

STRICTLY CONFIDENTIAL

BATON ROUGE MEETING

ETHYL ACTIVITIES RELATING TO AIR POLLUTION

OCTOBER 11, 1962

Attendance

Baton Rouge

M. F. Gautreaux⁽¹⁾
G. O. Hayes
G. A. Hughmark
J. H. Huguet
R. L. Hudson⁽¹⁾
C. L. Kingrea
G. F. Kirby
K. Swartwood⁽¹⁾
C. H. Zeanah

Cincinnati

~~R. A. Kehoe~~⁽¹⁾
F. Princi

Detroit

H. E. Hesselberg
D. A. Hirschler
R. K. Scales

Los Angeles

W. L. Faith⁽²⁾
L. L. Huxtable

New York

J. E. Boudreau
S. Forbes
C. G. Krieger
S. T. Pruitt

Pittsburg

J. M. Gill

San Francisco

A. Shults⁽²⁾

⁽¹⁾Part-time

⁽²⁾Eliminate from distribution of minutes

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N 7207

AGENDA

CONFERENCE ON

ETHYL ACTIVITIES RELATING TO AIR POLLUTION OCTOBER 11, 1962 LOUISIANA ROOM OF THE CAPITOL HOUSE BATON ROUGE

- | | |
|--|---------------------------|
| 1. Opening Remarks | - L. L. Huxtable |
| 2. Sales Picture on the West Coast | - L. L. Huxtable |
| 3. Political Picture in California | - A. J. Shults |
| 4. Activities of California State and
Los Angeles County Agencies | - W. L. Faith |
| 5. Air Pollution Legislation in the U. S. | - G. Krieger |
| 6. Public Health Aspects | - Dr. Princi
Dr. Kehoe |
| 7. Cooperative Programs | - H. E. Hesselberg |
| 8. A. P. I. | - H. E. Hesselberg |
| 9. Automotive Developments | - R. K. Scales |
| 10. Organic Lead Analyses | - J. H. Huguet |
| 11. Catalyst Development Program | - D. A. Hirschler |
| 12. Afterburners and Muffler Designs | - C. L. Kingrea |
| 13. Ethyl Engine Modification Studies | - H. E. Hesselberg |
| 14. Board Testing of Ethyl Catalyst | - H. E. Hesselberg |
| 15. Commercialization Status | - C. M. Neher |
| 16. Public Relations Aspects and
Advertising Possibilities | - J. E. Boudreau |
| 17. Summary | - L. L. Huxtable |

MINUTES

1. Mr. L. L. Huxtable opened the meeting and listed the following purposes:

To review our progress,

To report on changes in conditions and attitudes which affect the Corporation's well being,

To assess our present position, and

To recommend new courses of action.

The major recommendations of the October 1961 Detroit meeting were read and their status was given as follows:

- a. Appoint a Project Manager. Accomplished.
- b. Retain Mr. A. J. Shults to represent us in Sacramento. Accomplished.
- c. Obtain the services of a medical consultant in Los Angeles. Dr. Johnstone has been retained.
- d. Employ a public relations firm or individual in Los Angeles. Investigated but no adequate prospect has been found.
- e. Prepare a Fact Sheet to assure consistent answers to questions. This has been done.
- f. Contact the press on the West Coast; supply press releases, stories and background information. This has been done when needed.
- g. Continue and accelerate our catalyst program. Catalyst progress has been encouraging.
- h. Develop data on the role of TEL concentration on the performance of our catalyst. Sufficient data obtained to show that this is not the major problem.
- i. Carry on some basic studies of the potential improvements from engine modification. Experimental engine modifications are being tested. A "Chrysler Kit" is under test.
- j. Secure publication in Medical and Trade Journals of Kettering data as reference material and to educate general practitioners who influence public opinion.

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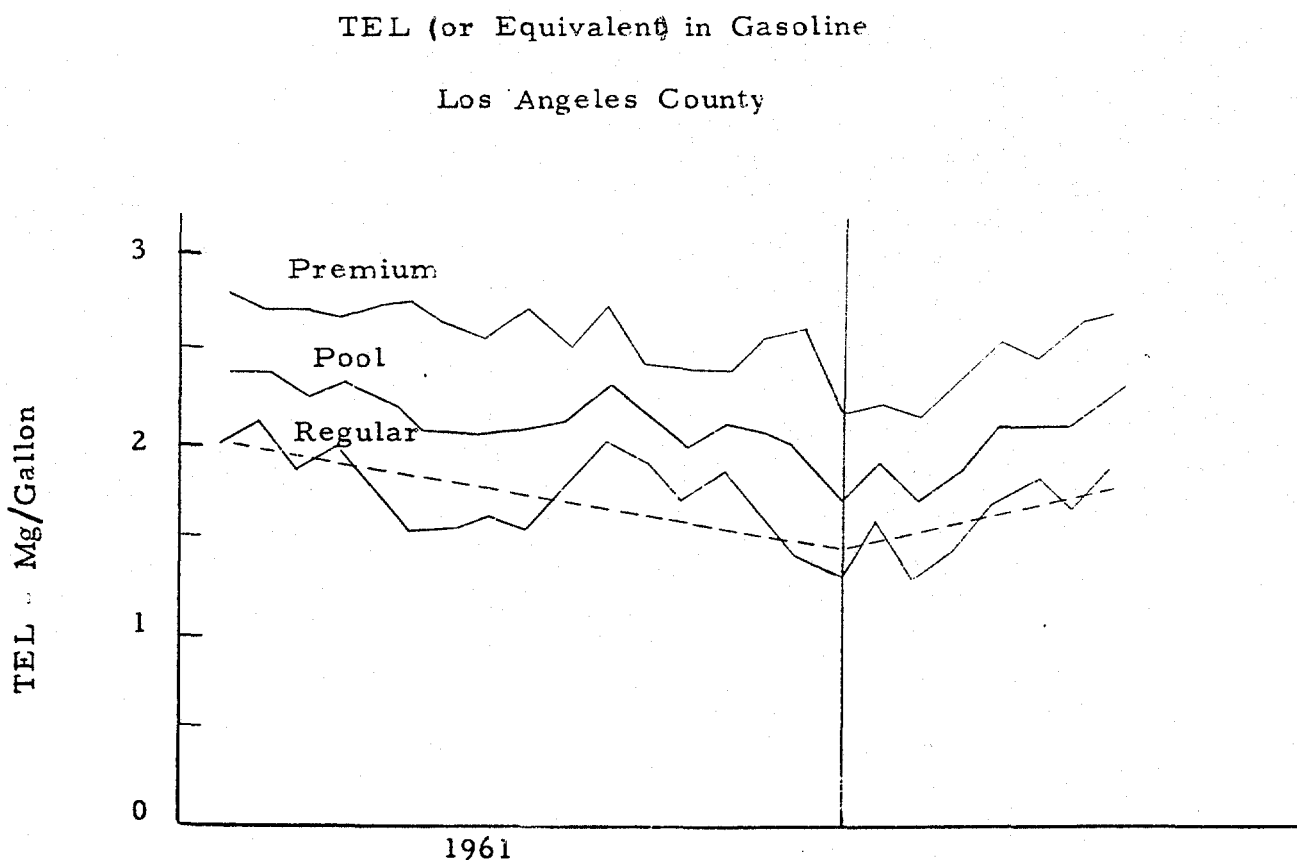
- k. Develop further information on lead compound size distribution and composition in the atmosphere.
A joint project at SRI is under way.

1. Hold a workshop meeting for medical people.
A meeting is to be held in Cincinnati in February 1963.

2. Much of the Western Region's efforts have been directed toward convincing our customers that lead will remain in gasoline. The Ethyl program and accomplishments have been stressed. Close contact has also been maintained with the Los Angeles County Air Pollution Control District, the State Motor Vehicle Control Board, and the State Health Department.

Some results are evident: Customers no longer criticize the lead industry, it appears that they no longer feel that anti-lead legislation is imminent, there has been less anti-lead publicity by the crack pots, the District, and the general press.

Lead in gasoline levels in Los Angeles County appears to be increasing. Many factors are involved but the trend is encouraging. See Figure 1.



3. Mr. Shults reported that the coming gubernatorial and assembly elections will not materially affect the smog program. He stated that the legislative strength is in the Senate and that this will continue even if the unpopular Senate reapportionment measure should win. Although a 50% turnover in the House appears likely, the Senate will still control. He does not think that the Smog Program would be any different under Nixon than it has been under Brown. So far, Nixon has not made smog an issue although there are rumors that he will issue a "white paper" on the subject.

In October 1961 the Assembly Interim Committee on Public Health held a public hearing on H. R. 411 relating to the use of fuel additives and their relation to the creation of smog. Assemblyman Thelin, Chairman of the Subcommittee on Air Pollution and Radiation Protection, presided. Dr. Kehoe and Mr. H. E. Hesselberg testified at this hearing. H. R. 411 requires that a report be submitted to the legislature in early 1963. Mr. Shults has talked to Mr. Thelin and feels sure that his Committee will not recommend anti-lead legislation at this time. Mr. Shults stated that AB 2335, which calls for reduction and eventual elimination of lead in gasoline, was never a popular bill and he doubts that it will be voted on. He feels that there will probably always be some type of anti-lead bill in the legislature as long as there is smog in California but is not too concerned about this at the present.

4. Dr. Faith reviewed recent statements by Mr. Griswold of the Los Angeles County Air Pollution Control District. Mr. Griswold said that he would like to accomplish three things before he retires next year:

- a. Have natural gas used for fuel 12 months per year instead of only during the smog season. This would require more pipelines and storage.
- b. Pass a rule to control solvent emissions from cleaning and painting operations. This appears likely.
- c. Reduce gasoline evaporation losses at filling stations. This would be quite expensive.

He apparently has several secondary objectives which are to reduce oxides of nitrogen, control lead compounds, and reduce the obnoxious exhaust from diesels. He might try to take credit for reducing organic lead emissions by reducing evaporation losses at filling stations. He has disapproved several power plant permits on the basis of their nitrogen oxide emissions which he feels are too high.

Some months ago Mr. Griswold stated that he was going to test a catalytic converter on lead-free gasoline. We know that he obtained a drum of unleaded gasoline from Shell. Most of his facilities are now under contract to the state and insofar as we know he is not now running this test. He will undoubtedly keep a close watch on the state program at Scott Laboratories where gasoline with a low lead content is being tested.

The District has a project on diesel exhaust but has made no reports on progress.

In Los Angeles, Supervisor Dorn has been trying to get all other Southern California counties to adopt all of the Los Angeles rules.

The State Motor Vehicle Pollution Control Board is working on an accelerated procedure for exhaust testing but will not go to this until two devices have been approved on the original basis. Six devices are currently in Step 1 testing.

The Board is now trying to decide whether blow-by devices should be specified for older cars. Cost of enforcement is a big question and there are several strong differences in opinion. Diesels have been exempted from blow-by regulations.

Dr. Faith believes that two exhaust devices will be found to pass the criteria but that the cost to install them on used cars will be nearer \$150 than the \$100 figure most frequently mentioned. He doubts if exhaust devices will ever be specified for used cars and estimates that it will be 1966-67 before they are required on new cars.

The Anti-smog groups have been breaking up, membership has been going down. The crackpots have been quiet. Dr. Hagen-Smit has been publicly criticizing the MVPCB program and has been encouraging the local groups to "awaken and be heard." Dr. Faith believes that he has taken this position for two reasons: For personal publicity and to stir up some sentiment for his friend, Mr. Griswold. Dr. Hagen-Smit wants the District to keep the research lab. He doubts that Dr. Hagen-Smit is tied in with the Republicans on the gubernatorial campaign.

Dr. Faith said that the USPHS sets the course in air pollution at the national level. The recently issued Scheck report strongly promotes auto exhaust as a major part of air pollution. The report brings in all possible relationships in such a manner that all phases appear bad.

The National Conference on Air Pollution to be held in Washington during December will certainly conclude that the USPHS needs more money to study auto exhaust. Mr. Vernon McKenzie is most likely to push the lead angle. We should also keep an eye on Mr. Michaelson.

5. Mr. George Krieger gave a brief review of Air Pollution Legislation in the United States. He believes that New York will wait for California action and revise it to fit. Several areas have adopted portions of the California laws although they are not needed.

Ethyl subscribes to the Commerce Clearing House Services on auto exhaust control. Through this service and contacts with API, Ethyl has knowledge of all impending state and national legislation. Local laws

are a blind spot, Sales Department personnel now send in clippings on local air pollution, it might be desirable to extend this somewhat.

6. Dr. Princi gave a very interesting review of the history and status of the health aspects of lead. He pointed out that most of the information on TEL and lead had been obtained and paid for by industry. He feels that one objective of the National Air Pollution meeting is to stir up sentiment to obtain approval of a multimillion dollar environmental health center in Washington for the USPHS. The Russians have gotten recognition of their work which follows the Pavlovian theory that every environmental change has an effect - and all effects are harmful.

A lead symposium is to be held in Cincinnati in February and will include all speakers who can contribute. The papers will be preprinted and bound and distributed at the close of the meeting.

Dr. Bock has written a paper showing that a group of people with above average lead levels in blood and urine have not had any unusual health problems.

Dr. Kehoe gave a brief review of the development of procedures which were necessary to assure safety in production and sale of TEL. He emphasized that the industry had demanded that there be no chance for error. He feels that problems created by industry should be solved by industry and not by a governmental agency. With respect to ambient air standards, Dr. Kehoe feels that they may be helpful if properly set and applied. In setting an air standard for lead, particle size, composition, and concentration must be considered. He has done and is doing work on a standard but believes that it will take 10-15 years to set a reasonable one.

7. Mr. Hesselberg summarized several cooperative programs as follows:

Three-City Survey started in June 1961 is now essentially complete. Over 1,500 persons have been tested and blood and urine samples are lower than had been expected and all are well within normal limits. There is an indication that a difference exists between urban and suburban residents but the difference is not significant from the medical standpoint.

Lead-in-air results are lower than data of previous surveys primarily because the samples in the survey were taken to show average - not maximum conditions. The USPHS is now checking the extreme levels in tunnels.

It is unlikely that the report on the Three-City Survey will be issued before mid-1963.

Particulate Lead Studies have been run by Mr. P. K. Mueller of the California Department of Public Health. In order to obtain data on

particulate lead in the atmosphere, Ethyl, du Pont, LIA and hopefully API are sponsoring a study at Stanford Research Institute. The \$84,000 project is just getting under way.

The Survey of Operating Modes is a contract research program which is being performed by Ethyl for the USPHS. The objective is to define the operating patterns of trucks. The survey is complete in Detroit. The gasoline-powered truck work has been completed in Los Angeles and diesel truck evaluations are to be run. The survey is now under way in San Francisco.

8. Relationships with the API are generally good. Dr. Princi is on the Medical Committee, Mr. H. E. Hesselberg is on the Air and Water Conservation Committee, Mr. G. Krieger is on the Information Committee, and Mr. J. H. Huguet is on the Committee on Disposal of Refinery Wastes.

9. Mr. R. K. Scales gave an interesting review of the history and status of automotive developments and the position of automobile manufacturers. At first, the manufacturers would not admit that auto exhaust was a problem but this has changed and they have formed a Vehicle Combustion Products Committee which has made provisions to pool knowledge and patents on non-proprietary developments.

In general, the industry is basically opposed to exhaust devices and is doing little work on them. They feel that engine modifications are the answer and several programs are in progress. Engine developments would be considered proprietary and would not be pooled. G. M. has indicated that they have some developments that may soon go from the research to the product (development) stage.

With respect to exhaust devices which may be specified by law, the industry position has changed a number of times and is not yet clearly defined. At first their position was that they would not install devices at the factory but would have their dealers do so with no guarantee or warranty on the equipment. This position may have softened and if given sufficient time to test, they might go along with factory installation. The auto manufacturers are all thinking of integrated systems they might equip all cars with exhaust control devices. If so, this could mean much greater catalyst use. Ethyl is in a good position since we have good contacts with the automotive industry and because Arvin is also well established in Detroit.

The automotive industry likes to deal with Mr. Don Jensen, Executive Officer of the MVPCB. They favor: (1) His opinion of no devices on used cars, (2) His request that all persons who submit devices work through AMA, (3) His assurance that Step 1 testing is only a "life" test, and (4) His efforts to give more time for testing. AMA is now testing several of the Walker-Cyanamid devices.

10. Mr. J. H. Huguet described the organic lead-in-air analytical development program which was recently completed by the Los Angeles County Air Pollution Control District. Ethyl cooperated on this program with du Pont in supplying an analyst from Kettering Laboratories who worked with the District chemists for several months. The most significant contribution was an accurate one-hour spot test method which was developed by Mr. L. J. Snyder of CR&D. This method will give an accuracy of ± 0.25 micrograms of lead per cubic meter on a sample volume of 2 cubic meters.

The District ran 24 analyses of atmospheric samples. Unfortunately, they did not include the important iodine deleading step and some of their results were as high as 1.5 micrograms per cubic meter. The development and results were written into a report in June 1962. This report was quite unacceptable in its original form and a revised report was issued in late September. This revision has some technical flaws but does not contain any objectionable statements. The District has no immediate plans to make further tests due to lack of manpower. Several worthwhile accomplishments have resulted from this study: We now have a good spot method for organic lead-in-air, the District obtained data that show that organic lead is not at a dangerous level, customers have been complimentary of our cooperative efforts, a helpful contact has been established.

In order to be able to oppose any unrealistic findings by the District or others, Ethyl ran 30 samples using this method under a variety of conditions in Los Angeles. These included day and night samples in heavy traffic, air in garages and samples near filling stations. No results were high enough to cause concern. There was some evidence that night samples were higher than comparable day samples.

Kettering has run several organic lead samples which fell in the range of 0.0 to 0.2 α/M^3 . Organic lead-in-air samples were also taken by the USPHS in Los Angeles as a part of the Three-City Survey. Results have not been reported.

A new activated carbon adsorption-type sampler for organic lead has recently been developed by Ethyl. A continuous sample can be taken for as long as a week. Preliminary results indicate that this may be an excellent method for measuring average ambient air levels of organic lead. Several more runs will be made to complete this activated carbon method and the sampling program will then be terminated.

11. The Catalyst Development Program was reviewed by Mr. D. A. Hirschler. Ethyl has tested some 2,200 catalysts including manganese and aluminum catalysts, mixed oxides of copper and iron, and numerous other metals. Many tests of size, shape, methods of metal application and other factors have been tested. Ethyl's present 1/16" extruded catalyst is the best tested to date. One car met California standards at 15,000 miles and is only

slightly higher at 22,000. Three other test cars are now operating on an accelerated testing schedule. It is expected that sufficient data for Step 1 acceptance will be available in December. This date must be met if the Board's goal of installation on 65 models is realistic.

Tests have shown that the temperature limitation on most catalysts is 1,500 to 1,700°F. A thermal by-pass appears to be necessary and is apparently included in several units now under test. Ethyl and Arvin are both working to develop a reliable by-pass. Norris Thermador is now interested in our catalyst. They have a good converter design and a by-pass which is said to work well.

Manifold air oxidation is a promising lead which gives about a 20% direct reduction. It could be quite effective when used in conjunction with a catalytic converter.

Research is still in progress in an attempt to reduce catalyst cost and increase patent coverage.

12. Dr. C. L. Kingrea reviewed the studies of afterburner and muffler design which have been conducted by the Engineering and Mathematical Sciences Section in Baton Rouge. An extensive literature search was first made in order to determine what data were available. Major efforts have been to develop a mathematical computer method which can be used to predict catalyst performance as affected by temperature, muffler design, catalyst activity and other variables. The computer model will be tested with data available from past runs. If it shows promise, it will be further tested.

Dr. Kingrea also reviewed the economics of the direct flame afterburner approach and showed that fuel penalties of approximately \$25.00 per year would be incurred by the average motorist.

13. Engine modification studies were described by Mr. H. E. Hesselberg. Detroit has modified an engine by providing two manifolds - two carburetors, and a suitable linkage to transfer from the small manifold and carburetor at low speeds to the larger units at high speeds. Exhaust emissions have been significantly reduced and although there are still some problems, the car is drivable. It will be used to demonstrate to the automobile industry that fuel distribution affects the amount of unburned hydrocarbons in exhaust.

Tests have also been made on the "Chrysler Kit" which is a modified, lean limit carburetor device. This unit can be used only on Chrysler products equipped with an automatic transmission.

This Kit has been tested on a Dodge. After some difficulty in getting the unit adjusted for reasonable starting, it operated successfully for a while but frequent adjustments have been necessary. Based on our data and information from others, it appears that the Kit can meet the California specification but it may require expert care and servicing.

Test work on deposits has shown that a high dosage of antioxidants will reduce deposits but not emissions.

14. Mr. Hesselberg also briefly reviewed the status of Board testing of Ethyl catalyst. The Board has indicated that if the rest of our tests now underway look promising, they will approve us for Step 1 testing in December. If we are accepted, the Board would have a budget problem since they have enough money to test 25 devices by six manufacturers but are actually testing 30 devices. This could mean that the test program would be stretched.

Arvin is now in the midst of Step 1 testing with another catalyst and their experience will be of value to Ethyl and may reduce the cost somewhat.

15. Dr. C. M. Neher reviewed the commercialization status of the catalyst program and referred to an analysis prepared by Mr. J. E. Brown dated October 10. This analysis reviewed the market statistics in California on new cars only and on new and used cars. Economics of muffler replacements were also reviewed. It was concluded that under the most favorable conditions, Ethyl can expect only a modest return from the potential California market. Should catalytic converters be adopted on a nation-wide basis, the return could be sizable.

16. Mr. J. E. Boudreau reviewed the Public Relations aspects and Advertising programs associated with the smog problems as follows:

- a. We now have the proper answers which can be given quickly to most questions on the subject. The compilation of 60 questions and answers has been approved and is available.
- b. We have adequate information sources regarding state and national air pollution activities. The municipal level is the danger spot and Los Angeles is the key.
- c. Our program is to establish in our customers an awareness of the value of antiknocks. Such articles are already being published in the Ethyl News and will be extended to other publications.
- d. The same theme will be followed in our advertising. A few simple sentences, thoughts, and key phrases will be used.

17. Mr. Huxtable briefly summarized the meeting and asked for comments.

Dr. Kirby voiced appreciation to the participants and stated that he felt that this was a most important company program which would be continued even if negotiations in progress should result in a change in corporate ownership