

SHORT  
COMMUNICATIONS

## Synthesis of *N*-(2,2-Dichloroethylidene)trifluoromethanesulfonamide

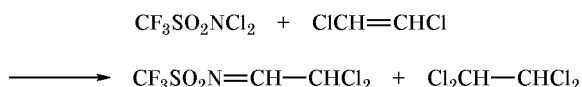
I. B. Rozentsveig, E. V. Kondrashov, G. G. Levkovskaya, and A. N. Mirskova

*Favorskii Irkutsk Institute of Chemistry, Siberian Division, Russian Academy of Sciences,  
ul. Favorskogo 1, Irkutsk, 664033 Russia  
e-mail: i\_roz@irioch.irk.ru*

Received December 20, 2000

We previously showed [1, 2] that reactions of *N,N*-dichloroarenesulfonamides with 1,2-dichloroethylene under conditions of thermal, chemical, or photochemical initiation lead to formation of mixtures of *N*-(2,2-dichloroethylidene)arenesulfonamides, 1,1-bis(arylsulfonylamino)-2,2-dichloroethanes, and *N*-(2,2,2-trichloroethylidene)arenesulfonamides; the yield of the latter products can attain 30%.

We now report for the first time on the reaction of *N,N*-dichlorotrifluoromethanesulfonamide with 1,2-dichloroethylene, which selectively yields *N*-(2,2-dichloroethylidene)trifluoromethanesulfonamide with no impurity of trichloroethyl derivative. The reaction does not require additional thermal initiation; it occurs in excess 1,2-dichloroethylene and is accompanied by heat evolution. The reaction time is 5 h in the sunlight or 1 h under UV irradiation. The chlorine released from *N,N*-dichlorotrifluoromethanesulfonamide adds to 1,2-dichloroethylene, yielding tetrachloroethane.



Thus the reaction of *N,N*-dichlorotrifluoromethanesulfonamide with 1,2-dichloroethylene provides an efficient route to highly reactive intermediate product which is used in the synthesis of compounds having a trifluoromethanesulfonamide group as promising medicinals, dyes, insectoacaricides, etc.

***N*-(2,2-Dichloroethylidene)trifluoromethanesulfonamide.** *N,N*-Dichlorotrifluoromethanesulfonamide, 2.18 g (0.01 mol) (prepared by the procedure reported in [3]), was dissolved in 7.7 ml (0.1 mol) of 1,2-dichloroethylene, and the solution was purged with argon for 0.5 h. The mixture was kept in the sunlight (5 h) or under UV irradiation (ORK-21 lamp, 0.5 h) until it no longer warmed up, and excess 1,2-dichloroethylene was removed under reduced pressure without heating. The residue was 3.98 g of a mixture of *N*-(2,2-dichloroethylidene)trifluoromethanesulfonamide and 1,1,2,2-tetrachloroethane. <sup>1</sup>H NMR spectrum (Bruker DPX-400, CDCl<sub>3</sub>, HMDS), δ, ppm: 8.57 d (CH=N), 6.24 d (CHCl<sub>2</sub>), *J* = 6.4 Hz; 5.95 s (Cl<sub>2</sub>HCCHCl<sub>2</sub>). IR spectrum, (Specord IR75, thin film), ν, cm<sup>-1</sup>: 1150, 1200, 1240, 1360 (SF<sub>3</sub>SO<sub>2</sub>), 1660 (C=N), 3095 (C-H).

### REFERENCES

1. Mirskova, A.N., Drozdova, T.I., Levkovskaya, G.G., Kalikhman, I.D., and Voronkov, M.G., *Zh. Org. Khim.*, 1987, vol. 23, no. 6, pp. 1248–1255.
2. Rozentsveig, I.B., Evstaf'eva, I.T., Levkovskaya, G.G., Mirskova, A.H., and Albanov, A.I., *Russ. J. Org. Chem.*, 2000, vol. 36, no. 6, pp. 813–815.
3. Nazaretyan, V.P., Radchenko, O.A., and Yagupol'skii, L.M., *Zh. Org. Khim.*, 1974, vol. 10, no. 11, p. 2460.