Squillace, P.J., and Thurman, E.M., 1992, Herbicide transport in rivers: Importance of hydrology and geochemistry in nonpoint-source contamination: Environmental Science and Technology, March 1992, pp. 538-545, by the American Chemical Society.

Abstract: Alachlor, atrazine, cyanazine, metolachlor, and metribuzin were measured at six sites during 1984 and 1985 in large subbasins within the Cedar River, IA. A computer model separated the Cedar River discharge hydrograph into groundwater and overland-flow components. The concentration of herbicides in the river when groundwater was the major flow component was less than 1.0 µg/L and averaged 0.2 µg/L. The maximum concentrations of herbicides occurred when overland flow was the major component of river discharge, exceeding 50 µg/L for total herbicides. About 6% of the annual river load of atrazine was transported with the groundwater component, while 94% was transported with overland flow. From 1.5 to 5% of the atrazine applied during the year was transported from the basin. Atrazine concentrations in the river increased according to the discharge divided by the drainage area. This correlation indicates that rivers with large normalized 2-year peak flow have the potential to transport large concentrations of herbicides. A diagrammatic model of nonpoint-source transport of herbicides was developed that suggest that sorbed transport from fields occurs during episodes of overland flow with rapid dissolution of herbicides downstream.