

## **Sustainability of groundwater resources in the Ljubljana area, Slovenia**

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**Abstract** A detailed study of groundwater flow and solute transport was performed in the recharge area of the Union brewery groundwater resources in Ljubljana. The main study goal was the assessment and prediction of movement of groundwater and urban contaminants through the unsaturated or/and saturated zone of the Pleistocene sandy-gravel aquifer and the risk assessment of contamination of the groundwater below. For this purpose complex geological, hydrogeological, chemical, geochemical and isotopic investigations were performed. The results were statistically processed and modelled with the help of computer tools to simulate transport, and attenuation of pollutants in the study area. They provided the ability to conduct the scenario simulations and thus to develop the protection strategy of investigated groundwater resources.

**Key words** Ljubljana; drinking water resources; urban gravel aquifer; groundwater flow; contaminant transport; sustainable management