



Soil contamination in an urban area through rainfall and particle deposition

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Pollutants emitted in the atmosphere in urban areas have indirect effects through fall-out on the ground, which negatively affects the quality of soil, plants and groundwater. The present study aims at obtaining a general view on the status of soil pollution in the Urban Community of Strasbourg (CUS) as well as an insight into current atmospheric input through rainfall and particle deposition. In the CUS area, groundwater is only 2-3 meters deep and highly exposed to infiltrating water. Soils were sampled at a depth of 0 to 20 cm on 20 urban sites spread over the CUS and analyzed for potentially toxic metals. Contents in heavy metals do not show important variations between the different sites nor anomalous levels over the CUS area. Rainwater collected on one site in the city center was filtered in situ at 5 μm to collect the suspended matter by deposition on microscope grids. The particles were analysed by analytical transmission electron microscopy over seven months covering the winter and spring seasons. The chemical analyses of one thousand particles were recorded and sorted by principal component classes (mineral, organic, mixtures and not determined) and species subclasses (silica, aluminosilicates, salts, oxides, not determined). The relationship between heavy metals and principal component classes has been investigated. It appears that the distribution of the principal components as well as the physical speciation of heavy metals is highly fluctuating with time. This study was supported by ADEME, BRGM and CUS.