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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Kinetic study of the gas-phase reaction of atomic chlorine with a series of aldehydes" *by* D. Rodríguez et al.

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(Referee 1)

....Also, as commented by Referee 3, our obtained constants for n-hexanal and n-heptanal (in cm3 molecule-1 s-1) (2.88 's 0.37) x 10-10 and (3.00 's 0.34) x 10-10 respectively, agree within the combined error limits with the constants reported by Plagens (PhD thesis, 2001), (3.23 's 0.15) x 10-10 and (3.53 's 0.10) x 10-10 (in cm3 molecule-1 s-1), respectively.

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- Page 5174, line 1: “of the decreaseEˇ ” is replaced by “for the decreaseEˇ ”.

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- On the subject of checks for possible interferencesEˇ : Concerning the photo-induced isomerisation to the corresponding cis isomer, in the “text experiments” to quantify losses of the trans isomer due to photolysis in the absence of Cl atoms, we did not observe a decay in the signal of the reactant nor the formation of new peaks which could correspond to the cis isomer. The reason for the discrepancy with the results found by Plagens may be due to the differences in the irradiation conditions. In our experimental conditions, the mixture in the smog chamber is exposed to irradiation from fluorescent lamps (Philips TL/05, 20W) with a maximum at lmax=370 nm to phptolyse Cl2. In the experiments conducted by Plagens, solar irradiation is used. Under such conditions the intensity of radiation in the range 300-330nm (where the aldehydes absorption cross sections are significant) is much higher and may so induce measurable rates of isomerisation. Following the suggestion of the Referee, we have introduced a new paragraph recognizing the role of photolysis: In the introduction. Line 21: ˇE (Prates et al 1998). In relation to the tropospheric sinks, carbonyl compounds generally show a weak absorption spectrum in the region 220-370 nm resulting from a dipole forbidden n - * transition which may lead to photo-dissociation, generating organic free radicals in the lower troposphere. In the discussion: Eˇ (Noxon, 1983)

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Interactive Comment

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Interactive comment on Atmos. Chem. Phys. Discuss., 5, 5167, 2005.