Dr. Kehoe

UNIVERSITY OF OREGON
Medical School

Portland, Oregon,
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Dr. W. A. Ruth,
Chief in Pomological Physiology,
University of Illinois,
Urbana, Ill.

Dear Doctor Ruth:

I received the enclosed memorandum from Fred L. Overley the other day with the request that I read it and return it to you along with any suggestions that I might make. This I am doing without delay although there are two matters that I would like to have checked before writing to you. One of these is in regard to the work that is being carried on in Wenatchee under a plan I proposed early last Fall in accordance with a suggestion of Mr. Harry Miller's.

Late last May I was in Wenatchee a second time to check on the progress of the work there. At that time 63 of the proposed 75 field workers had submitted urine, feces and blood for chemical tests. This is only the first of a series of four tests to be carried on. One(the above mentioned) before the spraying season starts, two at monthly intervals during the spraying season and one, the fourth, after the spraying season is ended. You will appreciate the fact that this constitutes a most strenuous test for there will be no other group that will exceed this one in exposure to lead and arsenic residues. If a large proportion of these individuals go through the four tests with results within those limits that can be considered safe, then surely it may be assumed that individuals eating washed apples in ad lib amounts will never receive an amount of lead or arsenic that could be considered dangerous. Another series of tests is planned for the Fall and Winter. Two groups of normal individuals (indoor office workers) will ingest washed and unwashed fruit and similar chemical tests carried out. This will provide data on absorption of lead and arsenic from the digestive tract and will rule out the contributing factor of entry through the respiratory tract. Mr. Miller has been out of Wenatchee most of the time since so that I have not been able to get a progress report since June 1. However, up to the time mentioned the work was proceding in a most satisfactory manner. I wish I might know the progress to date in order to incorporate lessons learned from it in any suggestions I might have to make in regard to the enclosure.

The second point grew out of a conference held in Seattle, Sept. 3 with Dr. F. C. Blanck, Chief of the Food Research Division, U.S. Dept. of Agriculture. At this conference Dr. Blanck stated that one of the four objectives he hoped to accomplish was the production of trustworthy data upon

which could be based a tolerance for lead and arsenic that would be able to withstand the most exacting of criticism--data so reliable and authentic that it would be obligatory for that Division of the Department of Agriculture upon whom devolves the duty for establishing tolerances to accept it. To this end his department has enlisted the aid of Dr. P. J. Hanzlik, head of the Department of Pharmacology, Stanford University Medical School, San Francisco. To Dr. Hanzlik has been assigned (I am not sure whether the work is under subsidy or not but I imagine that it is) the task of undertaking such experimental procedures as will be necessary to produce the kind of data mentioned above. I shall write to Dr. Hanzlik immediately to learn what I can of the situation as it has developed in his hands.

It is exceedingly commendable that the apple industry itself has undertaken a series of investigations on the toxicity of lead and arsenic. While it is undoubtedly true that its economic structure is critically related to the level of tolerance established, it is equally true that the scope of benefits to be derived from a just tolerance are so much wider than a single industry that it looms as a public health measure of governmental scope. It is a matter to be given consideration as to how much weight will be given by the Department of Agriculture to data supplied by or submitted by agencies outside their own, even though this data isbased on research done in reputable laboratories. It appears to me that there is already some data that might justify a more liberalized interpretation of the present tolerance if not its actual revision. Dr. Blanak himself is not sure just how seriously the data obtained by his department through Dr. Hanzlik will be considered.

As to the plan developed by Dr. Kehoe. There are only two or three suggestions that I would like to make.

1. The experimental subjects are divided into four groups of two each. They are to be "on a normal diet of their own selection". I would like to propose that the diets for at least one each in the second and third group be made uniform. Let the subject select the food he likes but impress upon him the necessity of keeping whatever selection he makes constant both qualitatively and quantitatively. My experience has emphasized the importance of stabalizing all experimental conditions possible. No one knows to what degree a chance ingestion of some particular food may offer unusual opportunities for forming bound or conjugated products or for buffering the body in some other way so that the amount of arsenic or lead ingested is presented for absorption in variable quantities. Then, too, various foods influence the secretion of digestive juices and the emptying time of the stomach in different manners--another cause for variation in materials presented for absorption. An illustration of the value of such a control is the experiment that was done with arsenic and shrimp. Shrimp with a high arsenic content was fed with no harm but a pure food mixture to which arsenic was added in the same concentration as found in the shrimp proved toxic.

2. I would like to see the attention of proper authorities

directed to the content of arsenic in tobacco smoke. In an article in the Am.J.Pub.Health 24:36:1934 Gross and Nelson state that not unreasonable amounts of cigars, cigarettes or smoking tobacco have to be consumed to expose the individual to the same amount of arsenic as they are subjected to in fruits that meet the present tolerance. So far as I know no agitation is directed in this direction.

3. "The effect of prolonged exposure to tolerable dosages must be investigated in a sufficient number of subjects----". "Field investigations in areas in which more than the average magnitude of exposure occurs might yield most useful practical information----". In connection with these proposals of Dr. Kehoe's, sight must not be lost of the data being accumulated in Wenatchee. The question of duplication of effort or of substantiation of data must be considered. It seems to me that the work being done in Wenatchee so nearly fits in with some of the proposals of Dr. Kehoe's that it would not be amiss to allocate certain funds for the furtherance of this work instead of letting the burden be borne by a relatively small section of the industry.

I shall be very anxious to hear concerning the progress of this work under Dr. Kehoe. He has done much pioneer work in this field and is, I believe, more than anyone else in this country, especially qualified for the conduct of such an investigation. If there is any way in which I can be of service, please let me know.

Sincerely Yours,

Ira A. Manville (signed)
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