

Supplement to Interim Report of March 23, 1961

The field investigation, as described in the Interim Report, was carried out as planned except that the period of time was extended to sixteen months instead of twelve, primarily for reasons of convenience in the completion of the second series of clinical examinations. On this account there were five rounds of sampling of the urine, instead of the intended four, and the final samples of blood were obtained for comparison with the initial samples after an interval of approximately fifteen months instead of twelve.

All of the data, including those of the clinical examinations, had been assembled by the end of the year 1961, and were subjected to careful scrutiny and statistical analysis. The final report is in preparation, but has been delayed in its completion because of other duties and obligations within the Department of Preventive Medicine and Industrial Health (of which The Netter Laboratory is an integral part) including those associated with graduate instruction.

The data of primary importance are those indicative of the experience of the personnel engaged in the pertinent operations of the petroleum industry with respect to potential exposure to lead in the form of the tetramethyllead which has been added to gasoline. Other items of information bearing on the matter under investigation, but less crucial in relation to the question of exposure to, and absorption of, lead, are the clinical findings (physical and laboratory findings, including hematological and X-ray observations). For present purposes these may be disposed of briefly. None of the men included in the survey gave any evidence of illness referable to the absorption of lead, whether of complaints, physical signs

or hematological deviations. As to the latter, all of the findings in all of the personnel <sup>were</sup> ~~came~~ within normal limits, and the terminal findings, to the extent of their differences from the initial data, were in the direction of improvement. (This, almost certainly, was a fortuitous circumstance, whether of seasonal or other import.) The differences were significant in the statistical sense, but were not remarkable in the physiological sense.

The radiological observations were not intended to be especially relevant with respect to potential exposure to lead, but were regarded as desirable for other hygienic reasons. There were no findings that required further investigation.

The terminal samples of urine were obtained in July and August of 1961, the next-to-last series having been obtained in May and June. The second (final) series of samples of blood were obtained in July and August, at the time of the collection of the final series of samples of urine. Only a few of the men who were included initially were missing in the final round of sampling (and examination). Such minor discrepancies are shown by the numbers of samples represented in the several tables of data.

The analytical data, relative to the urine and blood, for the entire period of this survey, are assembled in a series of tables numbered from 1 through 10, attached hereto. Tables 1, 2, 3, 7 and 9 are extensions of Tables 7, 8, 9 and 10 of the Interim Report (with some slight difference in arrangement). The "supplementary" tables, however, contain all of the analytical data and can be substituted for and added to those set forth in Part 2 of the Interim Report.

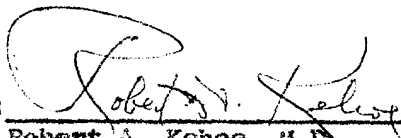
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Comment

The discussion beginning on page 21 of the Interim Report requires little modification in order to take into account the additional findings. There is, in fact, only one statement in the Interim Report which requires modification or retraction - page 22 "the variations showed no consistent trend with the lapse of time". This statement is at fault, only because of the discovery of a trend (made significant by the last two series of urinary findings) toward a generally progressive decrease in the concentration of lead in the urine of the filling station attendants in both San Francisco and Los Angeles. (The concentration of lead in the blood of the two groups was also lower in the terminal group of samples than in the initial group). This trend is of significance in the statistical sense, and it rests on somewhat more than a fortuitous basis. Just what this basis may be is purely speculative, however, since the variation in the findings, from the beginning to the end of the survey, occurred within the physiological range. Systematic investigation of the intake and output of lead on the part of experimental subjects, UNDER the carefully controlled conditions of the Laboratory, have demonstrated the existence of a comparable degree of variability in the lead content of the urine and blood of individuals, from person to person, and from time to time in the experience of a single individual. In these experiments, the variability is often explained by the full analytical data, whereas, in field surveys, one sees only the outcome of the combination of factors which affect the over all exposure to, and absorption of, lead by individuals or groups, without being able to sort out the individual factors. The point of importance, in the interpretation of the findings presented here,

in that there is no evidence of the <sup>existence</sup> ~~evidence~~ of occupational exposure to lead, on the part of these men, because of the substitution of tetramethyllead for tetraethyllead in the gasoline which was being dispensed and otherwise handled by them in the filling stations.

Note: The additional information obtained in the final period of the survey of the lead in the air at the occupational sites contributed nothing new or aberrant. The data presented in Tables 1,2,3,4,5 and 6 of the *INTERIM Report* are entirely adequate in their representation of the facts with reference to lead in the atmospheric environment of the workmen in the various occupations.

Signed: 

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Date: April 15, 1962\*

\*Prepared in time for a meeting and full discussion of the situation in the Office of the Assistant Secretary of Defense, Washington, D.C., April 17, 1962.

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