

CONFERENCE REPORT

July 3, 1947
File No. 80.20
140.10

Present: Mr. I. A. Deutch, Office of Air Pollution Control, Los Angeles.
Mr. H. A. Beatty, Ethyl Corporation, Detroit.
Mr. C. M. Gambrill, Ethyl Corporation, Detroit.
Mr. M. Morgana, Ethyl Corporation, Detroit.
Mr. J. Wintringham, Ethyl Corporation, Detroit. ✓
Mr. E. C. Paige, Ethyl Corporation, Detroit.
Mr. E. J. Gay, Ethyl Corporation, Detroit.

As a background for the reason this conference was held, we need to go back to a meeting held in Mr. Earl Bartholomew's office during January of this year. Present at this meeting were Mr. Charles Day and Mr. Gerthal French both of whom are connected with the Richfield Oil Company of Los Angeles. These gentlemen stated that they were concerned about the publicity given the Smog problem which had been steadily getting worse in the Los Angeles area. It appears that the Los Angeles Times had been devoting a great deal of space to the discussion of this problem. One of the main annoyances of the Smog condition seems to be eye-smarting and nose and throat irritation. At that time, it seemed apparent that the finger might be pointed at the motor vehicle including the passenger car as the main contributor to the eye, nose and throat irritation. Inasmuch as this company had been instrumental in assisting the General Motors Truck & Coach Company and the New York City Omnibus Company on the problem of reducing aldehyde content of the exhaust gas of city buses, Mr. Day asked that Mr. Gay be permitted to speak before a committee at some later date in Los Angeles. This permission was, of course, given.

Upon arrival in Los Angeles a few days prior to the date on which this meeting was scheduled, it was found that the talk was to be given before an SAE special meeting which had been called for the prime purpose of discussing the automotive vehicle's contribution to the Smog problem. Meanwhile, a small committee of oil refiners had been formed. It was the function of this committee to coordinate and study the problem purely from an oil company's standpoint and the committee had decided to hand over the transportation problem to a special committee of the SAE. The paper given before the SAE meeting was a straight forward discussion of our past experience concerning the elimination of aldehydes from the exhaust gas of gasoline powered vehicles. Copies of this paper are available if required.

In the days following the meeting, the undersigned had the opportunity to meet Mr. I. A. Deutch and Mr. Paul Rich, both of whom are connected with the Office of Air Pollution Control. During discussions with these gentlemen, it became apparent that they were dealing with pathological and physiological problems of air contamination about which the undersigned had very little knowledge. It was therefore suggested that it might be well for them to attempt to contact Dr. Robert Kehoe of the Kettering Laboratory.

On July 2nd, Mr. Deutch and a Mr. H. H. Holley, Assistant Chief Engineer for The Automobile Club of Southern California, met with Dr. Kehoe and Dr. Ash at the Kettering Laboratory in Cincinnati. Apparently, their discussion was of sufficient interest that Dr. Kehoe has expressed the desire for someone of his staff to visit Los Angeles at a later date to observe certain phases of the Smog study.

On the morning of July 3rd, the undersigned met with Mr. Deutch and Mr. Holley for breakfast. Mr. Deutch expressed a desire to meet with some of our people at the laboratory so that he might explain to them the problem faced in Los Angeles and ask them for advice and suggestions in regard to the type of apparatus used for air sampling. It was for this reason that the conference for the above noted people was arranged.

During the breakfast meeting, Mr. Holley stated to me that there was considerable concern among automotive people in Los Angeles concerning this air pollution problem. The Automobile Club of Southern California in an effort to assist this problem has reversed an opinion of long standing against an increase in gas taxes so that money might be available to build new roads and freeways that would facilitate the flow of traffic through congested areas. Mr. Holley stated that just recently \$100,000,000 a year has been made available to Los Angeles county for this purpose. It is the writer's opinion that a great deal can be done to reduce the contribution of the automobile and motor vehicle to the pollution problem by preventing the congestion of traffic in business and closely built up areas. It is the stopping and starting of engines rather than part throttle and full throttle running that creates the greatest nuisance.

Mr. Deutch took a considerable amount of time explaining the background of the Smog problem. Briefly, he stated that this was first noticed in 1937 and there was evidence of eye irritation in 1942. Since that time, a butadiene plant was constructed near the Los Angeles area which during the years emitted to the surrounding air a considerable amount of irritating by-products. However, this situation has been cleaned up, and at the present time the plant is not in operation.

The chief complaint of the residents of Los Angeles is eye irritation, lachrymation and nose and throat smarting. This only occurs on the days when the smog forms over the Los Angeles area or Los Angeles Valley and when the visibility becomes very poor. It is Mr. Deutch's opinion that the complaints experienced in earlier years were from persons who are unusually sensitive to irritation from products contained in the air; in other words, they were near the threshold of irritation or annoyance from these products. However, at the present time when the heavy smog occurs, the amount of irritants in the air are great enough to affect a large number of people.

The smog itself is caused when weather conditions in the valley area are such that very little air is coming in from the ocean, and the temperature conditions are such over the mountains that an inversion condition is built up. When this phenomena occurs, the temperature of the air above the ground is higher than the air temperature at the ground level so that there is no normal flow of air upward and a change of air at the ground level does not take place. Sometimes this inversion layer is as much as 1,800 to 2,000 feet in depth. Mr. Deutch has a considerable amount of meteorological data which was taken at various observation stations to support this theory and to show the path of air currents and their recirculation over congested areas.

Work done at the University of Southern California has shown that people are susceptible to much smaller concentrations of aldehydes in particular regard to eye smarting than was accepted by earlier work on this subject. It was

generally believed that the threshold of annoyance was something near 10 parts to a million of aldehydes in air. However, the U.C.L.A. work indicates that some people experience eye smarting with concentrations as low as 1 part in a million. Air samples taken in congested downtown areas in Pershing Square, which is in front of the Biltmore Hotel, and on top of Santa Fe Building, which is across the square from the Biltmore Hotel, has shown aldehyde concentration of sufficient quantity to cause eye smarting. The maximum concentration in the air appears to be between 10 to 12 in the morning while this same air current which may bring heavy concentrations into downtown Los Angeles at that time will flow up the valley and will show maximum concentration in Pasadena at about 2:00 in the afternoon. Air sampling has also shown that there are sizeable amounts of sulphur compounds in the air.

It is Mr. Deutch's opinion that aldehydes in the air come from four main sources. These are:

1. Home incinerators.
2. City dumps.
3. Wood waste burners of lumber yards.
4. Automotive transportation operating on the streets of Los Angeles.

Action has already been taken to close up two of the worst dumps in the Los Angeles area and plans are underway to build city operated incinerators which would in time eliminate the home incinerator. Also, the lumber yards and other woodworking factories are cooperating to reduce the smoke and odors emanating from their factories. Mr. Deutch is wondering what practical action can be taken to help reduce the contribution the automotive people might make to this problem. It was suggested that the continuous movement of traffic was an essential move in this direction, and that Los Angeles must prepare itself to accept the use of one-way streets in many congested areas. It was also thought that the promotion of tune-up campaigns for passenger cars which would get at the maladjusted carburetors that are on so many old automobiles might help a great deal towards improving the passenger car contribution. It was also pointed out that good maintenance plus application of the already known methods of maintaining carburetors and manifolds together with suitable gasolines would nearly eliminate any noticeable smoke and odor from gasoline burning commercial vehicles.

Mr. Deutch stated that little is known about the combined effects of various irritants in the air, and it was desirable to study this phase of the problem. In other words, the presence of a very small amount of aldehyde together with a sulphur compound and possibly chlorides or bromides might cause eye irritation, while if one or more of these other irritants are not present, the remaining irritants would not be noticeable. Mr. Deutch further stated that the oil companies have formed a small committee of vice-presidents to study and work on this problem. They have appropriated \$100,000 to be used by Stanford Research. The prime purpose of Stanford Research will be to coordinate the research facilities of the various oil companies so that maximum benefit might be received from any work done. Mr. Deutch has suggested and it has been accepted, that the Los Angeles County and the Stanford groups cooperate on this work so that

needless duplication of effort will not occur. Mr. Deutch will send to our attention their method for determining aldehydes and will appreciate any suggestion we can make for speeding up their sampling and method of analysis. We will send to him our field and plant data on methods of lead analysis in the air. Dr. Beatty suggested that they calculate the amount of SO_2 that might be in the air from various sources in the Los Angeles area. These calculations would provide a base line against analytical determination of sulphur compounds in the air. Mr. Gambrill arranged for Mr. Deutch to see Dr. William Fredrick of the City of Detroit Health Service. Dr. Fredrick has done considerable work on determination of contamination products in the air, and Mr. Gambrill thought that Mr. Deutch might be interested in discussing this work with him.

In conclusion, it is interesting to note that this problem was brought up at a recent API Meeting in Atlantic City at which Mr. Gambrill was present. It is the writer's opinion that there is not too much that we can contribute to this problem. We must avoid the very dangerous situation of suggesting certain fuel specifications which might make it easier to control aldehydes in either gasoline or diesel equipment, since it is apparent that we would obviously step hard on the toes of our customer companies. We cannot afford to disregard this situation since erroneous findings might lead to the conclusion that the products of combustion of leaded gasoline are a source of this irritant. Sound technical advice and a careful analysis of the results is of utmost importance. A copy of this conference report together with a letter will be sent to our Los Angeles office so that they may keep in touch with the situation to the best of their ability.

Errol J. Gay.

EJG/ems
7/15/47

cc: Mr. R. K. Scales (3)
Mr. E. Bartholomew
Mr. J. B. Macauley
Dr. Robert Kehoe - Cincinnati (2)

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