The Role of Suspended Sediments in the Transport of Atrazine in Mammoth Cave, Kentucky

Michael S. Anderson
Hoffman Environmental Research Institute
Western Kentucky University

Joseph Meiman
Mammoth Cave National Park

Abstract

Atrazine is a triazine herbicide used to control broad-leaf weeds and grasses in corn and other agricultural products, and is one of the most commonly applied herbicides in the United States. Atrazine has been assessed by the Environmental Protection Agency as a potential carcinogen and endocrine disrupter, and so may pose a threat to human or animal life. One of the characteristics of atrazine is that it can bond to sediments via adsorption, which prevents it from reaching the groundwater in typical diffuse flow aquifers. Due to the highly developed karst landscape of the Mammoth Cave area, however, there is extensive interaction between surface and sub-surface environments, including the transport of sediments from the surface into the karst aquifer. This study examines the role of sediments in the transport of atrazine into the Hawkins River during a spring storm event. The Patoka Creek sub-basin, which is drained by the Hawkins River, is approximately 71 square miles and has a substantial amount of agricultural activity, including the cultivation of corn. Initial results show that while little atrazine was found in the water, higher concentrations were found on the sediments collected. These findings indicate that sediments can be a factor in transporting atrazine into the cave environment.