

## RESULTS OF INTERNATIONAL RESEARCH PROJECTS ISOSOIL AND MODELPROBE

### VÝSLEDKY MEZINÁRODNÍCH VÝZKUMNÝCH PROJEKTŮ ISOSOIL A MODELPROBE

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#### **Abstract:**

Chlorinated ethenes (CE) belong among frequent contaminants of soil and groundwater in the Czech Republic (CZ). Because conventional methods of subsurface contamination investigation are costly and technically complicated, attention is directed towards innovative methods. One of promising methods is sampling of tree core. Volatile organic compounds (VOC) can enter into the trunks and other tissues of trees through their root systems. An analysis of the tree core can thus serve as an indicator of the subsurface contamination. Four areas of interest were chosen at the experimental site with CE groundwater contamination and fluctuation of groundwater and tree core CE content were observed for a one-year period. The aim was to determine how the CE concentrations in obtained samples of tree core correspond with the level of contamination of groundwater. Other factors which can affect the transfer of contaminants from groundwater to wood were also monitored and evaluated (tree species and age, level of groundwater table, river flow in the nearby Ploučnice River, seasonal effects and the effect of the remediation technology operation). Factors that may affect the concentration of CE in wood were identified. The groundwater table level (GWL), tree species and the intensity of transpiration appeared to be the main factors within the framework of the experiment. Obtained values documented that the results of tree core analyses can be used to indicate the presence of CE in the subsurface. Interval sampling of tree core revealed preservation of the contaminant in the wood of trees.

#### **Keywords:**

Chlorinated ethenes (CE), tree core, groundwater, correlation, contamination