

October 29, 1940

Dr. Graham Edgar
Ethyl Gasoline Corporation
Chrysler Building
New York, New York

Dear Graham:

After going over the correspondence and reports on the Army stove, it is our opinion that the matter should be investigated further.

We think it would be desirable to check the experimental results obtained at the Army Medical School. In the work that they did, their experimental system was not balanced, and as you suggest it is improbable that all of the fumes were collected. To be convincing, their results should include accurate analysis of the amounts of lead in the gasoline and measurement of the total volume of air used to burn fuel. The amounts of lead in the filter and on the walls of the cracking tube should be determined at the conclusion of the experiment and the burners and piping should be rinsed to determine whether there has been any accumulation there. The amounts of lead from these last sources and from the fumes of the burned fuel should check within reasonable limits the amount present in the gasoline initially. If significant amounts of lead are found in the cracking tube after a short period of use, the experiment should be repeatedly rerun for as long as a month or so to determine whether or not any accumulations occur within the system.

We should also be quite certain that the temperatures of the cracking tube are such as to insure complete decomposition of tetraethyl lead. If any significant amounts of organic lead find their way into the filters, a potential hazard is created in the handling and disposal of them.

Previous estimations based upon gasoline stoves using leaded fuel, indicated that a hazardous condition would occur if stoves were operated continually in poorly ventilated rooms. In the stove which we studied all of the lead passed presumably through the burner. Since the essential difference between the Army stove and the conventional stove lies in the fact that in the Army stove there is a filter designed to prevent lead from passing through the burners, we feel that it would be most desirable to have analytical data on some of these filters to determine just how efficiently they operate.

Dr. Graham Edgar - (2) - October 29, 1940

When I called the Kirk and Blum Company today with the idea of getting a stove, they informed me that after they had filled their order of 2,500 for the Army, subsequent contracts had been turned over to the Stewart-Warner Company, at Indianapolis, who presumably are now manufacturing them. I believe, for us to get one of these stoves, authorization from the Army would be required. Can you arrange this for us, or shall we communicate with them directly?

There are further one or two points to which Colonel Gentzkow's attention could be called with profit. First, from a toxicologic point of view, one may not compare lead that is breathed with that taken in food. Inhaled lead is much more dangerous than that which is swallowed. This is borne out by the observation that as little as 1.5 mg. lead per 10 cu. m. of air is capable of producing intoxication when breathed by workmen over a long period of time. The new Federal tolerances of food on the other hand are more than twice as great as this amount and as far as we now know are within safe limits. Secondly, the Colonel's statement, item 2, under Conclusions, is in error in that he states that danger of lead poisoning exists from the absorption of tetraethyl lead from gasoline applied to the skin. I think it is important that this second point be brought to his attention, for if these stoves find general use in the Army, which they probably will, some type of instructions or placard will probably accompany them and it is a possibility that some reference to the absorption of tetraethyl lead from gasoline will be put on to them.

Cordially,

WM:vr

Willard Machle, M. D.

cc - Dr. Calingaert

KE 0008547

October 29, 1940

Dr. Graham Edgar
Ethyl Gasoline Corporation
Chrysler Building
New York, New York

Dear Graham:

After going over the correspondence and reports on the Army stove, it is our opinion that the matter should be investigated further.

We think it would be desirable to check the experimental results obtained at the Army Medical School. In the work that they did, their experimental system was not balanced, and as you suggest it is improbable that all of the fumes were collected. To be convincing, their results should include accurate analysis of the amounts of lead in the gasoline and measurement of the total volume of air used to burn fuel. The amounts of lead in the filter and on the walls of the cracking tube should be determined at the conclusion of the experiment and the burners and piping should be rinsed to determine whether there has been any accumulation there. The amounts of lead from these last sources and from the fumes of the burned fuel should check within reasonable limits the amount present in the gasoline initially. If significant amounts of lead are found in the cracking tube after a short period of use, the experiment should be repeatedly rerun for as long as a month or so to determine whether or not any accumulations occur within the system.

We should also be quite certain that the temperatures of the cracking tube are such as to insure complete decomposition of tetraethyl lead. If any significant amounts of organic lead find their way into the filters, a potential hazard is created in the handling and disposal of them.

Previous estimations based upon gasoline stoves using leaded fuel, indicated that a hazardous condition would occur if stoves were operated continually in poorly ventilated rooms. In the stove which we studied all of the lead passed presumably through the burner. Since the essential difference between the Army stove and the conventional stove lies in the fact that in the Army stove there is a filter designed to prevent lead from passing through the burners, we feel that it would be most desirable to have analytical data on some of these filters to determine just how efficiently they operate.

KE 0009548

Dr. Graham Edgar - (2) - October 29, 1940

When I called the Kirk and Blum Company today with the idea of getting a stove, they informed me that after they had filled their order of 2,500 for the Army, subsequent contracts had been turned over to the Stewart-Warner Company, at Indianapolis, who presumably are now manufacturing them. I believe, for us to get one of these stoves, authorization from the Army would be required. Can you arrange this for us, or shall we communicate with them directly?

There are further one or two points to which Colonel Gentzkow's attention could be called with profit. First, from a toxicologic point of view, one may not compare lead that is breathed with that taken in food. Inhaled lead is much more dangerous than that which is swallowed. This is borne out by the observation that as little as 1.5 mg. lead per 10 cu. m. of air is capable of producing intoxication when breathed by workmen over a long period of time. The new Federal tolerances of food on the other hand are more than twice as great as this amount and as far as we now know are within safe limits. Secondly, the Colonel's statement, item 2, under Conclusions, is in error in that he states that danger of lead poisoning exists from the absorption of tetraethyl lead from gasoline applied to the skin. I think it is important that this second point be brought to his attention, for if these stoves find general use in the Army, which they probably will, some type of instructions or placard will probably accompany them and it is a possibility that some reference to the absorption of tetraethyl lead from gasoline will be put on to them.

Cordially,

WM:vr

Willard Rachle, M. D.

cc - Dr. Calingaert

KE 0009549