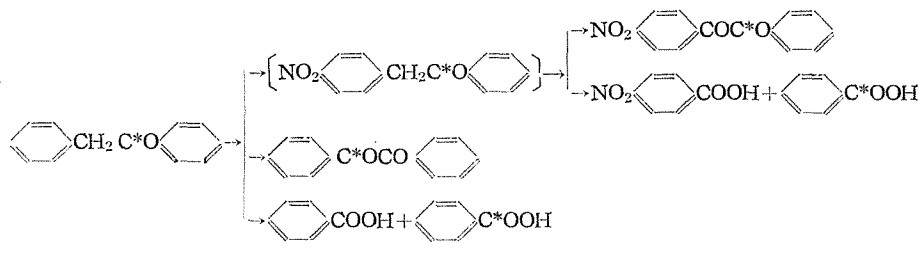


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and inactive *p*-nitrobenzoic acid. A similar oxidation and oxidative disruption prior to the nitration of desoxybenzoin-carbonyl-C<sup>14</sup> also take place and give benzil-carbonyl-C<sup>14</sup>, benzoic acid-carboxyl-C<sup>14</sup> and inactive benzoic acid. The essential reaction routes are shown as follows.



## Studies on Condensation Products of Chlorinated Phenols with Chloral. (I)

### The Structure of Condensation Product of 2,4-Dichlorophenol or 2,4-Dichloroanisole with Chloral

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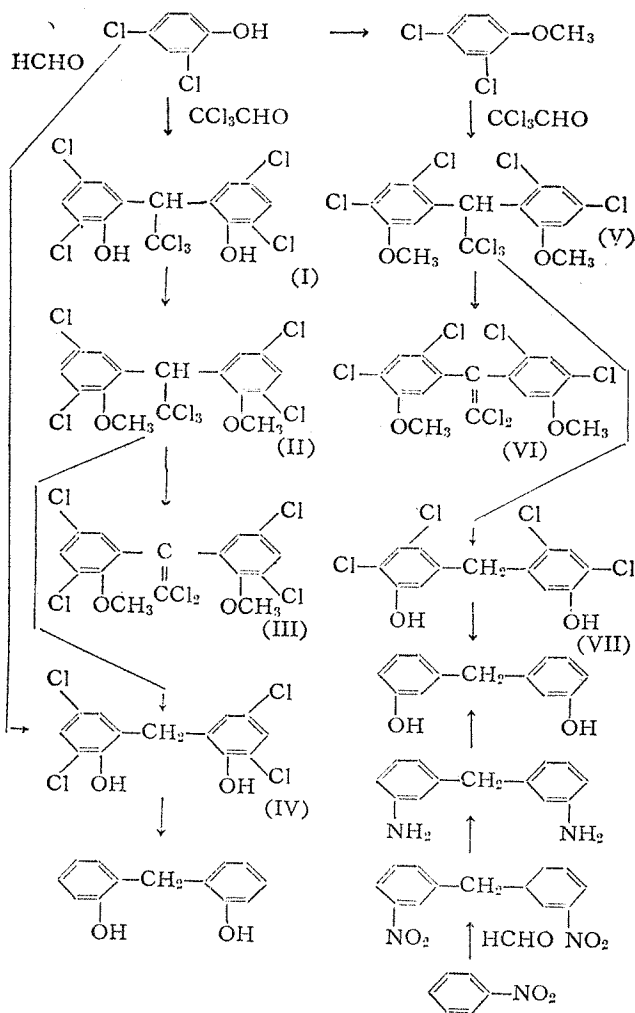
*Scientific Insect Control (Botyu-Kagaku)*, **22**, 231 (1957)

In recent paper, Riemschneider [*J. Am. Chem. Soc.*, **76**, 4853 (1952)] obtained a compound II, 154°, by methylating condensation product (I) of 2,4-dichlorophenol with chloral, and another compound V, mp. 160°, by condensing 2,4-dichloroanisole with chloral. He proposed (1) these two compounds were stereoisomers of 1,1-bis-(2'-methoxy-3',5'-dichlorophenyl)-2, 2, 2-trichloroethane resulting from the restricted rotation of benzene rings, and (2) the dichloroethylene compounds III, mp. 166°, and VI, mp. 157°, obtained by dehydrochlorination of compounds II and V, respectively were also the same type stereoisomers.

This study was undertaken to ascertain the above results and obtained the following conclusion. To a mixture of above 1,1-bis-(x'-methoxy-y', z'-dichlorophenyl)-2, 2, 2-trichloroethane (compound II or V) and diethylene glycol was added a concentrated potassium hydroxide solution, and then the mixture was refluxed at 160-70° for 5 hours. Bis-(x-hydroxy-y, z-dichlorophenyl)-methane (IV), mp. 167.5-68.5°, was obtained from compound II through hydrolysis, decarboxylation and following demethylation. Compound IV was not identical with the corresponding compound VII, mp. 152.5-53.5°, obtained from compound V. Compound IV was also prepared by condensing 3, 4-dichlorophenol with paraformaldehyde. Compound IV was then dechlorinated to bis-(2-hydroxyphenyl)-methane, mp. 117-18°, with sodium in liquid ammonia. From the above, it was confirmed that the structure of compound II is 1,1-bis-(2'-methoxy-3', 5'-dichlorophenyl)-2, 2, 2-trichloroethane which was identical with the structure proposed by Riemschneider.

On the other hand, a compound, mp. 96-97°, which was obtained by the same procedure from compound VII, was identical with bis-(3-hydroxyphenyl)-methane

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derived from bis-(3-nitrophenyl)-methane. So the structure of compound V should be 1,1-bis-(2'-methoxy-4', 6'-dichlorophenyl)-2, 2, 2-trichloroethane, differing from the Riemschneider's proposition.

From these fact, it was concluded that compounds II and V were not stereoisomers, but positional isomers of two benzene rings, and that the corresponding ethylene compounds (III and VI) were also not stereoisomers but positionaleisomers.