

ETHYL CORPORATION  
Inter-Office Correspondence

TO:           Dr. G. W. Beste                               Dr. R. A. Kehoe  
              Mr. H. J. Gibson                         Dr. F. Princi  
              Mr. D. M. Guy                           Mr. R. K. Scales  
              Dr. A. S. Hawkes                       Dr. C. J. Sprunk  
              Mr. H. E. Hesselberg

FROM:        J. R. Howard

SUBJECT:     Draft of Minutes of Meeting between Ethyl's Medical Department,  
              the Kettering Laboratories, and Ethyl R & D -  
              December 15, 1960.

(Please review and return with your comments.)

1.     Ambient Air Standards for State of California - Mr. Hesselberg reported that unfavorable lead-in-air publicity has been generated recently in the Los Angeles newspapers, stimulated by a meeting sponsored by the California State Department of Public Health to discuss ambient air standards. Dr. J. R. Goldsmith, who heads the Air Pollution Medical Studies Group on the State Air Pollution Board, had discussed ambient air standards for oxidants, CO, SO<sub>2</sub>, and Pb. Dr. Goldsmith was quoted in the newspaper as having said that within one year they intend to establish standards for maximum lead-in-air. He was further quoted as stating that the lead-in-air concentration in Los Angeles is twice that of any other American city except Philadelphia. The newspaper also inferred that Dr. Goldsmith stated that an oil company would shortly be using a new antiknock in California, TML, which would further increase the amount of lead in the atmosphere. Mr. Walter Hanning, Assistant Director of Research for the L.A. County Air Pollution Control District was quoted as questioning Dr. Goldsmith's statements on the basis that the lead-in-air in Los Angeles is quite low, and he saw no reason for concern. Dr. Charles Hine, a toxicologist from the University of California, was also mentioned by the newspaper as having questioned the advisability of a lead-in-air standard, pointing out that there are many other sources of lead than the atmosphere, such as food and drink. This publicity on lead-in-air is causing concern among California oil companies, particularly Standard Oil of California. Mr. Huxtable reported that Mr. MacGregor of California Research has made the statement that in his opinion the lead industry should "do something."

Dr. Kehoe sketched Dr. Goldsmith's background in this area and stated that he had met with Goldsmith late in 1959 on the matter of lead-in-air standards. Dr. Goldsmith had suggested a tentative standard of six micrograms of lead per cubic meter. This is the present lead-in-air concentration in Los Angeles. At that time Dr. Kehoe had advised him that there was no basis for establishing a lead-in-air criteria since insufficient data were then available.

Dr. Kehoe stated that Dr. Goldsmith will not be the sole judge for establishment of a lead-in-air standard, since the United States Public Health Service will have a strong influence on any standards adopted by any State. Dr. Kehoe stated that although the data being obtained from our field survey in California is representative of a small number of individuals, this group represents high exposure to lead, and the blood and urine analyses being obtained show no difference between TML and TEL. Air sampling close to the points of gasoline handling operations such as service station pumping has shown no organic lead-in-air with TML-containing gasolines. The only location where organic lead was detected was at the bulk plant loading racks where the concentration of gasoline vapors was very high.

Mr. Hesselberg has arranged to meet with Mr. John Maga, Chief of the Bureau of Air Sanitation of the California State Board, on December 20 to obtain an accurate picture of what went on at the ambient air standards meeting reported above. Dr. Kehoe stated that he will be willing to visit with appropriate people on the West Coast on this matter, if it should be necessary.

2. Incorporation of TML into Military and Federal Specifications -

Mr. Guy stated that the three military services are holding up their approval for incorporation of TML into Military and hence Federal gasoline specifications, until the lead-in-air studies which Standard of California, Ethyl, and duPont are conducting in California on gasoline containing TML has been completed. Since this program will not be completed until June 1961, Mr. Guy asked whether it would be possible to expedite medical consideration on the part of the Military. Dr. Kehoe stated that this would not be an appropriate time to attempt to expedite this matter through the Public Health Service. He also said that unless some untoward results are obtained in the California survey, the Public Health Service does not intend to make any further statement on this matter. Mr. Guy indicated that it will probably then be necessary that the Medical departments of the Military services review the Ethyl report on this survey.

3. National Aerometric Survey for the Public Health Service - Mr.

Hesselberg and Dr. Kehoe described the national (6-city) study of lead-in-air requested by the Public Health Service from the lead industry and the petroleum industries. This program is designed to establish a basic standard of air pollution and data on inhalation of lead from the atmosphere over a one-year period in Los Angeles, San Francisco, Chicago, Philadelphia, Cincinnati, and New York. Mobile monitoring stations would be set up in each one of these cities, requiring one field supervisor plus two laboratory technicians for each city. Standard Oil of California has indicated that they will make the survey for Los Angeles and San Francisco. The Public Health Service will monitor two other cities and the lead industry is expected to monitor the remaining two cities. Therefore,

this would mean that Ethyl would monitor one city and duPont one city. It is estimated that this program would cost approximately \$50,000 per city. Dr. Kehoe stated that this figure is not now in the Medical budget for 1961, and would have to be considered as a separate item after a more definitive approximation of the cost can be made.

4. Lead Inhalation - California Survey - Dr. Kehoe stated that the Medical expense for this program is being borne by Standard Oil of California and that duPont and Ethyl are splitting the analytical cost on a 50/50 basis. He also stated that the expenditures on this program at the Kettering Laboratory for Ethyl and duPont will amount to a total of \$10,000 in 1960 and \$10,000 in 1961. The 1961 Ethyl expenditure will be \$5,000, since the total expenditure will be shared 50/50 with duPont.

5. EPA-1 and EPA-2 Additives - Mr. Kerley stated that we have a toxicity statement from our Medical Department on EPA-1. He explained that EPA-2 is similar to EPA-1, but contains a higher phosphorus and a lower chlorine content. We are asking the Medical department for an acute toxicity statement on EPA-2 similar to that obtained on EPA-1, since we do not know the use concentration that would be involved with either compound. We will have to await our first customer before we can obtain a probable use concentration figure. Then we will request the appropriate skin irritation tests. Dr. Princi indicated that acute toxicity tests are approximately \$2,000 each, and that skin irritation tests cost about \$2,000 each for animal tests and \$7,000 each for human tests.

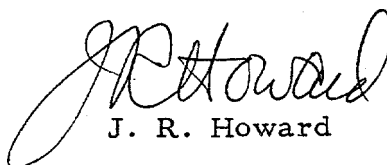
6. Ethylene Dibromide in Outboard Engine Oil - We now have approval from our Medical Department for the use of ethylene dibromide in outboard motor oil insofar as skin irritation is concerned. The Medical Department of the Standard Oil of California have also asked Ethyl for advice on oral toxicity, since they feel that canned outboard motor oil would probably be stored by the purchaser in his garage and hence it should be classified as a household item. Dr. Princi stated that this work is now underway at the Kettering Laboratories and we should have the required information in about two weeks.

7. Dibutyl Tin Sulfide as Outboard Oil Additive - Mr. Kerley stated that we have found that 1/2-wt % of dibutyl tin sulfide in outboard motor oil provides sufficient wear protection so that the proportions of gasoline and oil can be reduced from 24 parts gasoline and one part oil to approximately 100 parts gasoline and one part oil. The Scott-Atwater Division of McCulloch Motors is very much interested in this finding, and want to conduct a large-scale evaluation in Florida this winter. Neither Dr. Kehoe nor Dr. Princi have had experience with dibutyl tin sulfide. Dr. Kehoe stated that the material is probably toxic due to tin toxicity via skin absorption. Dr. Princi stated that it would cost approximately \$2,000 for a preliminary toxicity test on this material. Our supplier is Metal and Thermit, and their fact sheet merely states "toxicity not fully investigated...". Mr. Kerley agreed to contact Metal and Thermit to

see whether we could obtain a definite statement on toxicity, before we ask our Medical Department to make a preliminary examination.

8. F.D.A. Approval Tests on AN Compounds - Dr. Princi stated that \$20,000 have been expended in preliminary studies comparing the toxicity of AN-2, -12, -36, Ionol, and Cyanamid's 2246. AN-2 and -36 have about the same acute toxicity as Ionol, but AN-12 is much less toxic. None of these compounds show the undesirable side effects shown by 2246. Dr. Princi has presented the results of this preliminary study to the Food and Drug Administration and they have reacted favorably to his proposal that a special 90-day feeding test might supplant the customary 2-year feeding test usually required for approval, if the results are entirely favorable on the Ethyl compound. The 90-day feeding tests would involve carbon-14 tagged compounds which would be used to trace the metabolic route in animals. Dr. Princi stated that the costs of these 90-day tests including the preliminary study already conducted, would amount to a total of \$50,000 for AN-2, AN-12, and AN-36. A cost for AN-2 alone would be 50 to 60% of this amount and each additional compound would cost about \$15,000. It was agreed that before starting the 90-day tests we should obtain the recommendations of our Commercial Development group, and we would also need management approval.

9. General Toxicity Statements - Dr. Hawkes' stated that we need a general statement on toxicity for each of our AN compounds to answer requests being received from purchasing agents and other interested potential customer people. Dr. Princi agreed to provide a draft of such statements and Dr. Hawkes will review these with the Sales Department.

  
J. R. Howard

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