

## Mapping DNAPL groundwater pollution with the $^{222}\text{Rn}$ -deficit technique

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The ubiquity of radon in the subsurface, its ease of analytical detection in the field and its preferential partitioning in organic phases (i.e. non-aqueous phase organic contaminants or NAPLs) make it ideal for delineating subsurface organic contamination processes [1,2].

This contribution presents the results of 4 field campaigns at a site affected by a dense NAPL (DNAPL). A total of 505 Rn determinations in soil air were obtained in successive blind sampling campaigns (i.e., no prior information was disclosed on the location of hot-spots or the extent of the contamination) and were subsequently used for surface mapping of Rn activity in soil air.

The results of the  $^{222}\text{Rn}$ -deficit technique were compared with direct information from boreholes and monitoring wells at the site.  $^{222}\text{Rn}$  measurements correctly predicted the location of contaminated areas already identified by conventional characterization methods but also unveiled a large, previously overlooked DNAPL accumulation. These results indicate the ability of the  $^{222}\text{Rn}$ -deficit technique to detect not only the presence of organic contaminants in the vadose zone (as described in previous publications [3,4], but also of dense free phases in the saturated zone.

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### References:

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