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TRANSPORT OF AGRICHEMICALS BY WIND ERODED SEDIMENTS TO NONTARGET AREAS

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ABSTRACT

Water and wind erosion are the primary mechanisms by which surface soil is removed from agricultural fields. Wind erosion accounts for as much or more soil loss (tons/acre/year) than does water erosion. Sediments moved by wind may carry agrichemicals from agricultural fields to nontarget areas. Nontarget areas may include road ditches, shelterbelts, and waterways. The objective of this study was to determine if agrichemical movement via wind blown sediment is a potential pollutant of surface and/or groundwater. Samples of sediment that had been deposited in ditches on top of snow were collected during winters of 1994 and 1995 near or around Brookings, SD. Soil samples from adjacent fields (top 1 inch) were also collected. Soil and sediment samples were extracted and alachlor, atrazine, and atrazine metabolites, desethylatrazine and desisopropylatrazine were quantified. Alachlor was detected in about 30% of soil and sediment samples in both years with an average concentration of 2.2 ppb in soil and 5.44 ppb in sediment in 1995. In 1994, atrazine, desethylatrazine, and desisopropylatrazine were detected in 70%, 100%, and 50% of the sediment samples and 70%, 90%, and 60% of the soil samples, respectively. In 1995, atrazine, desethylatrazine, and desisopropylatrazine were detected in 73%, 27%, and 9% of the sediment samples at average concentrations of 8.9, 0.89, and 56.4 ppb, respectively. Atrazine, desethylatrazine, and desisopropylatrazine were detected in 70%, 40%, and 10% of the soil samples in 1995 at average concentrations of 11.9, 2.0, and 0.9 ppb, respectively. Herbicides were detected in most of the sediment samples. This suggests that wind erosion may be a transport mechanism by which herbicides are deposited into nontarget areas.