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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Atmospheric hydrogen peroxide and organic hydroperoxides during PRIDE-PRD'06, China: their concentration, formation mechanism and contribution to secondary aerosols" *by* W. Hua et al.

Anonymous Referee #1

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General Comments This is a useful and interesting article that investigates the factors influencing the formation and destruction of H2O2 and organic hydroperoxides in southern China. It was particularly interesting to read about the role of hydroperoxides in the formation of secondary sulphate and organic aerosol. There are quite a few areas of the article that are overly descriptive of the chemistry and there are sections that should be written more succinctly. The article is within the scope of ACP but needs rewriting in order to clearly describe the experimental site and meteorological conditions and to articulate the results obtained and the subsequent interpretation.

Specific Comments Introduction This section could be significantly reduced. Concentration ranges could be included within directly relevant sections of the article.

Measurement site It is difficult to appreciate the geographical setting and the typical meteorology encountered at the measurement site to be able to set the results in context (amounts to only 5 lines at the beginning of this section) and this could be much more descriptive.

Measurement method for hydroperoxides More detail needs to be given about the location of the sampling inlet (presently states from the uppermost room of a three story building). Was this surrounded by other buildings such that air could not freely circulate or was it in a much more confined location? A map of the measurement site might assist. Was the sample line cleaned in advance in order to minimise loss to the walls? No mention of any line loss experiments, were these carried out? Collection efficiency determined at 10˚C, was this the temperature at which the stripping coil was cooled to during the sampling period? If not, have collection efficiencies been carried out at the ambient sampling temperature? Were synthesised standards purified in order to determine concentration of hydroperoxides? There is no discussion of any experiments that have been carried out to determine artefact production of peroxides within the sampling set-up.

Results and discussion It is interesting the sampling has been conducted under a range of conditions, but the results are presented in a sometimes confusing way, switching between conditions, leading to some repetition and some contradiction between sections. This should be considered carefully and sections written more clearly to make the article flow more easily. It is interesting that MHP is detected in the rainwater samples.

10493 and throughout - It is encouraging to see that several hydroperoxides were observed in samples but I think a little more discussion of these could be included, rather than focussing on H2O2 and MHP.

ACPD

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10496 – toluene / benzene ratio mentioned but not given.

Many of the equations and descriptions of previous studies in certain sections can be significantly reduced / condensed if not deleted (ie sections 3.2.1, 3.4, 3.5 and 3.6)

Technical Corrections No technical corrections to be made.

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 10481, 2008.

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Interactive Comment