

cc: Mr. H. J. Gibson
Mr. J. B. Macauley
Mr. R. K. Scales
Mr. J. S. Wintringham

ETHYL CORPORATION

RESEARCH LABORATORIES

1600 WEST EIGHT MILE ROAD

FERNDALE 20

DETROIT, MICHIGAN

November 9, 1948

Dr. Robert A. Kehoe
College of Medicine
University of Cincinnati
Eden Avenue
Cincinnati 19, Ohio

Dear Dr. Kehoe:

We have purchased, on the open market in Columbus, four cans of Vitol fluid. Inspection of this material will answer some of the statements made to you by Mr. Van Hartesveldt, as reported in your letter of Oct. 27. Contrary to their claims, the material still separates and there is an agglomeration of the inhibitor phase into macro droplets. On simply standing these form small pools floating on the surface. On centrifuging at 1800 RPM for two hours a definite layer of this material formed at the top surface. It is apparent that the present product is slightly different from that we inspected previously, but we do not feel they have overcome the problem of obtaining a "permanent emulsion". The density of the present fluid is 0.846, while we had previously observed a density of 0.843. This may explain the fact that the inhibitor phase concentrated at the top rather than the bottom as before. We have not determined whether this increase in density is due to a slightly larger concentration of water. Further evidence of difference is apparent from the color. The fluid is orange in reflected light, with a slight fluorescence, and pink by transmitted light. If this is an attempt to impart a distinctive, warning color, as suggested at the Cleveland meeting in April the color change is too slight to be effective.

We are not planning to make any lead determinations on the two phases of this new Vitol. I am enclosing, however, further information on the previous Vitol, which shows definite stratification on standing. This supplements the information in LTD 48-50, which you have received. We have no objection to informing the Thompson people of our findings, and will leave it up to you as their medical advisor to take the matter up with them. Additional copies of LTD 48-50 and pertinent portions of our Monthly Research Memoranda, 48-8 and 48-10, are enclosed for presentation to them if you deem it necessary.

KE 0020576

Further, I am enclosing our latest data on air evaporation. These confirm our previous thought that the water present in Vitol fluid is responsible for the unusual evaporation characteristics. Without water, that is in a fluid comprising only methanol and "Ethyl" antiknock compound, the expected result is obtained that the lead concentrates in the residue as evaporation proceeds, in a manner similar to TEL in gasoline.

As you suggested, we could conduct further experiments attempting to more closely approximate evaporation under conditions of use. The advisability of this is open to some question. Our experience has been that the number of experiments possible, and the number of conditions which might be anticipated is so large, that to obtain really definitive results is a major undertaking. The present data, and calculations such as those presented in my letter of September 2, appear sufficient to us. We feel that our basic data make possible some reliable predictions as to what would happen under some definite conditions. For instance:

- With a Vitol reservoir under the hood, where the liquid will be kept warm, a service man opening the reservoir and leaning over to see if it is empty will be exposed to a concentration around 13,000 μ g. Pb/cu. ft. of air;
- In case of spill, the immediate exposure to the vapors will be as serious as if this were a gasoline containing 350 cc. TEL/gallon.

The physiological interpretation of these facts is beyond our competence.

I might point out, that a very simple method of correcting to a considerable extent, this abnormal evaporation characteristic of Vitol fluid would be to reduce the amount of water present, preferably to zero.

We will be interested in your findings on skin absorption of TEL with alcohol as a solvent, and how it compares with the permissible level of TEL in hydrocarbon solvents.

Very truly yours,

Morley Morgana
Morley Morgana

MM:eh

KE 0020577