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Contribution of trace metals from atmospheric deposition to stormwater runoff in a small impervious urban catchment

Lisa D. Sabin, Jeong Hee Lim¹, Keith D. Stolzenbach¹ and Kenneth C. Schiff

¹University of California, Department of Civil and Environmental Engineering, Los Angeles, CA

ABSTRACT

The contribution of atmospheric deposition to emissions of trace metals in stormwater runoff was investigated by quantifying wet and dry deposition fluxes and stormwater discharges within a small, highly impervious urban catchment in Los Angeles. At the beginning of the dry season in spring 2003, dry deposition measurements of chromium, copper, lead, nickel, and zinc were made monthly for one year. Stormwater runoff and wet deposition samples also were collected, and loading estimates of total annual deposition (wet + dry) were compared with annual stormwater loads. Wet deposition contributed 1% to 10% of the total deposition inside the catchment, indicating the dominance of dry deposition in semi-arid regions such as Los Angeles. Based on the ratio of total deposition to stormwater, atmospheric deposition potentially accounted for as much as 57% to 100% of the total trace metal loads in stormwater within the study area. Despite potential bias attributable to processes that were not quantified in this study (e.g., resuspension out of the catchment or sequestration within the catchment), these results demonstrate atmospheric deposition represents an important source of trace metals in stormwater to waterbodies near urban centers.

Full Text

ftp://ftp.sccwrp.org/pub/download/DOCUMENTS/AnnualReports/2005_06AnnualReport/AR0506_067-76.pdf