST Sand Blasted	RUST 100% Rust Wire Brushed	RUST 50% Rust Wire Brushed
TT-P-86a, I	4	6	7	4
Type I -PPG Pract. LO	4	5	7	5
Type I -O'Brien, Thermo. Tung	4	4	8	3
Type I - 5% Pb Naphth.- Vehicle Solids	4	5	7	5
TT-P-86a, II	9	7	6	8
Type II - 5% Pb Naphth., Vehicle Solids	9	7	7	7
Blackled 6	Complete Failure	-	-	-

Lead Pigments Technical Committee
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Exhibit "F"
June 30, 1959

LIA PROJECT #23

45° South

Chalmette, La.

Exposed: April 1957
Inspected: June 1959

Panel No.	LIA Paint #	AREAS 1 Rust	1 Chalk	2 Rust	2 Chalk	3 Rust	3 Chalk	4 Rust	4 Chalk
01	501	7	9	8	9	9	9	9	9
02	502	7	6	8	6	10	9	9	9
03	503	7	10	9	10	9	9	8	9
04	504	4	8	7	8	9	9	8	9
05	505	7	6	8	6	9	9	8	9
06	506	8	10	9	10	9	9	8	9
07	511	6	6	9	6	9	9	8	9
08	512	5	6	8	6	9	9	8	9
09	513	5	6	9	5	9	9	8	9
10	515	7	5	8	4	9	9	9	9
11	516	8	6	8	5	9	9	8	9
12	517	7	6	8	6	10	9	9	9
13	518	8	6	9	6	10	9	8	9
14	519	7	6	8	6	9	9	8	9
15	520	7	6	8	5	8	9	8	9
16	521	8	6	9	5	9	9	8	9
17	522	7	5	8	5	9	9	8	9
18	523	7	5	8	5	8	9	8	9
19	524	0	-	2	-	8	9	7	9
20	525	0	-	4	3	8	9	7	9
21	526	8	7	9	7	9	9	8	9
22	527	7	8	8	8	9	9	8	9

Note: Panel 18 - 8 Flaks; Panel 22 — 9 Flaks

LIA10491

Lead Pigments Technical Letter No. 14

L. I. A. FORMULA 328

A RED LEAD-COUMARONE PRIMER

FOR SEAWATER IMMERSION

FOREWORD

IN 1948 the Lead Industries Association initiated a series of tests comparing anticorrosive paints and primers for ship hulls. After a thorough preliminary screening, some of these paints were given full-scale "service tests" by the Navy in a continuing program designed to find and develop new coatings with improved service potential and economy. These service tests, carried out on the hulls of three U. S. Destroyers, were recently completed. On the basis of test results, red lead-coumarone primer (L.I.A. #328) appears to have performed comparably to the more expensive #141 (MIL-P-1945) coating which is the Navy standard for ship bottom service for anti-fouling systems other than vinyl.

On one of the three ship bottoms, it was found that the red lead primer affords protection that is equal or very slightly better than Navy standard anticorrosive #141. In a second case the red lead primer was judged to be slightly inferior (average merit score of 93.8 vs 95.5). And in the third case no significant difference in performance between red lead primer and #141 was discernible.

-more-

LIA10492

This type of primer should be applied to thoroughly cleaned surfaces for best performance. In these tests, the bottoms were sandblasted to bare metal. A slight improvement in overall performance was noted when the bare surface was treated with Navy Formula No. 117 pretreatment before priming.

Additional information on this paint formulation or other specific paint problems can be obtained from the Lead Industries Association or from the designated individuals in the member companies listed below.

Manufacturers of Red Lead

The Bunker Hill Company.....660 Market Street, San Francisco 4, California

1336 16th Street, Oakland 7, California

2151 Yates Avenue, Los Angeles 22, California

2700 16th Avenue Southwest, Seattle 4, Washington

For technical information write M. E. Elmore, Chemical Products Division, 1336 16th Street, Oakland 7, California

The Eagle-Picher Company.....American Building, Cincinnati 1, Ohio

For technical information write Paul Whitford at above address.

Chicago, Cleveland, Dallas 26, Detroit, Kansas City 6, (Mo.), New Orleans New York 17, Philadelphia 4, Pittsburgh 22.

The Glidden Company.....1396 Union Commerce Building, Cleveland 14, Ohio

For technical information write Austin Long at above address.

Atlanta, Boston, Minneapolis, New York, South Hackensack (N. J.), San Francisco; Adams & Elting Division, Chicago; American Paint Works Division, New Orleans; Campbell Paint & Varnish Division, St. Louis; Nubian Paint & Varnish Division, Chicago; A. Wilhelm Company Division, Reading;

-more-

LIA10493

Canadian Division, Toronto; Chemicals, Pigments & Metals Division, Baltimore, Collinsville (Ill.), Hammond (Ind.); Boston Lead Company, Scranton.

Hammond Lead Products, Inc.....5231 Hohman Avenue, Hammond, Ind.

420 Lexington Avenue, New York 17, N. Y.

1602 Oliver Building, Pittsburgh 22, Pa.

For technical information write R. H. Bukow at Hammond, Ind.

National Lead Company.....111 Broadway, New York 6, N. Y.

For technical information write R. P. Bates at above address

Atlanta, Buffalo 3, Chicago 8, Cincinnati 3, Cleveland 13, Dallas 2, Philadelphia 25, Pittsburgh 12, St. Louis 1, San Francisco 10, Boston 6, Charleston 25 (W.Va.), Seattle 4, Los Angeles 23.

Western Lead Products Company.....4530 E. Pacific Way, Los Angeles 22, California

1235 Fourth Street, Berkeley 2, California

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RED LEAD-COUMARONE PRIMER
FOR SEAWATER IMMERSION

FUNDAMENTALLY, the coating system described here consists of a red lead anticorrosive primer and a finish coating of either hot or cold plastic. For best performance of the coating, surfaces must be thoroughly cleaned and dry at the time of application. Sandblasting to the bare metal before painting is recommended.

While a metal conditioning coating prior to priming is not mandatory, there is some evidence that performance of the coating system is slightly improved when the bare metal is so treated. The Formula No. 117 protect-

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mark (Military Specification MIL-C-15328, available upon request to the C. O., Naval Aviation Supply Depot, 5801 Tabor Avenue, Philadelphia, Pa.; attention Code CDS) was applied in a thickness of 0.3 to 0.5 mils in the tests on three U. S. Destroyer hulls. As the name implies, the surface preparatory coating is intended to condition the metal surface and insure a firm bond between it and subsequent coats of paint.

Where no metal conditioner is used, the red lead primer is applied directly over the clean, dry metal surface. In either case two or three coats of the primer should be applied to reach a minimum dry film thickness of 5 mils. Records in the Bureau indicate the primers were "applied in three coats." Manual application is by spray rather than brush. In applying the primer, a minimum drying period of six hours should be allowed between coats and six hours before the anti-fouling paint.

A variety of anti-fouling coatings are in current use for ship bottoms and similar service. Cold plastic coating No. 105 (MIL-P-19451) and Hot plastic No. 15 HPW (MIL-P-19452) were used in Navy tests. Others include Maritime Commission coal tar-resin anti-fouling coating 52-MC-403 and Bureau of Ships Formula No. 121, a vinyl anti-fouling coating (MIL-P-15931). Less is known about the compatibility of the system L.I.A. 328/ BuShips 121, and the system should not be used without prior test.

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Red Lead Technical Committee
Meeting Minutes

Exhibit "Q"
July 15, 1959

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FORMULATION OF LIA # 388[1]

RED LEAD-COUMARONE PRIMER

	Composition	Percent	Pounds	Gallons
PIGMENT:	Red Lead, (TT-R-191, Type I, Grade 97).....	47.0	332	4.51
	Zinc Oxide (TT-Z-301).....	8.3	58.1	1.24
	Zinc Yellow (TT-Z-415, Type I).....	8.8	62.2	2.08
	Mica, 325 Mesh (MIL-M-15176, Type I).....	8.3	58.1	2.46
	Magnesium Silicate (52-M-52), Type I).....	27.2	192	8.07
	Aluminum Stearate (MIL-A-15206).....	0.4	3.1	0.37
		100.0		
VEHICLE[2]:	Coumarone-Indene Resin (M.P. 127-137°C)[3].....	25.4	166	18.12
	Coumarone-Indene Resin (M.P. 5-15°C)[4].....	8.7	57	6.22
	Liquid Coal Tar (MIL-T-15156).....	8.9	58.1	5.87
	Zinc Resinate ("Zinar" or equiv.).....	3.2	20.8	2.17
	Chlorinated Rubber 20 Centipoise Viscosity ("Parlon" or equiv.).....	6.3	41.5	3.03
	Hi-Flash Naphtha (MIL-N-15178, Type A)...	31.7	208	28.50
	Aliphatic Petroleum Spirits (B.P. 205-260°F)....	15.0	98.5	16.69
	Pine Oil (LLL-O-358).....	0.8	5.2	0.67
		100.0	1360.6	100.00

Pigment - 51.9%

Vehicle - 48.1%

Wt./Gal. - 13.6 lbs.

PV - 35%

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LIA10496

1) First described in Red Lead Technical Letter No.5, July 1950 as "Formula 5-R" (out of print).

2) This vehicle may be prepared by heating the coumarone resins and liquid coal tar together to a temperature of 445°F, adding the zinc resinate and holding temperature until it is all melted in. All of the petroleum spirits and 80 gallons of the required Hi-Flash naphtha may then be added. The chlorinated rubber can then be dissolved into the remaining Hi-Flash naphtha at room temperature. The chlorinated rubber should be blended in with the remainder of the ingredients only after the coumarone-coal tar-resinate mixture has cooled to 140°F or less. To avoid decomposition, the chlorinated rubber should never be heated above 140°F.

Although the above method is preferred, the vehicle may also be prepared by cold cutting the indicated ingredients.

3) A coumarone-indene resin with a melting range of 127-137°C.

4) A coumarone-indene resin with a melting range of 5-15°C.

Note: Only dark colored finishes should be applied over this primer since bleeding through of the coal tar may occur. However, this does not affect its protective performance.

In applying these paints in confined areas, adequate ventilation is necessary to prevent accumulation of explosive vapors and to protect the operator.

Although the formulations contained in this Technical Letter have been established by our Lead Pigments Technical Committee through careful evaluation, no guarantee of results is made or implied. Users are

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urged to make additional confirmatory evaluations to meet their specific requirements.

The Lead Industries Association and its member companies will be glad to give further information on paints for marine exposures or to assist on other paint problems.

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LEAD INDUSTRIES ASSOCIATION
60 EAST 42ND STREET
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EXHIBIT "F"

RED LEAD COATINGS FOR POTABLE WATER TANKS

Inspection Report — 180,000 gallon tank
at Wrentham State School, Wrentham, Mass.

Summary:

Nine years ago an 180,000 gallon wrought iron standpipe at the Wrentham State School at Wrentham, Mass., was painted with Type IV (phenol formaldehyde) red lead primer in a toxicity study. The standpipe was recently drained and inspected prior to repainting. Our representative inspected the interior at that time and found the coating to be in excellent condition. There was no serious pitting or other functional defect in the coating. Rust tubercules did exist scattered approximately uniformly throughout the tank. One section of the wall (on the northwest side of the tank) measuring about 8' (vertically) by 2' showed a high concentration of these. Though rust stained (apparently by the water itself) the coating was intact over about 95% of the area inside the tank. Examination of the paint film in partially sandblasted areas showed that it was continuous, tough, and still tightly adherent to the metal.

Background of the study:

In 1949, following an expert opinion (USPHS scientist) that lead paints for the interior of potable water tanks could be a health hazard, LIA interested Dr. M. B. Elkins, Chief of Laboratory of the Division of Occupational Hygiene of the Massachusetts Department of Labor and Industry, in conducting a study of lead paints in water tanks.

Among the tanks used in the study was a 180,000 gallon, riveted wrought iron standpipe (approximately 52' x 25' diam.) of the Wrentham State School. It was built in 1909. There appears to have been nothing unusual in the history of the tank. pH of the water it holds is 6.0 to 6.4.

This tank was cleaned and painted with Type IV red lead in early July, 1950. Though frequent tests of the effluent water have been made to check for lead toxicity, the tank has not inspected until it was taken out of service this June. (Results of the toxicity tests are appended.)

LIA10499

Inspection results:

The tank is built of 13 tiers of wrought iron plate, lapped and riveted.

The top three tiers appeared to be in good to very good condition. There was a ring of rust stain over the paint starting at the lower third of the third tier from the top -- some rust tubercules were evident there.

The fourth through sixth tiers showed a continuation of the rust ring mentioned above -- apparently formed at the water surface. Throughout these plates there were scattered tubercules -- more of them on the southeast wall than in other areas. Generally, however, the paint film was intact. There were no areas where it had disintegrated.

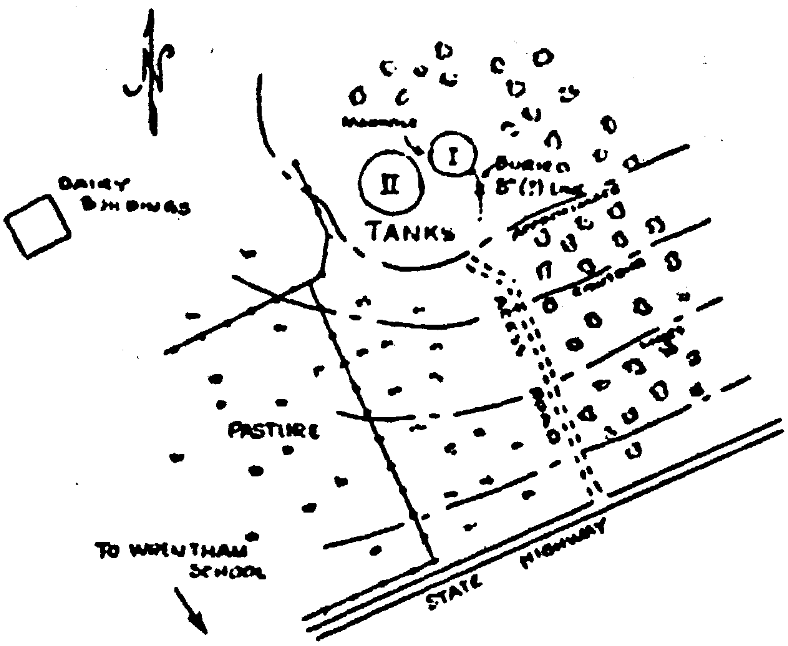
The seventh through ninth tiers were in good condition with few tubercules, and some rust streaks over the paint.

The bottom four tiers were in good condition, except for scattered tubercules. One patch about 8 feet high and 2 wide on the northwest wall showed the highest concentration of tubercules in the tank. Generally, though, the film was good -- even around rivets and seams.

It is estimated that at least 95 per cent of the inner surface was still covered by the paint and that the paint film itself was hard, continuous, and still serviceable. Painters on the job described the tank as being "in very good shape."

The tubercules were soft, crumbly rust with traces of debris inside them. They ranged from very small to about 1/2 x 1 1/2" maximum. In breaking off several of these tubercules it was found that the actual pitting of the metal was generally confined to a small (1/8 x 1/8" approximately) area near the top of each. The paint film under the rest of the tubercule appeared to be sound and in good condition.

LIA10500



Sketch of the Wrentham tank site

(Tank II in this sketch is a 500,000 gallon welded steel tank painted in August 1950 with L. & F. King "Triple Lead Coat." It was emptied, cleaned, and repainted a week earlier than Tank I. The coating was in poor condition — peeling off in large pieces which were quite brittle and non-adherent.)

Notes:

1. Before the current repainting, the 180,000 gallon tank is to have its seams welded. There was no evidence of any major leakage. The painters on the site did not think the tank had been leaking.

2. The new interior paint for the tank is a zinc dust paint. This was probably ordered on the basis of the results with Tank II, since the painting contractor's representative (Mr. A. C. Leonard of Camp, Dresser & McKee) had the impression that both tanks had been coated with the same (L. & F. King paint).

6/22/59

APPENDIX

Results of the Toxicity study:

Dr. Elkins interim report of 10/21/57 stated that the possibility of a health hazard arising from the use of Type IV paint for the interior of potable water tanks "would appear to be so remote as to preclude any need for serious consideration." The average lead content found in water stored in such tanks was found to be about 5 parts per billion -- about one twentieth of the permissable concentration.

Results of the tests on Tank I at Wrentham are given below:

Date of sample	Lead found mg/l = ppb	Comment
5/18/50	0.000	Influent
5/18/50	0.000	Prior to painting
7/17/50	0.000	Wash water, after painting
7/18/50	0.003	Wash water, after painting
7/19/50	0.001	Wash water, after painting
7/24/50	0.002	Second filling
7/31/50	0.000	Static one week
8/8/50	0.016	On line 8 days
8/21/50	0.000	On line 21 days
9/25/50	0.001	On line 2 months
7/9/51	0.050	One year after painting
7/9/51	0.003	One year after painting
8/5/52	0.001	Two years after painting
6/22/53	0.001	Three years after painting
5/3/55	0.001	Five years after painting
5/14/57	0.002	Seven years after painting