

Interactive comment on “Impact of the regional climate and substance properties on the fate and atmospheric long-range transport of persistent organic pollutants – examples of DDT and γ -HCH” by V. S. Semeena et al.

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Received and published: 17 January 2006

1. Ocean module: we agree that oceanic transports, neglected in the model experiments, would change the tracer distributions in the ocean mixed surface layer. Typical sea current velocities could in principle explain regional to global transport of a water soluble substance within a decade. The significance of oceanic currents for the large-scale cycling of HCH is under study using a 3D ocean module. The parameterisation of air/sea exchange is the commonly accepted one. 2. Air/soil exchange: Organochlorine pesticides remain in the uppermost centimeters of the soil for many years. The param-

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eterisation of air/soil exchange used implies a 1 layer soil model with thermodynamic equilibrium in the multi-phase soil system (air, water, organic phase) and subsequent volatilisation. The volatilisation rate is derived from a fit to observations (numerous field and greenhouse experiments with numerous substances) and a function of the substance fraction in the soil pore space, hence, of temperature, soil wetness, field capacity, substance solubilities (in water and organic phase) and vapour pressure. The consideration of vertical mass transport in the soil in a multi-layer soil model could improve the performance of the parametersiation. However, so far no evaluation of air/soil exchange parameterisations in large-scale models had been performed for organic substances to our knowledge. 3. Comparison with observations: We agree and will accordingly express in the revised version. Model experiments under more realistic emission/substance usage scenarios are in preparation. 4. We agree.

Interactive comment on Atmos. Chem. Phys. Discuss., 5, 12569, 2005.

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