

Comment on “Dependence of persistence and long-range transport potential on gas-particle partitioning in multimedia models”

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In their article, Gotz et al. [1] use three different multimedia contaminant fate models to analyze the impact of implementing a two-particle-size polyparameter linear free energy relationship (ppLFER) approach on metrics of persistence and long-range transport, and on calculated concentrations of semivolatile organic chemicals in the Arctic. One of the twelve compounds investigated is 2,4-D (2,4-dichlorophenoxyacetic acid), which has a pK_a of between 2.6 and 3.3 [2] and is effectively entirely dissociated in aqueous systems (and non-volatile as the dissociated anion). Gotz et al. [1] do not appear to have considered the ionization of 2,4-D during their multimedia modeling exercises, particularly the effects of ionization on octanol-water and air-water partitioning behavior. Consequently, all modeling results presented for 2,4-D in ref. [1] appear to be in significant error and should not be employed for risk assessment purposes.

References

- [1] C. Gotz, M. Scheringer, M. Macleod, F. Wegmann, U. Schenker, K. Hungerbuhler, Dependence of persistence and long-range transport potential on gas-particle partitioning in multimedia models, *Environmental Science and Technology* 42 (2008) 3690–3696.
- [2] Environmental Health Criteria 84: 2,4-Dichlorophenoxyacetic acid (2,4-D) - Environmental Aspects, International Programme on Chemical Safety, World Health Organization: Geneva, Switzerland, 1989.

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