

Seasonal Variation of Atmospheric Deposition of Trace Metal in Urban Central New York

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Little is known about atmospheric deposition in urban settings. A study was conducted to examine the deposition of trace metal in urban Syracuse, NY at the Syracuse Center of Excellence. Concentrations of 10 trace metals (Al, Mn, Cu, Zn, As, Sr, Pb, Se, Cr, Cd) were analyzed in wet and bulk precipitation collected after every significant rainfall (greater than 2.54 mm) from 3/9/11 to 3/7/13. We evaluated seasonal patterns of trace metal deposition and calculated annual fluxes. Concentrations of several of the trace metals varied between the summer (April-September) and the winter (October-March). Lead, zinc, arsenic, strontium and manganese exhibited high concentrations in the winter, followed by low concentrations during the summer. Possible mechanisms for this pattern include fossil fuel combustion in the winter, as well as the salting of major highways which run near the sampling site. In contrast, copper and aluminum concentrations were high in the summer and very low in the winter. Possible mechanisms for this pattern include increased road dust, and construction activities. The Department of Environmental Conservation analyzes trace metals at Morrisania (South Bronx) and Rochester, NY. The seasonal patterns of nickel, arsenic, lead and manganese from these two DEC sites follow similar patterns to Syracuse, NY.

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