

## **Implementation of the EU Water Frame Work Directive: Is it possible to reach good Groundwater Condition in Marchfeld Region up to the Year 2015?**

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According to the European Water frame Directive it is a requirement that surface- and groundwater in the EU should be brought to a good condition by 2015. For the implementation of this goal it is necessary that any measures to improve groundwater quality show an impact within the upcoming 10 years. A prerequisite for any change of groundwater chemistry within this time frame is that the mean residence times of the groundwater body is shorter than 10 years.

Since 1992 the Umweltbundesamt (UBA) accomplishes a hydro chemical groundwater monitoring in the Marchfeld groundwater body, which is highly sensitive and situated in an agricultural area. The Marchfeld is 1000 square kilometre large intensive agricultural used area. It's one of the largest pore groundwater body in Austria. Due to the distinctive agriculture the use of fertilizer leads to high concentrations of nitrate in the aquifer.

Aim of the project is to investigate whether it is possible at all to improve the groundwater conditions in the Marchfeld to be in good accordance with the directive until 2015.

Therefore the hydrochemical monitoring is supported since 2005 using isotope hydrological methods for groundwater dating with CFC and Tritium-<sup>3</sup>He. Aim of the project is to interpret the spatial and temporal variability of the hydrochemical parameters by geostatistical methods such as multivariate geostatistic, cluster analysis and time series analysis and to correlate these results with the isotope hydrological age information. The isotope hydrological investigations will be carried out in cooperation with the International Atomic Energy Agency (IAEA).