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# Multi-method screening strategies for characterisation of soil and groundwater contamination at megasites

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Megasites are contaminated sites of large-scale which pose the real threat of a regional deterioration of soil, groundwater and surface water. Megasites are worldwide issue and can be found in former industrial, mining and military areas. In general, megasites have a long history of usage, hence they are characterized by variety of contaminant sources often of unknown spatial extent and complex chemical nature. In majority of cases complete removal of contaminants from megasites is neither technically nor economically feasible within an intermediate time-frame. Thus, their remediation strategy should be focused on a risk minimization. Risk based approach requires an efficient and reliable site characterization. This issue is the concern of scientific project entitled "Tailored Improvement of Brownfield Regeneration in Europe" - acronym TIMBRE, funded by 7th European Union Framework Program for Research and Technology Development.

One of the objectives of the project is development of a cost-efficient approaches for site characterisation of contaminated areas (megasites). Timbre approaches are tested at former soviet military air base which is situated in southwestern Poland, Lubuskie Voivodship. Airfield was launched in the thirties of the 20th century and just before the II World War it has been changed into a military air base. After the war, the area was developed to a soviet major air base, wherein the reckless land use led to degradation of environment by extensive contamination of soil and groundwater by organics. In order to assess the current environmental status within the former airbase in Szprotawa, the complex sampling strategy has been developed and implemented.

Having in regard the size of the contaminated area, there were tested several methods based on high-resolution "direct push" techniques, soil gas analyses, tree core samples, and direct chemical analysis of the concentration of pollutants in groundwater and soil. This paper presents how those different methods combined in a one flexible strategy can help to assess the current state of contamination within the megasite and to recommend the future directions in land usage.

The research showed that various site charactersation methods can be combined in a step wise approach and in a flexible manner giving comprehensive information tailored to the needs of site revitalization at the expected level of accuracy at reasonable costs. The developed multi-method and multipurpose approach to site characterization is especially suitable for mega-sites.