

LEAD INDUSTRIES ASSOCIATION

480 LEEDINGTON AVENUE

NEW YORK 17, N. Y.

Pigments and Chemicals Division

CONFIDENTIAL

RED LEAD TECHNICAL COMMITTEE

New York, N. Y.

June 25, 26, 1953

A meeting of the Red Lead Technical Committee was held at the Roger Smith Hotel, New York City on June 25 and 26, 1953. The following members attended.

<u>Name</u>	<u>Representing</u>
Mr. R. F. Bates	National Lead Company
Mr. George Dickman	National Lead Company
Mr. A. J. Kichhoff	National Lead Company
Mr. J. O. Johnstone	Hammond Lead Products, Inc.
Mr. Paul Whitford	The Eagle-Picher Company
Dr. L. L. Carrick, Director of Red Lead Research	
Mr. R. L. Ziegfeld, Secretary-Treasurer, Lead Industries Association	
Mr. C. J. Vander Valk, Technical Director, Pigments and Chemicals Division	

REVIEW OF FIFTY-FIVE MONTHS EXPOSURE DATA FROM COMPREHENSIVE ATMOSPHERIC PROJECT (L.I.A. PROJECT NO. 14)

A summary report of the spring inspection of the L.I.A. Comprehensive Atmospheric Project (No. 14) was reviewed by the committee. This report included corrosion ratings after fifty-five months forty-five degree exposure on flat specimens at New Orleans and Sayville and on angle specimens at Sayville. The test paints in this project were composed of fourteen red lead and zinc chromate base pigmentations in the following five vehicle types..

A. Linseed Replacement Oil similar to that called for in Federal Specification TT-P-86, Amendment I.

B. Combination of raw linseed oil and a glyceryl phthalate alkyl vehicle in the following proportions;

G.E. Alkyd 2458	56.3%
Raw Linseed Oil	28.1%
Mineral Spirits	15.6%

C. 60% by volume of G.E. Alkyd 2529 and 40% by volume of phenolic varnish designated as U.S. Engineers Vehicle No. 2 (Pittsburgh 512). This is a 33 gallon BR25 phenolic varnish. The oil phase consists of 60% tung and 40% linseed.

D. G.E. Alkyd 2529.



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E. A low-cost freight car vehicle of the following composition:

Ester Gum Varnish	56.0%
Heavy Bodied Linseed Oil	29.0%
Mineral Spirits	15.0%

The committee agreed that the following pigmentations showed the best over-all performance to date:

Pigmentation No.	115	122	121	147
Ingredients				
Red Lead	75	65	55	52
Zinc Yellow	—	—	10	—
Iron Oxide	24.5	16	2	24
Magnesium Silicate	—	24.5	23.5	23.5
Mica	—	1	9	—
Aluminum Stearate	0.5	0.5	0.5	0.5
Paint Nos.	208	243	238	286
	-212	-247	-242	-290
Pounds Red Lead/Gal.	9	7	5	5

It was agreed that a Technical Letter should be prepared containing the above pigmentations in Vehicles B, D, and E. It was considered advisable to publish the exposure data and raw material costs along with the formulations.

It was next decided that the following two paints would be suitable for publication in a Technical Letter confined to suggested freight car primers. Calculation of raw material costs at June 15, 1953 prices showed these paints to be in the low cost range demanded by the railroads for freight car coatings. The formulations and calculated raw material costs are included in the following table.

Ingredients	PAINT No. 252			PAINT No. 237		
	lb by Wt.	Pounds for 100 Gallons	Raw Material Cost	lb by Wt.	Pounds for 100 Gallons	Raw Material Cost
Red Lead	40	258	42.75	25	128	21.20
Zinc Yellow	7	45	21.20	20	102	25.50
Zinc Oxide	—	—	—	15	71	11.20
Iron Oxide	28	161	9.70	20	102	6.10
Magnesium Silicate	25	180	2.70	20	102	1.53
Ester Gum Varnish	77	460	55.00	63	394	46.00
Mineral Spirits & Driers	23	136	3.52	37	222	5.75
			124.87			117.28
R. M. Cost per Gallon = \$1.25				R. M. Cost per Gallon = \$1.17		

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BENTONE STABILIZED RED LEAD FORMULATIONS IN TECHNICAL LETTERS

In view of the results published in a technical article by A. J. Eickhoff, et. al. on the beneficial effect of Bentones on settling and viscosity characteristics of red lead formulations it was agreed that Bentone modifications should be included in future published formulations. The Bentones would replace aluminum stearate as an anti-settling agent. These slight revisions will improve the keeping properties and flow characteristics of red lead paints without detracting from their protective life.

U. S. NAVY PROJECT ON TOXICITY OF LEAD FUMES GENERATED DURING ARC WELDING AND CUTTING OF LEAD PAINTED STEEL

(See R. L. T. C. Minutes of Feb. 13, 1953 for background information on this project)

A proposal by Dr. Leslie Silverman of the Harvard School of Public Health was reviewed by the committee. This contained a plan of investigation for evaluating the environmental exposures from welding and cutting operations on lead painted surfaces. A copy of this proposal is attached to these minutes as Appendix A.

The committee approved this proposal and agreed that Dr. Silverman should proceed with the project if the people concerned with this problem in the Navy Department would agree to accept the results as final. The technical director was asked to arrange a conference with the Hull Arrangement, Welding, Painting and Industrial Health Sections of the Bureau of Ships to review the project and determine the attitude of the Navy personnel concerned. The technical director said he would contact Mr. Gessow of the Hull Arrangement Section as soon as possible and arrange a meeting. Mr. Dahlman agreed to attend this conference with the technical director.

CONSIDERATION OF PUBLISHING WARNING OF FIRE HAZARD IN TECHNICAL LETTERS

Mr. Whitford informed the committee of the recent occurrence of fires in batches of red lead paint prepared with high speed stone mills. Since this is a hazard which could result in unfavorable publicity and a partial loss of market for red lead it was suggested that a notice warning against the use of high speed stone mills for dispersing red lead be published in future issues of Red Lead Technical Letters.

After considerable discussion the committee decided against the publication of this warning by the Lead Industries Association. The majority of the committee expressed the view that this was a matter that could best be handled individually by the sales department of each member company.

NEXT MEETING

It was agreed that the next meeting of the Red Lead Technical Committee be held sometime in September.

The meeting was adjourned at 2:00 P. M. on Friday, June 26.

C. J. Vander Valk
C. J. Vander Valk
Meeting Secretary

APPENDIX A

Environmental Exposures from Welding and Cutting
Operations on Lead Painted Surfaces

PROPOSAL

Title: Environmental Exposures from Welding and Cutting Operations on Lead Painted Surfaces. (For U. S. Navy and Lead Industries Association)

Principal Investigator: Leslie Silverman, Sc.D., Associate Professor of Industrial Hygiene Engineering, Harvard School of Public Health, 55 Shattuck Street, Boston 15, Massachusetts.

Plan of Investigation: This study will be divided into two parts, (1) a laboratory study under controlled conditions and (2) a field study embracing the operations in which this procedure and equipment would be used in actual practice in ship repair and construction. It is estimated that the laboratory work would take approximately 2 months and would involve welding and cutting mild steel plates coated with the series of proposed lead and zinc pigment paints submitted by the Technical Director of the Pigments and Chemicals Division of the Lead Industries Association, Mr. C. J. Vander Valk. This list was evolved with the assistance of Mr. McMahon of the National Lead Company and Mr. Van Etten of the U. S. Navy Department, Bureau of Ships.

Priority in the laboratory work will be given to the first two paint systems recommended by the above group and the other types of paint will be studied in less detail after control and fume concentrations and analyses have been evaluated with the types of paint in the high priority category. The types of paints to be used are those now in present Navy specifications and those which are proposed for application at an early date. The paints will be supplied by the Navy Department and those proposed for use will be supplied by the Lead Industries Association. They will be applied in one and two-coat thicknesses as recommended by the Pigments and Chemicals Division of the Lead Industries Association. The welding equipment, electrodes, steel

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plate, and the services of a competent welder for the laboratory study will be supplied through the Boston Navy Yard. Arrangements for this material and personnel have been made through Commander G. D. Hutchinson of the Bureau of Medicine and Surgery, Mr. Storlaski of the First Naval District, and Mr. J. C. Ritter, welding engineer at the Boston Navy Yard.

Studies will include the use of the E6010 rod on 250 and 360 materials. The laboratory studies will be made with current densities and type of welds comparable to those made in the field.

In the laboratory studies tests will be made to determine ventilation rates necessary for both general and local exhaust. Dilution and control velocity curves will be developed from this study. Airborne contaminants concentrations will be measured and analyzed for the various paint systems and methods of control. Ordinary exhaust hose and flanged hoods as used in bench welding would be appraised for fume control for the paint systems involved. Studies will also be made with metal cutting of painted surfaces of the priority types (116 and 54) included in the proposed paint systems. It is intended that most of this work will be done on mild steel surfaces with mild steel electrodes with different types of welds as normally encountered in shipyard use.

It is understood that this problem will consider field welding on the outside of enclosures and also welding in confined spaces. Cutting in both situations will also be observed if necessary.

After the laboratory phase has been completed field data will be obtained at the Boston Navy Yard where actual ship repair welding is performed to determine the environmental hazards associated with painted surfaces under operating conditions. All of the available types of welding now in use at the Yard will be observed and fume concentrations and their control procedures will be eval-

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ated on Navy 116 and Navy 84 paints. Field work would require approximately 2 months.

It is understood that field work assistance will be provided by the Boston Navy Yard Industrial Hygiene personnel under Mr. Storlazzi so that a more complete sampling program can be undertaken. Welding exposures with painted surface operations in various repair problems as well as standard construction will be considered.

General: With regard to this program it was understood that the Navy would furnish personnel, materials, and equipment wherever possible, the Lead Industries Association would supply the necessary coatings of the types not available through the Navy, the Harvard School of Public Health, Department of Industrial Hygiene through Dr. Leslie Silverman would supply the necessary personnel for this investigation as well as sampling equipment needed in the laboratory and field studies.

Duration of the Study: It is anticipated, on the basis of the series of paints to be studied in the laboratory and the amount of field work to be undertaken, that a period of 4 to 5 months may be needed to complete all phases of the study. It is anticipated that this program, if approved, can be initiated on the 1st or the 15th of July, depending upon approval date.

Publications: It is assumed that under this project all data would be presented in a final report to the Navy Department and to the Lead Industries Association for their consideration. It is also understood that the results of this study could be published in technical journals provided permission of the Navy and Lead Industries Association were obtained. It will be understood that all parties concerned would have an opportunity to review manuscripts before publication. It is understood that all reports and any published results would be reviewed and signed by both Professor Philip Drinker and Dr. Leslie Silverman.

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Cost of the Project: On a basis of the time involved and materials it is estimated that the cost of this project would be \$5000.00. On a basis of previous discussions it was understood that Dr. Loelle Silverman would be the prime contractor and would undertake to reimburse the School of Public Health for supplies, services and all personnel employed on this project directly from this budget figure.