October 23, 1970

Prof. G. Fred Lee
Water Chemistry Laboratory
The University of Wisconsin
Madison, Wisconsin 53706

Dear Dr. Lee:

I never have received my copy of your letter to Herb Stokinger dated August 14 which you referred to in your letter of September 23. Jack Garrett has received your letter of October 13 and I now do have a copy of your earlier letter and the position statement.

As you indicated in your letter to Jack, there is no reason why you should not discuss the results of our on-going toxicity studies with Dr. Calandra and his associates. I have enclosed a copy of my letter to Herb Stokinger with copies to you, Dr. Calandra and Dr. Mount concerning the status of our studies and the detailed results available at this time.

In connection with the position paper, I have the following comments:

1. In the second paragraph on the first page, there is a reference to pesticide formulations and the possible direct contamination of natural waters. I think you know that the polychlorinated biphenyls were never promoted as components in pesticide formulations for wide-spread dispersion on crops, orchards, etc. The fact is that the U. S. Department of Agriculture developed recommendations for the possible use of the waxy type Aroclors in pesticide formulations for painting interior surfaces. The USDA data indicated that hard surfaces (painted or metallic) sprayed with lindane or benzene hexachloride containing Aroclor 5460--a 60% chlorinated terphenyl, not PCB--remained toxic to flies, ants, roaches and silver fish for as long as three months compared to one

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week's effectiveness for formulations of the pesticide without Aroclor 5460. The waxy Aroclors, 1254 and 1260, may also have ended up in some similar formulations. In any case the amounts used were insignificant, we think, in terms of any threat to contamination of natural waters.

2. In the second paragraph on page two, Wister Meig's publication in the JAMA is mentioned. Correspondence with the author following publication confirmed the fact that the chloracne was of such a mild nature that even trained dermatologists would probably have missed the evidence of the chloracne. To our knowledge, there have been no published reports of any chloracne episode since 1952. The question can be raised then as to whether the chloracne problem is of any real significance.

3. The third paragraph on page two refers to the chronic studies currently in progress. The first sentence implies that the two-year studies are complete. Secondly, there maybe a trend to convert completely to the metric system which would warrant units such as "micrograms per gram". I believe, however, that the practice in reporting doses fed to animals in chronic studies generally is to use a "parts per million" reference. Perhaps this is due to the fact that acute doses are usually expressed in terms of "milligram per kilogram of body weight" of the test animal.

This latter point I would leave to the judgement of Drs. Stokinger and Calandra. Similarly, a comparison of toxicity of that of DDT should rest with them. I would add that as recently as last month at a meeting with Garth Fitzhugh, he expressed the opinion that the Aroclors are "much less toxic than DDT". There is no question that the comparison varies depending on what species of mammals, birds, fish or possibly insects one is using to make a comparison. Obviously, whether one is talking about acute or chronic toxicity is relevant. Our own opinion at Monsanto is that the general statement that PCB's are no more and probably less toxic than DDT can be supported.

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At the present time, we do not think that a drinking water standard for the PCB's showing up in the environment should be lower than that for DDT.

I apologize for the delays involved in answering your request for information and comments.

Sincerely,

Elmer P. Wheeler
Manager, Environmental Health

EPW:ju

c.c. Dr. Joseph C. Calandra
Dr. Donald I. Mount
Mr. William B. Papageorge
Dr. Herbert E. Stokinger

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