

**STREAMBANK EROSION AND RISK ASSESSMENT OF CONTAMINANT
TRANSPORT IN MISSOURI WATERSHEDS**

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ABSTRACT

Sedimentation and herbicide contamination are significant water quality concerns in claypan watersheds. Two separate watershed-scale studies were conducted in the Central Claypan Region of northeastern Missouri. One project investigated the effects of season, land use, and stream order on streambank erosion rates within Crooked and Otter Creek watersheds. Season was found to be the most significant factor controlling bank erosion rates, while the land use and stream order effects were not significant. At the watershed scale, streambanks contributed about 60% of the in-stream sediment. The second project involved the development of an index-based model for predicting the risk of herbicide transport in Young's Creek watershed, using soil, landscape, hydrologic, and herbicide properties. Application of a restrictive clay layer criterion was crucial for assessing risk between hydrologic pathways in claypan soils. The model correctly identified differences in risk for different soil types, distinguishing between claypan and alluvial soils, as well as among claypan soils. Among the four herbicides tested, the model was sensitive to differences in sorption intensity and dissipation half-life. The index model approach allows for watershed-scale quantification of herbicide transport risk over both time and space. It is potentially useful as a management tool for targeting best management practices to the most vulnerable areas within watersheds.