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Interactive Comment

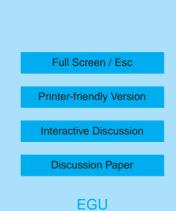
Interactive comment on "The atmospheric chemistry of sulphuryl fluoride, SO_2F_2 " by T. J. Dillon et al.

Anonymous Referee #2

Received and published: 16 November 2007

General comments

This paper reports a quite extensive study of the atmospheric chemistry of sulfuryl fluoride which is a widely used fumigant. The atmospheric implications of this study indicate that this compound has no significant loss process in the troposphere and a very long lifetime in the stratosphere, and it has a significant global warming potential. These conclusions are based on laboratory studies of reaction kinetics and infra-red spectroscopy for this compound. The reactions investigated are those with O(1D), OH, O3, and onto aqueous surfaces. The rate coefficient for the reactive loss of O(1D) reaction was determined while only upper limits were obtained for the reaction rate coefficient with OH and O3 and for the uptake coefficient onto aqueous surfaces. These results have been obtained using three outstanding experimental methods (PLP-LIF/RF,



relative rate method with FTIR analysis and wetted-wall flow tube). The work has been carefully executed and the analysis of the results is appropriate and clearly described.

Specific comments

p. 15226: reaction of O(1D) with SO2F2: although no sulphur containing products could be identified it might be interesting to speculate on some possible products and their formation mechanisms.

p. 15227: reaction OH + SO2F2: the impurities of the SO2F2 sample (up to 1%) could account for the reactivity observed. Was it not possible to have some indication about the nature and concentration of the impurities?

Technical corrections:

p. 15225: 590 cm-1 instead of 590 nm.

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 15213, 2007.

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