

Technical University of Denmark



Effective and reliable site investigation at large sites by the use of initial screening methods

Nielsen, Mette Algreen; Trapp, Stefan; Clausen, Lauge Peter Westergaard; Kalisz, Mariusz; Krupanek, Janusz; Stalder, Marcel; Martac, Eugen; Bartke, Stephan

Publication date:
2015

Document Version
Publisher's PDF, also known as Version of record

[Link back to DTU Orbit](#)

Citation (APA):
Nielsen, M. A., Trapp, S., Clausen, L. P. W., Kalisz, M., Krupanek, J., Stalder, M., ... Bartke, S. (2015). Effective and reliable site investigation at large sites by the use of initial screening methods. Poster session presented at AquaConSoil 2015, Copenhagen, Denmark.

DTU Library

Technical Information Center of Denmark

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Effective and reliable site investigation at large sites by the use of initial screening methods

Mette Algreen¹, Stefan Trapp¹, Lauge P. W. Clausen¹,
Mariusz Kalisz², Janusz Krupanek², Marcel Stalder³, Eugen Martac⁴, Stephan Bartke⁵.

Background

Conventional site investigations (soil and groundwater sampling), may **involve uncertainties** due to insufficient historical data or sampling density due to limited budgets.

Initial screening methods can be applied faster and with higher sampling density to **target other screening methods** for the most relevant areas.

Initial screening methods can be applied as a part of the screening strategy in a **step wise approach**.

Tree coring and **soil gas sampling** are rapid, low-invasive and cost-efficient initial screening methods.

Initial screening methods are well suited at **large sites** or at sites with **insufficient historical information**, and also at sites where conventional drilling is risky (urban, swampy, military sites).

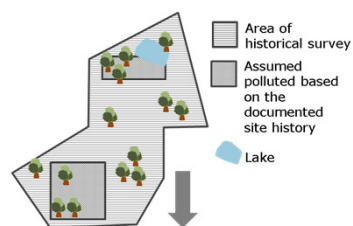
The Szprotawa test site

- A **former military airbase** contaminated with jet fuel and **BTEX** in high risk areas 50-70 mg/kg, outside 2.15 mg/kg.
- **Geology**: relatively homogeneous; a silty cover, followed by sediments, sands and gravels. **Groundwater table** 0.2-7 m (typically 2-3 m) bgs.

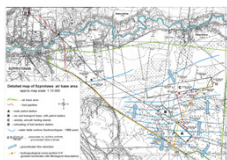


Stepwise method application

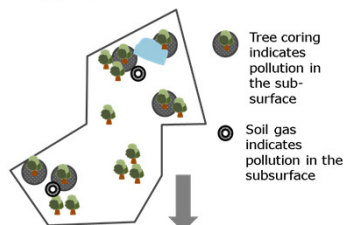
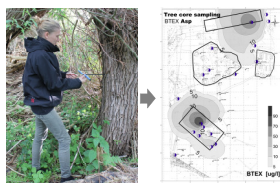
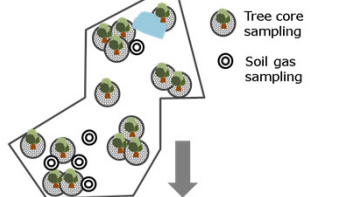
For illustration:



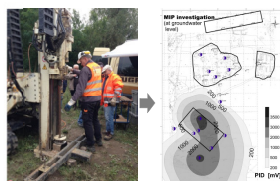
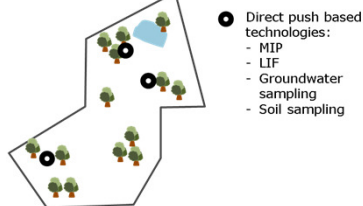
Historical survey



Initial screening

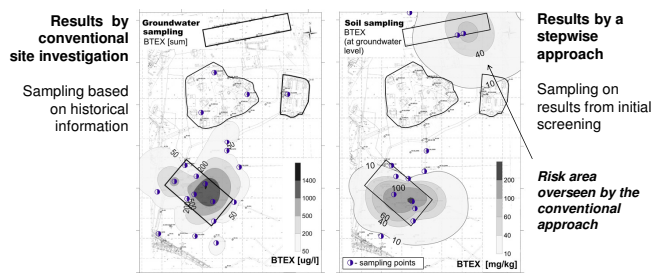


Detailed screening

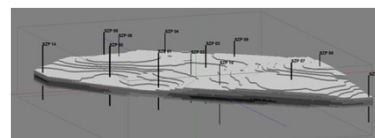


Outcome from the site investigation

- The stepwise approach can lead to **more effective and reliable site investigations**
- **More areas are investigated**, more data are available
- Initial screening methods can **minimize the risk** of overlooking hot spots or unknown sources



- MIP (Membrane Interface Probe) and LIF (Laser Induced Fluorescence) provided **3D information**



Spatial distribution of the high risk area derived from LIF sensing

- The use of multiple (initial) screening methods can deliver more data for the **design of remediation strategies**

Literature:

- <http://www.timbre-project.eu/>
- Effective and reliable site characterization at megasites by the use of pre-screening methods. (2015). Algreen, M.; Kalisz, M.; Stalder, M.; Martac, E.; Krupanek, J.; Trapp, S.; Bartke, S. Environ. Sci. Pollut. Res. In press