



DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON 98, DELAWARE

ORGANIC CHEMICALS DEPARTMENT
PETROLEUM CHEMICALS DIVISION

January 12, 1949

TO: DR. S. L. RANKIN

FROM: B. G. CRANE

We recently encountered a dusty atmosphere in the cleaning of a tank where lead in air analyses showed as high as 15 micrograms per cubic foot. This is interesting and significant to me, and I believe that it will be, also, to you and Dr. Kehoe. It is the first time a measure of the lead content has been available when dusty conditions prevail.

While it has always been recognized that lead salts could be present in dusty atmospheres, and while it has always been, and is now our recommendation to take precautions against such hazards, either through the use of a dust respirator or by keeping the surfaces of the tank wetted down, nevertheless, this case is of considerable interest to me, and there are several questions in my mind.

I reviewed this case by telephone with our representative. It was apparent that the tank had been thoroughly cleaned so far as sludge and scale that had been in contact with sludge was concerned. There were no indications of a leaky bottom which could give rise to TEL vapors. All swing lines, etc., had been drained, eliminating such facilities as a source of TEL vapors. There were no hollow roof supports which could contain sludge or TEL. So far as could be determined, the high lead in air analyses could come only from lead salts in the dusty atmosphere or from the volatilization of lead salts during hot work. However, the latter does not appear to be the source of the high readings.

At my request, two samples of scale that had fallen from the side-walls and roof of the tank were collected on November 22, and a sample of floor sweepings was collected on November 26. We are mailing these samples directly to Dr. Kehoe, and would like to have them analyzed and the following questions answered:

1. The amount of organic lead present in the form of TEL and decomposition products of TEL.
2. The amount of inorganic lead present.

In addition to results obtained from analysis as requested above, I would like your opinion and Dr. Kehoe's as to whether or not the high readings as shown on the lead in air analyzer could be the result of metallic compounds other than lead. For example, could the metallic fumes from welding operations give readings with the lead in air analyzer, even though no lead was present?

For your information, and Dr. Kehoe's, the tank was cleaned in order to allow for cutting new manholes, installing intank mixers, and anchoring the roof supports. The

KE 0009698

following is a chronological order of events as they took place:

August 26, 1948 Start of cleaning operations. Work continued intermittently until October 24, 1948. Work delayed on account of strikes.

October 25, 1948 Thorough visual inspection made of tank. It was pronounced clean.

Lead in Air Analysis 9:45 A. M. 2+ mc./cu.ft.
Recheck 1+ mc./cu.ft.

Tank pronounced free of lead hazard for cold work only.

October 25, 1948 Work of installing manholes and intank mixers delayed on
to account of oil workers' strike.

November 17, 1948

November 18, 1948 Surfaces prepared and okay given for welding. No hot work done on this date.

November 19, 1948 Workmen in tank doing hot work. Tank Atmosphere dusty.
Temperature 69° F.
Wind - Calm

Lead in Air Analysis 10:30 A. M. 15 mc./cu.ft.

Men removed from job.

Lead in Air Analysis 3:00 P. M. 1 mc./cu.ft.

Customer advised to remove all loose scale that had fallen from side-wall and roof of tank since completion of cleaning on October 24.

November 22, 1948 Loose scale removed by crew wearing full protective equipment

Lead in Air Analysis 3:30 P. M. 1 mc./cu.ft.

Temperature - 71° F.
Wind - Calm

November 23, 1948 Crew in tank all day.
Temperature - 72° F.
Wind - Calm

Lead in Air Analysis 10:00 A. M. 4 mc/cu.ft.
 10:30 A. M. 6 mc/cu.ft.

Temperature - 73° F.

Lead in Air Analysis 12:25 P. M. 5 mc./cu.ft.

Temperature - 72° F.

Lead in Air Analysis 4:00 P. M. 8 mc./cu.ft.

Since lead content was in critical zone, crew was pulled off job until November 26.

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November 26, 1948

Three men in tank for three hours
Temperature 60° F.
High wind

Lead in Air Analysis

4:00 P. M.

1 mc./cu.ft.

While it is recognized that the results of lead in air analyses may be from the presence of organic lead compounds in the tank, this case is significant and indicates that we should in all cases where dusty conditions prevail continue our recommendations covering the use of dust respirators or the wetting down of all surfaces.

The samples have gone forward as of this date to Dr. Kehoe, and are numbered and labeled as follows:

- 49-2 Sample collected by the crew at completion of sweeping on Nov. 22, 1948
- 49-1 Sample collected by the tank crew at completion of sweeping on Nov. 22, 1948
- 49-3 Sample collected by Riley on Nov. 26, 1948

E. C. CRANE

BGC/nb

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P. S. We would also like advice from Dr. Kehoe as to whether or not the lead content of these samples, which are side-wall scale, is of the same order of magnitude as that normally found, or higher.

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