

October 9, 1940

Dr. Graham Edgar

Dear Dr. Edgar:

The following are my comments on your letter of October 7 regarding the Army burner for Ethyl Gasoline:

1. Equipment. - It will be interesting to see the detailed drawing, although the photograph is fairly descriptive. The filter pads submitted seem rather dense and I am wondering how much back pressure they put on the system, and how this back pressure is overcome. I would expect a thicker but looser pad to be equally as effective, while showing less pressure drop.
2. Calculations. - I agree with your remarks regarding the amount of air and fuel used. If the amount of lead actually present in combustion gases is as small as reported, the conclusions would not be invalidated by a three-fold correction factor.
3. The only question in my mind relates to the accuracy of the values. If no lead was found in the fifth absorber, there is still the possibility that some lead was present in a non-absorbable form.

I believe that early experiments on the exhaust of an engine failed to account for all the lead input, and this was probably due to inability to remove the lead quantitatively from the exhaust gases. It may be, however, that in this case we are dealing with Pb and not PbO, and therefore, that the recovery is more quantitative.

A rough check on this would be obtained by analyzing a filter, which according to the Army report, should account for 99% of the lead input (including, of course, the scrapings from the cracking tube).

4. Further tests. - An improvement in the testing technique will consist of analyzing the measured gas for CO and CO₂, thus obtaining a measure in terms of fuel input. This will remove the necessity of gathering all the combustion

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products, or of preventing admixture with fresh air. The advisability of running further tests, however, will depend mostly on Dr. Machle's opinion of the data submitted.

5. A sample of "Thrift-O-lene" has been received and will be identified. Unless its composition should have something unusual, I doubt whether this will be worth testing.

Very truly yours,

George Calingaert

GC:AMC

cc: Dr. W.F. Machle

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