Atmospheric Chemistry of Halogenated Propenes

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FTIR-smog chamber techniques were used to study the kinetics, products and mechanisms of the Cl atom and OH radical initiated oxidation of a number of halogenated propenes in 700 Torr of air or N_2/O_2 diluent at 296 ± 2 K. The reactions of Cl atoms and OH radicals with halogenated propenes occur via addition to the C=C double bond. Reaction with OH radicals is the major atmospheric sink for halogenated propenes. Infrared spectra, radiative efficiencies, and global warming potentials of the halogenated propenes are reported. The contribution of halogenated propenes to radiative forcing of climate change and to local air pollution is negligible. The results are discussed with respect to the atmospheric chemistry and environmental impact of halogenated alkenes.