

Monsanto

MON 891

FROM NAME & LOCATION:

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DATE December 20, 1979
SUBJECT Analysis of Chlorophenols
REFERENCE
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Recently MRC reported analyses for mono- thru octachlorodibenzodioxins in eight lots of PCP, five lots of DCP, and four lots of OCP, all of August-October production. Low but reliably detectable quantities of mono- and dichlorodibenzodioxins (20-60 ppb) were found in several samples. Tri-, tetra-, and pentachlorodibenzodioxins were not reliably detected in any of the samples.

Two DCP lots appears to be contaminated with "penta" residues: octa-, hepta-, and (in one case), hexachlorodibenzodioxins were detected in relative quantities characteristic of "penta". We believe these most probably to result from contamination of the sample and not the product, but of course this cannot be proved. Both lots date from early August, before relocation of the DCP chlorinator; and contamination during sampling is a very plausible happening. Because of this, we should examine DCP produced after relocation to see if this apparent contamination recurs.

Otherwise we seem to be learning little by semi-routine analysis of OCP and PCP production at Dayton. The impurity levels, except for mono-chlorodibenzodioxin, seem to be consistently below their limit of detectability with current procedures. What with the two- to three-month lag between production and analysis, all we get is a warm feeling about production that has long since gone to our customers. I doubt that further analyses of OCP and PCP by this procedure are worth our time and money.

Like DCP, Santophen-1 is another matter. John McPhillips would like to be able to advertise it as "dioxin free". While we can say that current S-1 production contains no detectable tetrachlorodibenzodioxin, we have no analyses of recent production that would say anything about the presence or absence of other isomers. This could be provided by Dayton, if John would be willing to live with the results.

There is one potential problem here, however, o-Benzyl-p-chlorophenol cannot be distinguished from monochlorodibenzodioxin by the mass spectrometer now used for this analysis. An isomer, p-chlorophenyl benzyl ether, forms during the Santophen process. John Hinkebein showed last year that it mostly

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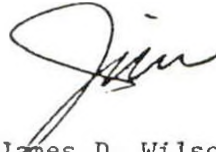
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rearranges to Santophen in the process, but we should assume that at least ppm-levels remain in the product. We cannot assume that it would be separated from monochlorodibenzodioxin in the chromatographic procedures. Thus until it (and its isomer o-chlorophenyl benzyl ether) are synthesized and spiked into the dioxin analysis, we can't be sure what estimations of monochlorodibenzodioxin content mean. Similarly, dichlorophenyl benzyl ether probably interferes with dichlorodibenzo-dioxin determinations. If in McPhillips' opinion it is worth taking a look at current Santophen production to see if we've got the "dioxin" out, in the face of these uncertainties, Krummrich should go ahead and have four or five lots analyzed.



James D. Wilson

JDW/bh

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