Geophysical Research Abstracts, Vol. 8, 06317, 2006
SRef-ID: 1607-7962/gra/EGU06-A-06317

Mass balances of PAHs in a karst area (Swabian Alb, Germany)

K. Ruopp, P. Grathwohl

University of Tübingen, Center for Applied Geoscience, Germany

(grathwohl@uni-tuebingen.de / phone: +49-7071-2975429 / fax: +49-7071-5059)

The Swabian Alb is one of the most important karst areas in Germany. In this area the *Blautopf*, the second largest karst spring in Germany is located. The extension of the catchment area is about 160 km^2. It is mainly an agriculturally used area, where background pollution levels can be obtained.

In principal, karst aquifers have a high vulnerability for the input of contaminants because of a thin soil layer, many sinkholes and other direct pathways to the groundwater. The objective of this study is to establish a input/output mass balance of the catchment area using polycyclic aromatic hydrocarbons (PAH) as ubiquitous environmental tracers. Deposition rates are determined at selected monitoring sites using time integrating passive samplers. PAH-concentrations at the spring were monitored using passive samplers as well. Therefore, a fully time and space integrated approach was applied in order to measure the pollutant fluxes. In addition, soil samples were investigated with respect to their buffer capacity for PAHs.

The PAH- atmospheric deposition rates (input) show seasonal variability, but are fairly constant at the different monitoring locations. No significant transport of PAHs, neither in the seepage water collected in different caves, nor in the spring leaving the catchment (output) was observed. The very little output was dominated by particle facilitated transport. Overall, the mass balance indicates that 97% of the pollutants remain in the catchment and accumulate in the top soils – even in a karst area.