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Topsoil investigation on two different urban areas in West Hungary

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Heavy metal contents of urban soils in two different urban areas have been investigated in Sopron town (169.01 km2) and in Szombathely town 97.50 km2) in Hungary.

In a standard network 208 samples have been collected Sopron from 0 to 10 and from 10 to 20 cm depth. 164 samples have been taken on 88 points in the area of Szombathely. We analysed all of the soil samples with ICP equipment applying Lakanen-Erviö method (Ammonium Acetate – EDTA (pH 4.65)) and we focused on Co, Cu, Ni, Pb and Zn during the evaluation.
The soils of suburb are determined largely by the bedrock, but in the downtown the soil pH was alkaline in soils of Sopron. Therefore, the toxic elements are still accumulated in the topsoil. The lead content was very high (suggested pollution limit >25 mg Pb/kg) in both layers on the whole area of the town. Urban soils with high copper content (among 611 mg and 1221 mg Cu/kg) have been collected from garden and viticulture areas. According to our measurements we found the highest average values in the soils of parks.

The pH of urban topsoils of Szombathely was mostly neutral and it was lower in soil of agricultural areas on the suburb, where the artificial fertiliser is still used. The Pb content was high (more than 25 mg Pb/kg) in case of 13 samples next to traffic roads of the town. The Co, Cu and Ni results were below the suggested Hungarian background limits. The Zn values were above the suggested Hungarian pollution (20 mg Zn/kg) and interventional limits (>40 mg Zn/kg) in most cases.

According to the results we found the highest average values of heavy metals in the soil of traffic areas or next to the Gyöngyös creek, which could be originated from traffic contamination, binding in the soil of urban green spaces, thus possibly affects human health.

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