N,N-DIALKOXYUREAS AND NH-DIALKOXYAMINES

V. F. Rudchenko, V. I. Shevchenko,
S. M. Ignatov, and R. G. Kostyanovskii

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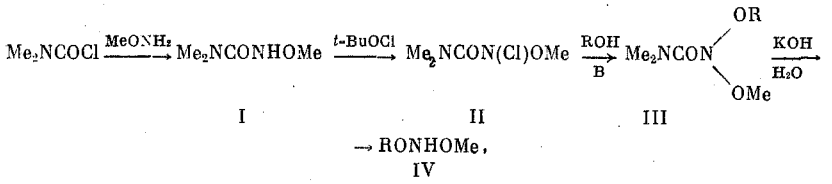
For the first time we have obtained N,N-dialkoxyureas (III) and NH-dialkoxyamines (IV), particularly the simplest representative dimethoxyamine (IVa) (Table 1):



where B = RONa or 2,4,6-trimethylpyridine, and R = Me (a), Et (b), and i-Bu (c).

It was found that in II, as in N-chloro-N-alkoxy-N-tert-alkylamines [1, 2], nucleophilic substitution of the Cl on the N takes place smoothly. This is achieved by lowering the electron-acceptor effect of Me_2NCO with respect to N(Cl)OMe owing to the competitive, stronger amide conjugation. An increase in the electron-acceptor activity of the ROCO group causes the homolysis of the N–Cl bond to occur in N-chloro-N-alkoxyurethylanes when they are reacted with alcohols owing to the captodative stabilization of the aminyl radical [3]. N-Chloro-N-alkylamides, as we know, are chlorinating reagents owing to the effective stabilization of the N-anion by the electron-acceptor RCO group.

The structure of I-IV was confirmed by spectral data (see Table 1) and elemental analysis.

TABLE 1

Compound	Yield, %	Bp, °C (p, mm Hg)	PMR spectrum (60 MHz, in CCl_4 relative to HMDS; δ, ppm, J, Hz)		
			Me_2N	MeO	other groups
(I)	81,3	91–92(1)	2,85	3,56	8,35 (NH)
(II)	~100	–	2,99	3,79	–
(IIIa)	84,5	61(1)	2,85	3,53	–
(IIIb)	59,7	75(2)	2,93	3,57	1,20, 3,86 (Et, J=6,8)
(IIIc)	50,7	97–98(2)	2,88	3,54	0,91 ($\underline{Me_2}CH$, J=6,8), 1,8 (CH), 3,57 ($\underline{CH_2}CH$, J=6)
(IVa)	61,5	83,5(760)	–	3,59	7,74 (NH)
(IVb)	41,7	95–97(760)	–	3,54	1,15, 3,79 (Et, J=6,8), 7,63(NH)
(IVc)	44,4	95(160)	–	3,57	0,9 ($\underline{Me_2}CH$, J=6,8), 1,86 (CH), 3,61 ($\underline{CH_2}CH$, J=6), 7,67 (NH)

LITERATURE CITED

1. V. F. Rudchenko, I. I. Chervin, and R. G. Kostyanovskii, Izv. Akad. Nauk SSSR, Ser. Khim., 924 (1979).
2. R. G. Kostyanovskii (Kostyanovsky), V. F. Rudchenko, V. G. Shtamburg, I. I. Chervin, and Sh. S. Nasibov, Tetrahedron, 37, 4245 (1981).
3. V. G. Shtamburg, V. F. Rudchenko, Sh. S. Nasibov, I. I. Chervin, and R. G. Kostyanovskii, Izv. Akad. Nauk SSSR, Ser. Khim., 449 (1981).

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