# Abstract


## Groundwater flow and highly permeable zones in aquifers of eastern part of Bohemian Cretaceous Basin based on Litá area and surroundings

In my thesis I deal with the character of highy permeable zones in marlstones and calcitic sandstones in east-bohemian synclines of the Czech Cretaceous Basin. My chosen area lies southwest of Nové Město nad Metují and within it lies Litá area, an important source of groundwater for Hradec Králové region. Groundwater in the area was contaminated in the 80's by chlorinated hydrocarbons. Based on a detailed field sampling of 23 boreholes and 4 sites of surface water performed in 2008 and on archival data on contaminant concentrations, I evaluate the character and relationships of groundwater from the boreholes. I grouped boreholes according to their chemical properties. In the second part of my thesis, I perform the analysis of the influence of faults on groundwater flow in a larger area of east-bohemian synclines. Results show that most yielding boreholes lie between fractures, not near them, which suggests the impermeable role of fractures. From available information I then try to answer the question of highly permeable zones of preferential groundwater flow. Based on the observed flow velocity, uneven nature of contaminant transport and discovered bifurcation of groundwater flow, I support the occurrence of these zones in the area and conclude that the existence of karstic porosity in aquifers formed by marlstones and calcitic sandstones in the environment of the Czech Cretaceous Basin is not unrealistic.



Keywords: chlorinated hydrocarbons, contamination, flow, fractures, highly permeable zones, karstic system