

May 12, 1937

Dr. C. F. Adams
Director of Laboratories
The State Board of Health
Jefferson City, Missouri

Dear Doctor Adams:

You are quite right in believing that we have been interested in the accumulative effects of lead in human beings in connection with the spray residue problem. However we have not published any work on the investigation of this specific problem. What we have done is to study the ingestion and excretion of lead in a very considerable number of persons in various parts of the United States, in an effort to determine the general magnitude of normal and inevitable lead exposure, and the fate of such small quantities of lead in the animal organism. This, it seems to me, has an important relation to the problem at issue, but it does not deal with it directly.

There have been a very large number of articles written on this subject and from a variety of points of view. However there is really very little experimental evidence, and there are very few observed facts, as applied to the human subject, which permit of conclusions of any significance. As to the injurious effects of spray residues on the consumer, I think there is practically no evidence. In fact, so far as I know, most of the people who have been looking for evidence of injury among persons exposed to this danger, have failed to find it. Thus the question at present is one of potential danger without, so far as I know, much evidence as to the actual magnitude of the danger. The most vocal proponents of the idea that spray residues are at present a serious menace to American health are a group of workers in New York for whom C. N. Myers seems to be the chief spokesman. So far as his published material is concerned, I regard his conclusions as unjustified from his data, and I regard his data as inadequate, almost to the point of absurdity, and also as being inaccurate. I feel quite safe in saying that the whole question is in need of very careful and thorough investigation. Naturally even with this point of view, I do not feel that the efforts of health authorities should be criticized in any way when they attempt to set up tolerances for lead and arsenic in food materials, since it is necessary here to have a wide margin of safety.

Dr. C. F. Adams

In the articles which I am sending you, you will note a few references to this question of spray residues. These are by no means complete because, as you will see, we have not been discussing this question in these articles. However, I think you will probably be interested in the question of normal lead, and in this connection I believe you will be especially interested in the sources of lead as I have discussed them to a limited degree in one of the articles in the series which I am sending you.

We are doing some experimental work at present on human subjects who are ingesting known quantities of lead in addition to that naturally occurring or accidentally occurring in their diet. It will be some time before the results of this experimental work will be published. When they are published, I shall probably discuss this specific problem to some degree, and at the same time will review the literature. Until that time I could not send you references to the literature without going through a very large amount of work to do so. Meanwhile I am doing the best I can for you by sending you a series of articles which I trust will be of some interest.

Very truly yours,

RAK:is

Robert A. Kehoe, M.D.

KE 0019656

Ruth, W.A.: The spray-residue situation. Summary of some of the more important new experiments, Trans. Illinois State Hort. Soc., 69:174, 1935.

Heeren, R.H.: Toxicity of fruit sprays: a study of lead spray residues in Iowa-grown fruit, with reference to manifestations in consumers, Pub. Health Reports, 52:8, 1937.

Lendrich, K. and Mayer, Fr.: The occurrence of arsenic and lead on fruit as a result of spraying, Z. Unters. Lebensm., 52:441, 1926. Abst. in Chem. Absts., 21:2340, 1927

Further reports of the presence of arsenic, lead and copper on fruit and in some fruit-products, as the result of the use of disinfectants, Ibid, 54:137, 1927.

The significance of the use of arsenic and lead compounds as disinfectants in preservation of fruit, Arch. f. Hygiene, 100:57, 1926.

Frisbie, W.S.: Federal control of spray residues on fruits and vegetables, Amer. J. Public Health, 26:369, 1936.

O'Kane, W.C.: Arsenical residues after spraying, New Hampshire Agr. Exptl. Station Bull., 183:8, 1917.

Myers, J.N. and Throne, B.: Health hazards from the ingestion of small amounts of metals (lead, mercury, zinc, copper, arsenic), New York State J. Med., 20:1258, 1929

Significance and danger of spray residue, Ind. Eng. Chem., 25:624, June 1933.