



WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: MN1041

Title: Antibiotic Losses in Runoff and Drainage from Manure-Applied Fields

Focus Categories: Agriculture, Water Quality

Keywords: Surface Runoff, Tile Drainage, Tillage, Sediment, Antibiotics, Manure

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Federal Funds: \$105,804

Non-Federal Matching Funds: \$131,380

Congressional District: 4th

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Abstract

Since their discovery, antibiotics have been instrumental in treating infectious diseases that were previously known to kill humans and animals. However, their widespread use as additive in animal feed has raised major concern about the development of antibiotic-resistant microorganisms. Also, increasingly more microorganisms are becoming resistant to multiple antibiotics. A high proportion of the antibiotics added to animal feed are excreted in urine or feces. In some cases, as much as 80% of the antibiotic administered orally may pass through the animal unchanged (Levy, 1992). Once excreted in urine and feces, these antibiotics can enter surface and/or ground waters through non-point pollution from manure-applied lands. The goal of this study is to determine whether or not there are losses of any antibiotics from swine manure application either in surface runoff or through subsurface drainage. We also propose to quantify (1) the degree of antibiotic adsorption from manure both in batch and flow through studies on a major soil in the Minnesota River Basin, and (2) the degree of antibiotic degradation at lower temperatures.