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**TIME SERIES ANALYSIS OF NEBRASKA DAILY RAINFALL DATA TO SIMULATE ATRAZINE RUNOFF**

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**ABSTRACT:** Measured atrazine concentrations in Nebraska surface water have been shown to exceed water quality standards, posing risks to humans and to the ecosystem. To assess this risk, atrazine runoff was simulated at the field-scale in Nebraska based on the pesticide component of the AGNPS model. This project's objective was to determine the frequency that the atrazine concentration at the field scale outlet exceeded three different atrazine water quality criteria. The simulation was conducted for different farm management practices, soil moisture conditions, and five Nebraska topographic regions. If the criteria were exceeded, a risk to the drinking water consumer or freshwater aquatic life was hypothesized to exist. Three pesticide fate and transport processes were simulated with the model. Degradation was simulated using first order kinetics. Adsorption/desorption was modeled assuming a linear soil-water partitioning coefficient. Advection (runoff) was based primarily on the USDA-NRCS curve number method. Daily rainfall from the National Weather Service was used to compute the soil moisture conditions for the 1985 to 2000 growing seasons. After each runoff event, the pesticide runoff concentration was compared to each of the three atrazine water quality criteria. The results show that environmental receptors (i.e., freshwater aquatic species) are exposed to unacceptable atrazine concentrations in 20 to 50 percent of the runoff events.

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