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Synthesis and Intramolecular Cyclization of ω -Haloalkyl Dithiophosphorus Acid Esters

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SYNTHESIS AND INTRAMOLECULAR CYCLIZATION OF ω -HALOALKYL DITHIOPHOSPHORUS ACID ESTERS

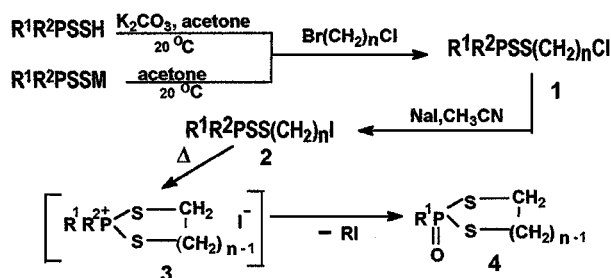
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ω -Haloalkyl dithiophosphorus acid esters undergo the thermal rearrangement resulting in the corresponding 2-oxo-1,3,2-dithiaphosphacyclanes.

Keywords: ω -Haloalkyl dithiophosphorus acid esters; 2-oxo-1,3,2-dithiaphosphacyclanes; phase transfer catalysis

The series of ω -chloroalkylthioly esters of dithiophosphorus acids **1** was synthesized by interaction of unsymmetric α,ω -dihaloalkanes with dithiophosphorus acids under phase transfer catalysis conditions or with the acid salts under homogenous conditions in acetone solution. Then, ω -chloroalkyl esters **1** were transformed to the corresponding



$\text{R}^1 = \text{R}^2 = \text{OEt}, \text{OPr-i}, \text{Ph}; \text{R}^1 = \text{Me}, \text{R}^2 = \text{OEt}, \text{OPr}; n = 2, 3; \text{M} = \text{Na}, \text{K}$

SCHEME 1

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iododerivatives **2** by the exchange reaction with NaI. In the case of alkoxy group at the phosphorus atom, the esters **2** undergo the thermal Pizchimuka-type rearrangement resulting in the corresponding 2-oxo-1,3,2,-dithiaphosphacyclans (Scheme 1).