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The Study of γ- Radiolysis of 1.2.4-Trichlorobenzene in Methanol Solution

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Abstract : As one of the γ-radiolysis products of hexachlorocyclohexane and hexachlorobenzene, the study of 1.4 g/L concentrated 1,2,4-trichlorobenzene (TCB) in methanol solution has been irradiated at 0-209.3 kGy dose of γ-radiation and the results have been studied via GC-MS. At maximum radiation dose of 209.3 kGy 91.38% of TCB has converted into different organic compounds, such as 1,4-, 1,3- and 1,2- dichlorobenzenes (DCB), chlorobenzene, toluene, benzene and other chlorinated and non-chlorinated compounds. The variation of compounds formed by γ-radiolysis depends on the nature of solvent and radiation dose. One of the frequently identified radiolysis products of TCB in different organic solvents - 1,4-DCB studied quantitatively with external standard. The concentration of DCB increases by increasing absorbed radiation dose to approximately 131.8 kGy, then at higher doses with its conversion into chlorobenzene, it decreases.

Keywords : γ-radiolysis, chlorinated pesticides, radiation dose, dechlorination
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