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**Seasonal Variations of Pesticide Concentrations During Storm Events in
Little Topashaw Creek.**

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Little Topashaw Creek is a highly degraded stream located in a region of intensive agricultural practice in the north Mississippi loess hills. Because of this, the potential for pesticide-containing runoff entering the creek during rainfall events is significant. The purpose of the present study was to examine seasonal patterns in concentrations of 12 current-use pesticides, two historic-use pesticides and 3 metabolites during 2000-2001. Results indicate pesticide concentrations fluctuated seasonally and were associated with discharge, suspended solids concentrations and seasonal pesticide applications. Peaks in herbicide concentrations closely coincided with runoff following applications during April and May 2001. Peak insecticide concentrations were associated with runoff following applications in May and again in July 2001. Peak concentrations in historic use pesticide concentrations (pp' DDT, dieldrin) and metabolites (pp' DDD, pp' DDE) were associated with increases in discharge and suspended solids concentrations during May and June 2001. Most pesticide concentrations measured during high flow decreased during fall and showed only trace amounts during winter. A combination of factors, including magnitude of storm event (measured as discharge), seasonality and farming practices influence pesticide and associated metabolite concentrations observed within Little Topashaw Creek during storm events.