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Extended Abstracts

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title: **Groundwater chemistry, quality and man-made threats in the Polish part of the Nysa Łużycka catchment**

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The studied area covers the lower and middle part of the Nysa Łużycka catchment. The river is a boundary between Poland and Germany, while the catchment is located in three countries – two mentioned above and the Czech Republic. The poster shows only the results of the Polish part of the catchment. Two multiple layer aquifers were studied, namely Quaternary and Neogene ones. Each of them is constituted by two to three groundwater layers. Normally the most shallow aquifer, occurring in the sands and gravels at the depth of 0–40 metres, is not sufficiently isolated from the surface. The deeper aquifers are overlaid by the thick sediments of clay thus are less vulnerable to the man made threats originating from the land surface.

The major man-made threats identified in the studied area originate from the agricultural, industrial and urban sources. Some special type of influence is posed by the open cast lignite mining.

The groundwater chemistry was studied on 84 groundwater samples collected between 2001 and 2009 from the wells and piezometers. The groundwater samples were analysed by the Central Chemical Laboratory of the Polish Geological Institute – National Research Institute. The major chemical type of natural groundwaters for the Quaternary aquifer (n=60) was $\text{HCO}_3^- - \text{SO}_4^{2-} - \text{Ca}^{2+}$, while for the Neogene aquifer (n=24) two types were nearly equally abundant: $\text{HCO}_3^- - \text{Ca}^{2+} - \text{Mg}^{2+}$ and $\text{HCO}_3^- - \text{SO}_4^{2-} - \text{Ca}^{2+}$. Most of the analysed parameters, ions and elements do not exceed the maximum allowable concentrations (MAC), according to the Polish legal regulations. In case Fe^{2+} the concentrations above MAC value are rather common and refer nearly to the whole studied area. The high concentration of K^+ and Pb^{2+} occur only at some locations and are possibly connected with some anthropogenic influence.



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