REACTION OF SCHIFF BASES WITH TRICHLOROACETYLATING AGENTS

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General 3,3-dichloro-2-azetidinone synthesis in good yield has now been realized by a new reaction of Schiff bases with trichloroacetic anhydride. Process of the reaction is characterized by the formation of carbon dioxide and carbon tetrachloride, mechanistically involving chlorine cation extraction from trichloroacetyl group by trichloromethyl anion. By the use of trichloroacetyl chloride the same synthesis has been provided by carrying out the reaction in the presence of triphenylphosphine, where triphenylphosphine acts as chlorine cation-abstracting agent.

With Schiff bases possessing hydrogen at α-carbon reaction of trichloroacetic anhydride is distinguished from the above reaction by the formation of C-trichloroacetyl derivatives. This characteristic C-trichloroacetylation appears to involve a N→C migration of N-acetyl intermediate initially formed, taking account of the fact that the corresponding N-trifluoroacetyl compound, produced as a product in the reaction with trifluoroacetic anhydride, undergoes N→C migration to give C-trifluoroacetyl compound.