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The P(III) Thioacid Anhydrides Synthesis, Structure, Reactions

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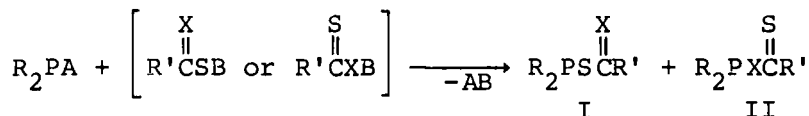
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THE P(III) THIOACID ANHYDRIDES. SYNTHESIS, STRUCTURE, REACTIONS

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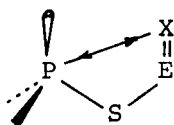
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The acetylthio- and acetimidoylthioderivatives of P(III) acids have been obtained in the reactions of thioacetamide and thioacetic acid, and their derivatives with different P(III) compounds containing groups that are easily detached. As a rule, the reactions proceed with the formation of S-phosphorylated derivatives and only very rarely can the X-phosphorylated compounds be obtained.



The compounds of type I easily enter the nucleophilic substitution reactions to the P-atom with the rupture of the P-S bond and addition reactions to the C=O and C=N unsaturated bonds. While heated or affected, they also rearrange the alkyl- and acylhalides.

The X-ray crystal study has shown these compounds to have an unexpected molecular structure with a short intramolecular contact between the P(III) atom and terminal heteroatom of the acid residue. These distances are by 0.65-0.80 Å shorter than the sum of Van der Waals' radii.



E = C, P
 X = O, S

The nature of this short contact is discussed.