

LEAD INDUSTRIES ASSOCIATION

400 LEXINGTON AVENUE
 60 East 42nd Street
 NEW YORK 17, N. Y.

Pigments and Chemicals Division
 SUBJECT TO REVISION

RED LEAD TECHNICAL COMMITTEE MEETING

New York, N. Y.

September 18, 1956

A meeting of the Red Lead Technical Committee was held in the offices of the Lead Industries Association on September 18, 1956.

PRESENT

L. L. Carrick, Chairman
 Paul Whitford
 J. O. Johnstone
 O. P. Shobe
 R. P. Bates
 E. K. Zimmerman

REPRESENTING

Lead Industries Association
 The Eagle Picher Company
 Hammond Lead Products, Inc.
 The Glidden Company
 National Lead Company
 National Lead Company

Robert L. Ziegfeld, Secretary-Treasurer
 David M. Borcina, Secretary to Committee

The meeting was called to order at 9:35 A.M. with Dr. Carrick presiding.

The minutes of the previous meeting of June 4 and 5, 1956, were approved.

U. S. NAVY'S DESTROYER TESTS ON BOTTOM PAINTS

Mr. Ziegfeld stated that reports had been received from W. E. Adamson on the progress of the U. S. Navy's tests of a red lead anti-corrosive shipbottom paint on three destroyers and read excerpts from them and other of his reports.

It was the general consensus that the Navy's anti-corrosive shipbottom test painting activities be followed closely by the committee. Tentative dates for dry docking of these destroyers are; U.S.S. Vogelsang, November, 1956, U.S.S. Healy and U.S.S. Robinson, April, 1957. L.I.A. paint number 328 was used for the painting and 273 gallons made by the Norfolk Naval Shipyard according to the following formula:

	Pounds Per 100 Gallons
Red Lead	132.0
Zinc Oxide	58.1
Zinc Yellow	62.8
Mica	58.1
Magnesium Silicate	192.0
Aluminum Stearate	3.1
Cumar V-3	166.0
Cumar P-10	57.0
Liquid Coal Tar	58.1
Zinc Resinate ("Zinar")	20.8
Chlorinated Rubber ("Parlon 20")	41.5
Coal Tar Naphtha	306.50
Fine Oil	5.8



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(The official formula calls for xylol and naphtha, but only naphtha was used.)

REPORT OF L. L. CARRICK'S WASHINGTON, D. C. VISIT

Dr. Carrick then reported on his September 17, 1956, visit to Washington, D. C. as per Exhibit "A" attached.

The committee discussed Dr. Carrick's report, particularly the results of the questionnaire sent to the naval shipyards dated March 21, 1956, attached to his report.

It was thereupon suggested by the committee that the chairman request the permission of Mr. Gessow to visit with the individuals at the various yards surveyed and discuss with them the cost factors included in the survey.

RECOMMENDATIONS FOR 1957 ACTIVITIES

Mr. Ziegfeld called attention to the tremendous highway building program that had just been approved and suggested that the committee might want to consider increasing our activities in this field.

After some discussion it was the unanimous opinion of the committee that major emphasis should be placed on increasing our activities in the highway construction and maintenance field in 1957 and that the following steps should be given consideration:

1. The Association should take whatever steps are necessary to participate in the activities of the National Research Council-Highway Research Board and the Road Builders Association. Also that an attempt be made to secure the membership list of the American Association of State Highway Officials.
2. Secure, if possible, copies of the painting specifications, both primer and top coat, of all State Highway Departments and those of the major cities.
3. Future Red Lead Technical Letters should be aimed at the highway construction program and should include specifications for primer as well as top coat paints.
4. The committee also recommends that consideration be given to advertising in "Roads and Streets" magazine.
5. Efforts should also be made to promote the use of lead paints by articles in the trade press and in the Association's own publication "Lead."

It was also recommended that a general research fund of \$1,500.00 be established for 1957.

WETTING CHARACTERISTICS OF RED LEAD

The committee recommended an investigation to improve the wetting characteristics of red lead paints by the addition of lead naphthamate. Representatives of National Lead Company stated that they had some data available and would supply it to members of the committee at the next meeting.

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AMERICAN CAR AND FOUNDRY DIVISION LETTER OF AUGUST 23, 1956

After some discussion it was suggested that an attempt be made to determine what changes had been made in galvanizing processes and procedures for discussion at the next meeting.

It was further recommended that the secretary of the committee reply to the letter and provide the information requested insofar as it is available.

L.I.A. PROJECT 14

After some discussion it was recommended that these panels be left on test and that test panels Nos. 254-255 and 251-252 be carefully watched.

L.I.A. PROJECT 19

It was the opinion of the committee that the panels in this project be inspected prior to November 15, 1956.

L.I.A. PROJECT 23

It was the recommendation of the committee that National Lead Company, prepare the test panels for exposure at Sayville, L.I., N.Y. and at New Orleans, La.

RED LEAD TECHNICAL LETTERS FOR SPECIFIC APPLICATIONS

The secretary reported that the Association was finding it difficult to secure enough information to establish case history type of red lead technical letters from the various users of red lead. In many instances, companies do not keep painting maintenance records of sufficient duration to be useful.

RUST-OLEUM LETTER DATED APRIL 27, 1956

After some discussion it was determined that there is no domestic source of supply for calcium plumbate and the secretary was requested to notify Rust-Oleum Corporation to that effect.

REPORT ON HOT STACK PAINTING

After some discussion it was generally agreed that the development of high temperature lead paints for hot stack painting was only a remote possibility and that no further activities be considered at this time.

HOT SPRAY APPLICATIONS

It was reported that a German process of hot spray application of iron oxide and red lead appeared successful in providing a lasting film comparable to red lead in linseed oil. Also that this method of application had been used in Germany before the war on structural steel and railroad bridges.

It was also stated that there appears to be increased interest in this method of application, the major advantage of which is that thicker films can be applied in one coat.

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Mr. Whitford believed that there was additional information available on this subject in his company's files and would attempt to locate it.

After some discussion the committee was in general agreement that the hot-spray method of application would bear investigation and if undertaken should be correlated with the committee's study of fast drying primers.

IMPROVED STORAGE OF RED LEAD PASTE

The question of improving the storage life of red lead paints was then discussed. It was suggested that a mineral spirits paste with the oil to be added at the time of use might be beneficial. Dr. Carrick then suggested that he investigate various wetting agents such as alcohol preparations, lead naphenate or Bentone 36 to aid in suspension and to remove air.

It was pointed out that there may be some objections to mixing of paint as many consumers desire a ready-to-use product.

NEXT MEETING

It was generally agreed that the next meeting be held in New York around November 15, 1956.

The meeting adjourned at 4:55 P.M.

Respectfully submitted,

David M. Borcina

David M. Borcina
Secretary to the Committee

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Exhibit "A"
September 18, 1956

REPORT OF L. L. CARRICK'S TRIP TO WASHINGTON ON SEPTEMBER 17, 1956

In my one and one-half hour talk with Mr. Gessow, the following represent the more outstanding points which were stressed:

A question of revision of Specification S9-1, "General Specification for Ships of the United States Navy, July 1, 1954," was discussed. Mr. Gessow stated that the specification had already been rewritten along the following lines. After receiving the Bmed communication 7231-J3-Kbb dated July 18, 1956 in which the findings of Dr. Drinker and Dr. Silverman were evaluated, he decided that before making this revision he would write to various shipyards and request of them answers to the questions which are tabulated on serial 533R-M80 of March 21, 1956, a copy of which is attached to this report. He felt that the answer contained in this report as to the use of red lead paints on ships was more or less final. As a result, it would seem that most of the yards hesitate to use red lead because of its toxicity which meant an increase in equipment if it were to be used as a protective coating. I also left with you his summation of Bmed communication 7231-J3-Kbb that he sent out in regard to the use of Formula 116.

Mr. Gessow says that he was the man who introduced Formula 116 as a Navy paint. He works very closely with Mr. D. P. Graham and Mr. E. M. VanEtten. All three are quite well satisfied with the performance of Formula 116. Their difficulties seem to lie primarily with the use of red lead by the Navy personnel. Mr. Gessow did admit that the red lead formula 116 was not as objectionable as the straight lead as the amount of red lead per gallon was greatly reduced and this would reduce the health hazard. At the present time it would seem that because of this report referred to above dated March 21, 1956 from the Navy yards that, owing to the health hazard alone, a straight zinc chromate formulation is preferred by the Navy personnel. It seems that Mr. Gessow is governed more by the wishes of the various Navy shipyards than by the performance of Formula 116 as compared to 84.

After leaving Mr. Gessow, I dropped in on Mr. Graham and Mr. VanEtten. They had nothing new to contribute except the fact that some Navy yards were complaining about vinyl red lead primers. It seems that some of them have obtained concentrations of red lead in the air greater than the allowable concentration. Upon questioning Mr. Graham and Mr. VanEtten, I found that they did not know on what conditions these complaints were based. It does seem that with a smaller concentration of red lead in the vinyl red lead primers that they would have to be in a very confined, non-ventilated environment to have concentrations of lead above the allowable amount. The next time these people are interviewed it would be well to get more details.

Having a few minutes before my train left for New York I went to the Bureau of Standards and called on Mr. Howard. He stated that Specification TT-7-46(a) which had been reported as being somewhat unsatisfactory by Australian users evidently had been corrected by the work of the committee through the National Lead Company laboratories. They have had no further complaints of paints in any of these formulations in TT-7-46(a).

I asked if there were any other problems concerning red lead or red lead pigments that had come to his attention. He said there were none in regard to red lead and the only complaint in regard to the lead pigments was the staining of the lead paints when applied over copper. If I am not mistaken, all the paints which he mentioned contained zinc oxide. I believe the obvious answer to this would be the removal of the zinc oxide and an increase in the white lead content.

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C O P Y

Exhibit A
September 18, 1956

DEPARTMENT OF THE NAVY
BUREAU OF SHIPS
WASHINGTON 25, D. C.

In Reply Refer to
Ser 533P-1080
21 March 1956

MEMORANDUM FOR FILE

Subj: Comments on toxic hazards of welding and cutting steel plates with red lead primer.

Ref: (a) BUSHIPNOTE 9190 Ser 533P-3741 of 3 Oct 1955
(b) BUSHIPNOTE 9190 Ser 533P-4604 of 19 Oct 1955
(c) NAVSHIPD BSM ltr (236)15 of 14 Nov 1955
(d) NAVSHIPD M RE ltr JJ52/18-4(365-952941) of 4 Nov 1955
(e) NAVSHIPD CHISM ltr Code 367b:ns 519 of 2 Nov 1955
(f) NAVSHIPD PHILA ltr Code 140 519 of 31 Oct 1955
(g) NAVSHIPD BREM ltr (370)519/1 of 31 Oct 1955
(h) NAVSHIPD SPRM ltr 369a/5302 15/48 404252 of 28 Oct 1955
(i) NAVSHIPD ATK ltr 231W:pd PS/519 of 28 Oct 1955
(j) NAVSHIPD LBELCH ltr J20-1 Ser 8878(356) of 27 Oct 1955
(k) NAVSHIPD PTSNG ltr 353 519(14153) of 26 Oct 1955
(l) NAVSHIPD PEARL ltr 519 Ser 366-722 of 24 Oct 1955
(m) NAVSHIPD M. RTA ltr J20(354) of 19 Oct 1955
(n) NAVREFFAC SDIEQU ltr 365:CWS:ase Ser NRP 4232 of 28 Oct 1955
(o) SUPSHIP-INSORD NITWU3 ltr Gen/11420 Ser 300-492 of 7 Nov 1955
(p) SUPSHIP-INSORD Camden ltr Code 250 519 Ser 4734 of 27 Oct 1955

1. Evaluation of red lead primer, formula 116 showed that it would provide superior protection to pickled steel compared to zinc chromate primer, formula 64. This superiority was considered sufficient to specify red lead primer as the after-pickling primer if safety precautions/necessary when welding or burning red lead coated steel was practicable.

2. Reference (a) summarized minimum ventilation needs when welding or cutting over red lead and zinc chromate primers, and requested comments on the following questions to determine the practicability of specifying use of formula 116.

a. Can the use of air-line masks or local exhaust as required be reliably enforced?

b. If enforced, will production costs increase? If so, by approximately how much?

c. Is removal of red lead mechanically feasible? (Reference (b) points out a dust mask is required during such operations) What increase in production costs will arise for medium and high tensile steel.

d. If red lead is specified, what three grades should be used?

3. Practically all replies received recommended against adoption of formula 116. None recommended adoption of formula 116. Detailed comments are given in references (c) to (p). Replies to questions (a), (b) and (c) are summarized below.

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Exhibit 4
September 18, 1956
Ser 533P-M180

Activity	Ventilation Enforcement (Question (a))	Product Cost Increase (Question (b))		Mechanical Removal Feasible (Question (c))	
		Cost Increase?	How Much?	Feasible	Cost Increase
NAVSHIPID BSN	No	Yes	30%	No	\$.10/ft
NAVSHIPID MARE	Yes-for welders only	Yes	20 to 25%	Yes	\$.10/sq ft
NAVSHIPID CHASN	No	Yes	10 to 25%	No	
NAVSHIPID PHILA	Yes-with effort	Yes	25%	Yes	15%
NAVSHIPID EREN	Yes	No	None*	Yes	None
NAVSHIPID SPFLN	Yes	Yes	Increase	Yes	None
NAVSHIPID WTK	No	Yes	300%	Yes	300%
NAVSHIPID LEE CH	No	Yes	20 to 25%*	No	
NAVSHIPID PTSMH	No	Yes	15%	No	15%
NAVSHIPID PEARL	Yes-with diffi- culty	Yes	25%	Yes	25 to 35%
NAVSHIPID MOWA	No	Yes	5%	Yes	10% (M) None (HTS)
NAVREFFAC SODEQU	Yes	Yes	\$20M/yr	Yes	\$31.5 M/yr
SUPSHIP-INSOON	No	Yes	Substantial	No	
NPTMS					
SUPSHIP Camden	No	Yes	20 to 25%	No	

* Use of low hydrogen electrode requires removal of paint.
** Sandblasted in lieu of pickling.

4. In view of above, the use of zinc chromate primer formula 84 as an after-pickling primer is being continued. No further action in this matter is planned, except that the use of vinyl zinc chromate primer formula 180 will be considered.

L. D. GESSOW

Copy to:

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533 (2)

Prepared by L. Birnbaum, Ext. 65732
Typed by V. L. King, 1/21/56

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Exhibit A
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a. Inhalation Hazards Due to Gases, Vapors, Fumes.

1. Measurements were made of the toxic vapor concentrations existing during the spray application of vinyl paints. Total vapor concentrations (methylisobutyl ketone and xylene or toluene, depending upon the specific formulation being applied) as well as simultaneous determinations of xylene or toluene were measured; methylisobutyl ketone concentrations were obtained by difference. Atmospheric samples were also collected for lead determination since one of the formulations contains significant quantities of red lead oxide. Evaluation of the data obtained led to the following conclusions:

(a) Toxic vapor concentrations measured within 25 feet of the spray exceeded the threshold limit value for one or more constituents, and ran as high as 800 parts per million.

(b) The use of 5000 cfm venturi air ejectors prevented "pocketing" of vapor and produced rapid dissipation and dilution of solvent vapors.

(c) The composition of the solvent vapors measured in the air was approximately the same as that existing in the original liquid phase.

(d) The concentration of lead in the atmosphere measured within 30 feet of the spraying operation was 3 to 10 times greater than the threshold limit value for lead when Formula #19 was used. This is considered to be a serious lead exposure.

(e) The use of proper respiratory equipment is recommended for the effective control of this exposure.

5. A coordinated investigation was made of the toxic and explosion hazards existing during the application of vinyl resins to interior and exterior surfaces. The following conclusions were made:

(a) Considerable vapor hazard exists after the application of vinyl paints due to the slow drying which takes place. A toxic and explosion hazard exists for as long as 10 days after application within tanks has been completed.

(b) Thermal decomposition of vinyl resins, as it occurs during welding or burning operations, produces large quantities of hydrochloric acid vapors, and small quantities of hydrogen cyanide gas. All personnel so exposed should be provided with, and required to wear, air-line respirators. If feasible the area involved should be cleaned by scraping prior to the application of heat.

(c) Natural ventilation existing between keel blocks is sufficient to control solvent vapors during the exterior application of vinyl resins in drydocks areas. (1,2,3)