

**PHYSICAL MODEL EXPERIMENTS AND SIMULATIONS OF RELEASES
OF ETHANOL BLENDED FUELS IN A SATURATED AQUIFER**

William G. Rixey*

Yi Zhang

University of Houston
Dept. of Civil & Environmental Engineering
4800 Calhoun Road
Houston, TX 77204-4003
713-743-4279
wrixey@uh.edu

Jie Ma

Pedro J.J. Alvarez

Rice University
Houston, TX

Two-dimensional laboratory-scale experiments were conducted to characterize phase separation, NAPL mobilization, and redistribution as well as ethanol transport resulting from spills of ethanol-blended fuels. Fixed volume spills of varying ethanol fuel composition (E15, E25, E50 and E85) were released in a 2-D saturated aquifer. A multiphase, multicomponent numerical model, UTCHEM, was used to quantitatively evaluate the impact of physical-chemical properties that influence fluid-phase transport in porous media. The numerical simulations compared well with the physical model experiments for the various ethanol-blended fuels. It was also observed that variations in the size, shape, and saturation of the residual NAPL source remaining after the release of the fuel blends impacted the dissolution rates of the hydrocarbon remaining in the NAPL.

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