
Journal of Environmental Hydrology

ISSN 1058-3912

Electronic journal of the International Association for Environmental Hydrology

On the World Wide Web at <http://www.hydroweb.com>

JEH VOLUME 5 (1997) PAPER 3

Posted May 6, 1997

EQUILIBRIA IN SUBSURFACE FLUIDS WITH LINEAR INTERACTION BETWEEN DECAY AND SORPTION

Ekkehard Holzbecher

Institute of Freshwater and Fish Ecology
Berlin, Germany

ABSTRACT

There are many situations in groundwater transport where sorption processes act at the same time. Equilibria of components in a decay chain, which are known for a single phase system, may remain valid in a multi-phase environment - but under certain circumstances only: the conditions are noted below. Analytical solutions are given for systems in which the single process idealization is not valid. Solutions are derived for cases of the coupled regime (1) of phase-dependent first order decay or degradation and (2) of linear phase exchange. In the description of two-phase equilibria, R-factors as a generalization of retardation factors are introduced. A mathematical relationship is derived between R-factors, decay-constants and concentration equilibria. For radionuclides, this allows the determination of retardation ratios from measured concentration ratios.

Reference: Holzbecher, E.; *Equilibria in Subsurface Fluids With Linear Interaction Between Decay and Sorption*, Journal of Environmental Hydrology, Vol. 5, Paper3, May 1997.

CONTACT:

Ekkehard Holzbecher
Institute of Freshwater and Fish Ecology
Rudower Chaussee 6A, Haus 21.2
12484 Berlin
Germany

[E-mail: holzbecher@igb-berlin.de](mailto:holzbecher@igb-berlin.de)

[HOME](#)