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## Multivariate assessment of barrier materials for treatment of complex groundwater rich in dissolved organic matter and organic and inorganic contaminants

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### Highlights

- Material for treatment DOM rich groundwater from heavy metal and organic pollutants
- Removal efficiency was analyzed with coefficients of adsorption isotherms
- Activated carbon, peat, fly ash were the most effective for organics removal
- Fly ash was the best for simultaneous removal of metal and organic pollutants
- Batch adsorption and PCA are effective for selecting materials for water treatment

### Abstract.

This study focused on the challenges of treating groundwater rich in dissolved organic matter and contains both heavy metals and organic pollutants. Activated carbon, fly ash, lignite, peat, torrefied organic material and zero-valent iron were tested as prospective materials for permeable barriers. Removal of different pollutants was analyzed using coefficients of the Freundlich equation for adsorption isotherms. Principal components analysis was used to visualize similarities and differences in pollutant removal efficiency and sorbent capacity between barrier materials. Fly ash,

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