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Interaction of Isocyanates of Dialkyl- and Alkylen-Phosphorous Acids with C,N-Disubstituted Nitrilimines

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INTERACTION OF ISOCYANATES OF DIALKYL- AND ALKYLEN-PHOSPHOROUS ACIDS WITH C,N-DISUBSTITUTED NITRILIMINES

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It was found that isocyanates of dialkyl- and alkylen-phosphorous acids react with nitrilimines forming phosphorous containing heterocycles of different structure. In case of isocyanates of dimethyl- and diethylphosphorous acids the bipolar ion, which was formed at the first stage, either cycles with the following migration of alkyl radical towards the nitrogen atom (A), or regroups into a product of phosphailide structure, which adds one more molecule of nitrilimine to N=C -link. Pseudophosphonium salt, which is formed, is converted later during Arbuzov's regrouping into oxyilid (B).

$$(RO)_{2}P-N=C=0 + R_{1}-C(C1)=N-NH-C_{6}H_{5} \xrightarrow{(C_{2}H_{5})_{3}N} \xrightarrow{-(C_{2}H_{5})_{3}N \cdot HC1}$$

$$RO \qquad N=C=0 \qquad RO \qquad RO \qquad N-C_{6}H_{5} \xrightarrow{R_{1}} \xrightarrow{R_{1}-t=N-N-C_{6}H_{5}} \xrightarrow{R_{1}} \xrightarrow{R_{1}-t=N-N-C_{6}H_{5}} \xrightarrow{R_{1}-t=N-N-C_{6}H_$$

Isocyanate of ethyleneglycolphosphorous acid interacts with C,N-diphenylnitrilimine along A pathway the methylene group migrating from oxygen atom towards nitrogen atom.