

June 1, 1961

Mr. D. L. Allen
Assistant General Traffic Manager
U.S. Department of the Interior
The Alaska Railroad
P.O. Box 7-211
Anchorage, Alaska

Dear Mr. Allen:

I am pleased to reply to your letter of inquiry of May 23, referred to me by Dr. H.H. Schrenk of the Industrial Hygiene Foundation.

First let me point out that the various cargoes which are to be transported in tank cars that have been used previously for the transportation of gasoline containing tetraethyllead will not be contaminated measurably with tetraethyllead, if all the gasoline has been removed, for this compound of lead will be removed quantitatively with the quantitative removal of the gasoline. Incidentally even slight contamination of these products with gasoline would make them highly undesirable, so that the gasoline would have to be thoroughly eliminated. Even if it were not, however, the tetraethyllead contained in traces of gasoline would be negligible from the toxicological viewpoint. It is not possible for an individual to consume ^{enough} commercial leaded gasoline to be poisoned by tetraethyllead, for acute intoxication by gasoline would supervene before enough lead to cause intoxication would have been taken in. This is, of course, because of the low concentration of tetraethyllead, and also because tetraethyllead, despite its bad reputation, is not nearly as toxic as many persons believe it to be.

The problem presented by the tank cars, from the aspect of contamination with lead, lies in the fact that as they have been used for considerable periods of time to transport leaded gasoline, the lead compound in contact with the metal surface that is slowly undergoing erosion incorporates some of the solid decomposition products of tetraethyllead (mostly triethyllead compounds) within the corrosion products. The rust and scale on the surfaces of these tanks contain triethyl and diethyl salts of lead to the extent of a few hundredths of one per cent. The total quantity of lead in these surface deposits may be such as to yield a significant amount of contamination to liquid products. For this reason, we have always discouraged the use of these tank cars for the transportation of any food product, until they have been cleaned thoroughly. The expense of the latter has militated against their use for such purposes (but has not prevented it altogether), unless the tank car were being taken out of the gasoline trade permanently or for a prolonged period. In many instances the risk is not great, but it cannot certainly be appraised, and the liability, therefore, of the owner of the product, and perhaps that of the shipper as well, is considerable if the question is raised, regardless of the degree of actual risk.

The most effective cleaning is that of sand-blasting (or shot-blasting with other than lead shot) the corroded metal to a bright surface. No further cleaning is required. In some instances, fairly successful cleaning operations have been carried out by means of acid or alkaline solutions, and with the type of cleaners (oakite etc) that are used in the petroleum industry for less specific types of cleaning. Anything that will remove the rust and scale leaving a clean but somewhat pitted surface from which no further solid material can be detached, will serve the purpose reasonably well, followed, of course by copious flushing with water (the triethyllead salts are fairly soluble in water).

The answer to your specific question about shot blasting (with the parenthetic proviso which I inserted) to new metal is a categoric yes. This is by far the best method and one that can be relied upon completely, provided a thorough job is done. The latter, of course, can be established by careful inspection without instrumentation.

I believe I have answered such question as you or others might raise, but if there is any uncertainty in your mind about anything I have said or failed to say, do not hesitate to inquire further.

Very truly yours,

Robert A. Kehoe, M. D.

RAK:ss

cc: H.H. Schrank, Ph.D.

KE 0020186