

## Conclusion

Combined sewer system significantly deteriorates water and sediment quality in urban streams studied. Important waste water producers of several industries are localized around Průmyslová street in the catchment area of Botič and in Vysočany district in the catchment area of Rokytka. Therefore, Botič is affected mainly by Cu, Ni, Pb a Zn and Rokytka by Cd, Cu, Ni a Pb through the discharge of CSOs in case of rain and stormwater.

Metal concentrations as well as evaluated environmental risk show significant increase due to discharge of CSOs in the longitudinal profile of streams affected by urban drainage. Changes in distribution of Cu and Zn to easily available fractions were observed in sediments of Botič, which receives discharge from 33 CSOs. For copper it was proportional increase of oxidizable fraction, for zink proportional increase of exchangeable/carbonate fraction. The observed mobility order of the six trace metals studied according to mobility factor was  $Cd > Zn > Ni > Cu > Pb > Cr$  in sediments of Botič and Rokytka and  $Cd > Zn > Ni > Pb > Cu > Cr$  in sediments of Kunratický Stream.

The analysis of heavy metals loadings, geochemical distribution and other physicochemical parameters has enabled to identify specific areas of metal contamination. However, no statistically significant correlations between physicochemical sediment properties and metal concentrations were observed showing that urban drainage impact more significantly influence the degree of stream sediment contamination.

MPI varinace in the longitudinal profile of streams was greater than the MPI varinace among observed streams. The multivariate analyses used in this study show themselves to be very useful tool for identification of urban drainage impact. PCA reduced the dimensionality of data matrix from 6 to 2 significant components, accounting for 88,7% of the total variance. It was found in the PCA plot, that sites of Kunratický Stream, characterized by high Cd contamination, were clustered separated from Botič and Rokytka sites. "Lower" sampling sites of both these streams affected by CSOs were significantly heavily contaminated by all observed metals, clustered together in results of cluster analysis and PCA as well.

## References

- Barnthouse, L.W., Deangelis, D.L., Gardner, R.H., O'Neil, R.V., Suter, G.V., Vaughan, D.S. (1982): Methodology for Environmental Risk Analysis. ORNL/TM/8167. Oak Ridge National Laboratory. Oak Ridge, TN.
- Beneš, S. (1994): Obsahy a bilance prvků ve sférách životního prostředí. II.část. Ministerstvo Zemědělství. Praha.
- Borovec, Z., Tolar, V., Mráz, L. (1993): Distribution of some metals in sediments of the central part of the Labe (Elbe) River: Czech Republic. *Ambio*, 22, 200-205.