



N.O.R.I.S.C.

Network Oriented Risk
Assessment by In situ Screening
of Contaminated Site



Målsättning

- ♦ Förbättrad kvalitet på undersökningen
- ♦ Lägre kostnad
- ♦ Kortare tid för undersökning och utveckling av området



Deltagare

- ♦ Tyskland
- ♦ Ungern
- ♦ Grekland
- ♦ Italien
- ♦ Polen
- ♦ Sverige



I Sverige

- ♦ Uppsala universitet!
- ♦ SGU-Ulf Quarfort m fl
- ♦ Miljöförvaltningen i Stockholm-Bertil Engdal



Vem är jag?

- ♦ Jimmy Nilsson
- ♦ Civilingenjör miljö- och vattenteknik
- ♦ Projektanställd Uppsala universitet



Målsättning

- ♦ Förbättrad kvalitet
- ♦ Billigare
- ♦ Snabbare



Hur då?

- Kemiska fältmetoder
- Geofysiska metoder
- Ett "expertsystem"



Vad har gjorts?

- ♦ 4 st fältundersökningar
- ♦ 1 datorprogram



Expertsystemet

- ♦ Föroreningar-aktiviteter
- ♦ Geokemiska, hydrologiska, och geofysiska metoder
- ♦ Styrka, kostnad och tid



Hur använder man programmet?

- ♦ Tidigare aktivitet
- ♦ Storlek
- ♦ Jord/grundvatten/gas-prover
- ♦ Övriga parametrar, t ex grundvattenytan, akvifärer, metallskrot etc.



Resultat:

- ♦ En kombination av metoder:
- ♦ Lämpliga metoderna med låg kostnad



The screenshot shows the 'Estimate amount of drillings/sampling' window in the NORISC expert system. The interface includes several input fields and checkboxes:

- Area of site:** 4 ha
- Give number of boreholes/sampling points:** 8
- Give number of samples per borehole:** 5
- Number of samples:** 40
- Percentage of site which is contaminated:** 12 %
- Suggested number of boreholes/sampling points:** 21
- Suggested number of samples:** 252
- Ready rate for staff/cost calculation:** Geochemical: 10 €, Geophysical: 25 €
- Do you want GIS to suggest number of samples?**
- Not known:** Alternative04, Alternative05, Alternative03
- Problem (general):** Location (details): Height:

On the left side, there are buttons for 'Sampling', 'Geochemical site characteristics', 'Geological and hydrological site characteristics', 'Other site characteristics', 'Site restrictions', 'Run', 'Info', and 'Quit'. The NORISC logo is visible in the bottom right corner.

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Project Home

Sampling
 Select country/Region: [FR] Select methods for: Soil Destination level: [Land use] Groundwater Destination level: [] Soil gas Destination level: []
 Former activity: [] Provide list of laboratories: []

Choose other contaminants: []

These contaminants to look for: **Guideline Value**

Contaminant	Former activity	Soil(mg/kg)	Groundwater(µg/l)	Soil gas
Arsenic (As)		20		
Benzene toluene ethylbenzene o-xylene		100		
Chloride (Cl)		2		
Copper (Cu)		100		
Hexavalent Chromium (Cr(VI))		1		
Manganese (Mn)		10		
Nitrate (NO ₃)		100		
Polyaromatic Hydrocarbons (PAHs)		100		
Lead (Pb)		100		
Zinc (Zn)		100		

Disable

Geotechnical site characteristics
 Geological and hydrogeological site characteristics
 Other site characteristics
 Site restrictions
 Flux
 Info
 Quit

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Sampling
 Main parameters
 To be measured: Vertical extent of stratigraphy
 Groundwater level
 Electric porosity
 Hydraulic conductivity

Optional parameters
 To be measured: Water content Cyclotoline in bedrock Flax Average groundwater velocity
 Flax Groundwater direction
 Flax water pressure Head loss, Submergity

Other site characteristics
 To be measured: Hydraulic transmissivity Clay Aquifer
 Fractures and discontinuities Gravel Sand Aquiclude
 Lateral extent of stratigraphy Sil Sil Sil

Site restrictions
 Flux
 Info
 Quit

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Restrictions
 Classification
 Choose: Steel concrete (even in cover) < 50 % of total area
 Steel concrete (even in cover) < 50 % of total area
 Steel concrete (even in cover) < 20 % of total area
 Concrete/soil cover < 50 % of total area
 Concrete/soil cover < 20 % of total area
 Concrete/soil cover < 50 % of total area
 Buffer/soil < 20 % of total area
 Buffer/soil < 50 % of total area
 Topography < 3m wind CR + 20 % max. slope
 Topography < 0.2m wind - SW-WND 100 + max + 20 %
 Topography < 0.2m wind - DR + 5 % max. slope
 Electric power lines in valleys (Close to 200m distance)
 Electric power lines in valleys (Far to 200m distance)

Disable

Geotechnical site characteristics
 Geological and hydrogeological site characteristics
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Method	Method	Method	Total Cost(€)	Total Time
X-Ray Fluorescence (mobile)	Gas chromatography with Flame Ionisation Detector (GC/FID)		18 226.5	56.5
All possible methods				
	Gas chromatography with Flame Ionisation Detector (GC/FID)		7 156.1	44.2
	GC/MS		13 229.3	44.7
	Gas chromatography with Photo Ionisation Detector (GC/PID)		7 156.1	44.2
	Gas chromatography with Thermal Conductivity Detector (GC/TCD)		7 156.1	44.2
X-Ray Fluorescence (mobile)			11 070.6	56.5

Testa programmet

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Jimmy.Nilsson@geo.uu.se

