XVIII International Conference on Water Resources
CMWR 2010
J. Carrera (Ed)
CIMNE, Barcelona 2010

ASSESSING THE FATE OF PESTICIDES IN GROUNDWATER BY COMBINING BATCH AND SOIL COLUMN EXPERIMENTS WITH NUMERICAL MODELING

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Key words: non-equilibrium sorption, two-site model, inverse modeling, solute transport, two-region model, pesticide migration

Abstract. The risk assessment of groundwater pollution by pesticides may be based on pesticide sorption and biodegradation kinetic parameters that may be estimated with inverse modeling of datasets from either batch or continuous flow soil column experiments. In the present work, a chemical non-equilibrium and non-linear 2-site sorption model is incorporated into solute transport models to invert the datasets of batch and soil column experiments, and estimate the kinetic sorption parameters for two pesticides: N- phosphonomethyl glycine (glyphosate) and 2,4-dichlorophenoxy-acetic acid (2,4-D). When coupling the 2-site sorption model with the 2-region transport model, except of the kinetic sorption parameters, the soil column datasets enable us to estimate the mass-transfer coefficients associated with solute diffusion between mobile and immobile region.