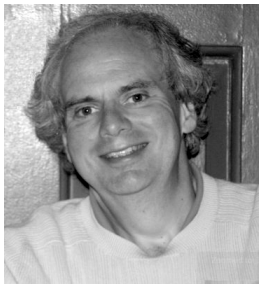
CHEMICALS AND SOILS: INTERACTIONS AND TRANSPORT



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Abstract

Phosphate, nitrate, zinc, glyphosate, polycyclic aromatic hydrocarbons, water, and a myriad of other chemicals all interact with solid surfaces as they are transported through and over the soil by the movement of water. The mechanisms by and extents to which these interactions occur are chemical specific. Some chemicals have strong soil interactions and move relatively slowly through the soil column, whereas others have weak interactions and can move much more quickly. Many chemicals are of water-quality concern in both urban and agricultural areas. The water-induced transport of some of these chemicals has been well studied in agricultural areas and some of this understanding can be applied directly to urban areas. This is possible because many of the basic water flow paths are similar between agricultural and urban areas such as infiltration to groundwater, overland surface flow, and engineered drainage. An overview of the interactions between general classes of chemicals and soils will be presented with pertinent case studies from both urban and agricultural settings.

Biography

Paul Capel is Team Leader for the USGS National Water-Quality Assessment (NAWQA) program study on agricultural chemicals. His other USGS projects include work with the Office of Water Quality and the National Pesticide Synthesis Team. Paul has co-authored over fifty papers and three books on the fate and transport of organic chemicals in surface water, ground water and the atmosphere. He received his Ph.D. from the University of Minnesota in 1986. He serves as adjunct associate professor of water chemistry in the University of Minnesota's Department of Civil Engineering.