Monsanto

FROM (NAME & LOCATION) W. B. Papageorge - B2SK

DATE October 21, 1975

SUBJECT G. E. REQUESTS

REFERENCE Memo JPM to DW, 10/10/75

TO D. Wood

cc R. E. Keller
J. P. Mieure
W. R. Richard

In responding to Items (1) and (2) in Jim Mieure's memo, I propose that we forward a copy of the Fishbein paper (copies are attached) and comment on biphenyl purity as follows:

"Identifiable materials present in our biphenyl contribute to the presence in the polychlorinated biphenyl mixture (the material of primary concern to you) of the following:

Chlorinated naphthalene	<3 ppm
Chlorinated methyl naphthalene	<6 ppm
Chlorinated methyl biphenyl	100 ppm max.
Chlorinated dibenzofurans	<.5 ppm
Unidentified	60 ppm max."

W. B. Papageorge

/pd

PCB Toxicity

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PCB's: How Toxic?

Polychlorinated biphenyls (PCB's) are recognized as ubiquitous environmental contaminants. In 1973, this worldwide problem resulted in a decision by the Organization for Economic Cooperation and Development to control the use and disposal of PCB's (*1*). At present, both the U.S. and Canadian governments are preparing legislation for the control of toxic substances.

The concern over PCB's is based on two factors, namely their environmental persistence and their toxicity. Recent results, however, cast doubts on the latter. Bowes *et al.* (*2*) observed concentrations of highly toxic polychlorinated dibenzofurans (PCDF's) ranging from 0.1 to 0.5 microgram per gram in all but one of the North American PCB's (Aroclor). Earlier studies by Vos *et al.* (*3*) had indicated that only PCB's manufactured in Japan (Kanechlor) and Europe (Clophen, Phenochlor) contained such impurities. In addition, PCDF's and other by-products were recently found in "pure" PCB isomers (*4*).

The toxicity of PCDF's exceeds that of PCB's by approximately four to six orders of magnitude. Their presence in PCB's has, therefore, significant bearing on toxicity studies on PCB's, commercial mixtures, and isomer preparations alike. Yet, in only a small proportion of the scientific reports on this subject is the problem of PCDF impurities in PCB's discussed. Obviously, the degree of this contamination is variable with the origin and probably also with other details of the manufacturing processes.

I strongly recommend, therefore, that in all future toxicity studies and for as many past studies as can be documented, precise information on the PCB's used (source, date of manufacture, lot number, and so forth) be recorded. I further recommend that past experiments for which such information is available be reevaluated in view of the strong possibility of the presence of PCDF's and their overriding toxic effects.

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References

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3. J. G. Vos, H. L. Van der Maas, M. C. Ten Noever De Brauw, R. H. De Vos, *Food Cosmet. Toxicol.* **8**, 625 (1970); J. G. Vos, *Environ. Health Perspect.* **1**, 105 (1972).
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