Monsanto

FROM (NAME & LOCATION) W. R. Richard - Research Center

DATE : May 13, 1969

SUBJECT : AROCLOR - ANALYSIS IN PESTICIDE RESIDUES

REFERENCE : (Visit to Prof. G. Widmark U. of Stockholm - May 5, 1969)

TO : File

cc:

| | |
|---|---|
| R. Keller | A-Lab |
| E. Wheeler | EWHEE |
| E. Tucker | Res. 2 |
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| W. Kuhn | WKUHN |
| R. Kountz | RKOUN |
| R. Davis | RDAVI |
| P. Benignus/J. Bryant | PBENI |
| J. Fallon | JFALL |
| Q. Thompson | QTHOM |
| R. Weiss | RWEIS |
| L. Stark | LSTAR |
| J. Springate | JSPRI |
| M. Farrar | Res. 1 |
| W. Waychoff | WWAYC |
| C. Paton | CPATO |
| R. Baxter | RUABON |

Widmark was finding

$Cl_5$ and $Cl_6$ chlorinated biphenyls from extraction of salmon and from extraction of waste sewage sludge.

low $Cl_7$ and $Cl_8$ chlorinated biphenyl

Some $Cl_{10}$ " "

No $Cl_{11}$ and $Cl_{12}$ " "

This corresponds roughly to Clophen 50 or Aroclor 1254.

The isomers found in nature are not the same ratios as in either Aroclor 1254 or Clophen 50.

Widmark has examined 2000 samples from the Baltic Sea. Another group of ecologists is examining the sea around Scotland. Their results are a bit different according to Widmark's knowledge.

Widmark had been in contact with transformer manufacturers in Sweden. They reported very low loss of chlorinated biphenyls, an occasional spill. Widmark kept hitting at marine paints as a source of the product.

He wanted Monsanto to restrict sale to those closed system applications. He asked if the economic value of PCB's was worth the bad publicity which would come to Monsanto.

We countered with a question. What products would he recommend as substitutes? What kinds of synthetic compounds are biologically acceptable? Would he help establish a safe tolerance level of synthetic compounds in wild-life?

PLAINTIFF'S EXHIBIT

# 359 Tucker

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He reported that he had not isolated or found much chlorinated biphenyl with 1 through 4 Cl atoms. This might be because Aroclor 1242 and below is more biodegradable; (or it could be due to the analytical isolation and separation methods; or perhaps Aroclor 1242 is less exposed in the world.)

Widmark is dedicated to better and more accurate analysis. He is in sympathy with most of the ecologists demanding elimination of chlorinated pesticides. His knowledge of scientific evidence and its requirements makes him slightly hesitant in condemning Aroclor itself or demanding its total eclipse.

Keller and Wheeler should have a more complete report.

Widmark reported not finding chlorinated naphthalene, chlorinated paraffin, chlorinated benzene, chlorinated terphenyl. He thought he had identified and accounted for 80% or more of the lipid soluble extractable chlorine containing compounds.

Based on these remarks of Widmark we might consider alternate products and actions.

What is the $Cl_5$ and $Cl_6$ content of Aroclor 1242?

The Aroclor 1242 has 31% dichloro,
53% trichloro
16% tetrachloro

The $Cl_5$ content must be very low in our present material. If Aroclor 1242 is indeed biodegradable we might restrict usage to minimize and control its concentration in nature to acceptable levels.

However, the use of Aroclor 1248, 1254 and 1260 would seem to require further restrictions in exposed systems.

Scott Tucker reported that Aroclor 1242 could be destroyed by $HNO_3/H_2SO_4$ treatment. Widmark may or may not have been destroying Aroclor 1242 before his analysis.

We could also expect that $Cl_{3\emptyset}$ might go undetected based on Widmark's evidence; and apparently chlorinated paraffin and chlorinated terphenyl have so far escaped detection or are absent in the tissues of birds or fish.

Again, Keller and Wheeler should have a more complete report.

WRR.

W. R. Richard

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Aroclor - Biodegradation

RUABON VISIT

I talked with R. Baxter, J. H. Mainprize and R. A. Lidgett at Ruabon. They had reviewed the literature and had received samples of Aroclor from St. Louis, isomers 24', 44', 22'4'4' and Aroclor 1242, 1254, and 1260. We asked that they examine these for microbiological degradation.

R. A. Lidgett said he would have to develop an analytical method. I would hope that collaboration with Scott Tucker on-method or on actual sample analysis could speed this up. We would like some indicat of biodegradability, especially on Aroclor 1242.

WRR

W. R. Richard

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