

Leaching of PFC from soils contaminated with PFC of different origin

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Leaching tests are fundamental tools for the assessment of groundwater impact by contaminated soils concerning the soil-groundwater pathway. Such procedures are supposed to serve as the basis for a reliable leachate prognosis. They can be applied to determine the short and long term leaching behaviour as well as the source term of contaminated soils. For this purpose two types of leaching procedures have been validated in Germany for the examination of the leaching behaviour of frequently occurring organic substances (DIN 19528 - column test and DIN 19529 - batch test). A liquid-to-solid ratio (L/S) of 2 L/kg and 10 L/kg is the basis for the risk assessment which is implemented in different German regulations. The equivalence of test results for both tests for the same material under investigation has been investigated for a variety of pollutants in order to assess their reliability in compliance testing. However, for emerging pollutants there is hardly data available on this issue.

Leaching tests on soils contaminated with emerging pollutants such as PFC (Perfluorinated Surfactants) are currently coming more into consideration due to the increasing detection of contaminated sites.

Therefore, two soils were investigated in this study from different contamination source (paper sludge containing compost and fire distinguishing foam) using both leaching tests and both liquid-to-solid ratios. The leachability of the various perfluorinated compounds in relation to their content in solid matter was considered. Furthermore the eluate pre-treatment prior analysis (in particular liquid/solid separation step needed for batch tests) has been taken into account.

The comparability of the results from batch and column is dependent on the solubility of the various compounds, on the L/S and on the turbidity in the eluates.