



## **Shale gas impacts on groundwater resources: insights from monitoring a fracking site in Poland**

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Exploitation of shale gas by hydraulic fracturing (fracking) is highly controversial and concerns have been raised regarding induced risks from this technique. The SHEER project, an EU Horizon 2020-funded project, is looking into developing best practice to understand, prevent and mitigate the potential short- and long-term environmental impacts and risks from shale gas exploration and exploitation. Three major potential impacts were identified: groundwater contamination, air pollution and induced seismicity. This presentation will deal with the hydrogeological aspect.

As part of the SHEER project, four monitoring wells were installed at a shale gas exploration site in Northern Poland. They intercept the main drinking water aquifer located in Quaternary sediments. Baseline monitoring was carried out from mid-December 2015 to beginning of June 2016. Fracking operations occurred in two horizontal wells, in two stages, in June and July 2016. The monitoring has continued after fracking was completed, with site visits every 4-6 weeks. Collected data include measurements of groundwater level, conductivity and temperature at 15-minute intervals, frequent sampling for laboratory analyses and field measurements of groundwater physico-chemical parameters. Groundwater samples are analysed for a range of constituents including dissolved gases and isotopes.

The presentation will focus on the interpretation of baseline monitoring data. The insights gained into the behaviour of the Quaternary aquifer will allow a greater perspective to be placed on the initial project understanding drawn from previous studies. Short-term impacts will also be discussed in comparison with the baseline monitoring results. The presentation will conclude with discussion of challenges regarding monitoring of shale gas fracking sites.