

Pilot project
**“Regional Risk Assessment of Mining
Sites and Contaminated Sites in the
Upper Silesia Region”**

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NATO/CCMS Pilot Study Meeting

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European strategies – local actions

- Mining Wastes Directive
- Soil Framework Directive



- PECOMINES
 - Upper Silesia Pilot Study
- Silesia Voivodship initiatives

Mining Waste Directive

Article 20 Inventory of closed waste facilities

Member States shall ensure that an inventory of closed waste facilities, including abandoned waste facilities, located on their territory which cause serious negative environmental impacts or have the potential of becoming in the medium or short term a serious threat to human health or the environment is drawn up and periodically updated. Such an inventory, to be made available to the public, shall be carried out by 1 May 2012, taking into account the methodologies as referred to in Article 21, if available.

Soil framework Directive

What information is needed

- The soil status report shall be issued by an authorised body or person appointed by the Member State. It shall include at least the following details:
 - (a) the background history of the site, as available from official records;
 - (b) a chemical analysis determining the concentration levels of the dangerous substances in the soil, limited to those substances that are linked to the potentially polluting activity on the site;
 - (c) the concentration levels at which there are sufficient reasons to believe that the dangerous substances concerned the concentration levels at which there are sufficient reasons to believe that the
- dangerous substances concerned pose a significant risk to human health or to the environment.

Soil framework Directive

Which facilities should be identified

ANNEX II

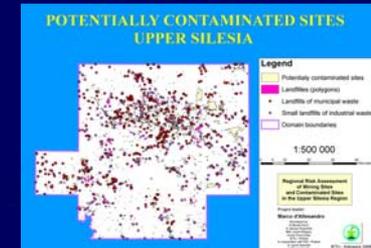
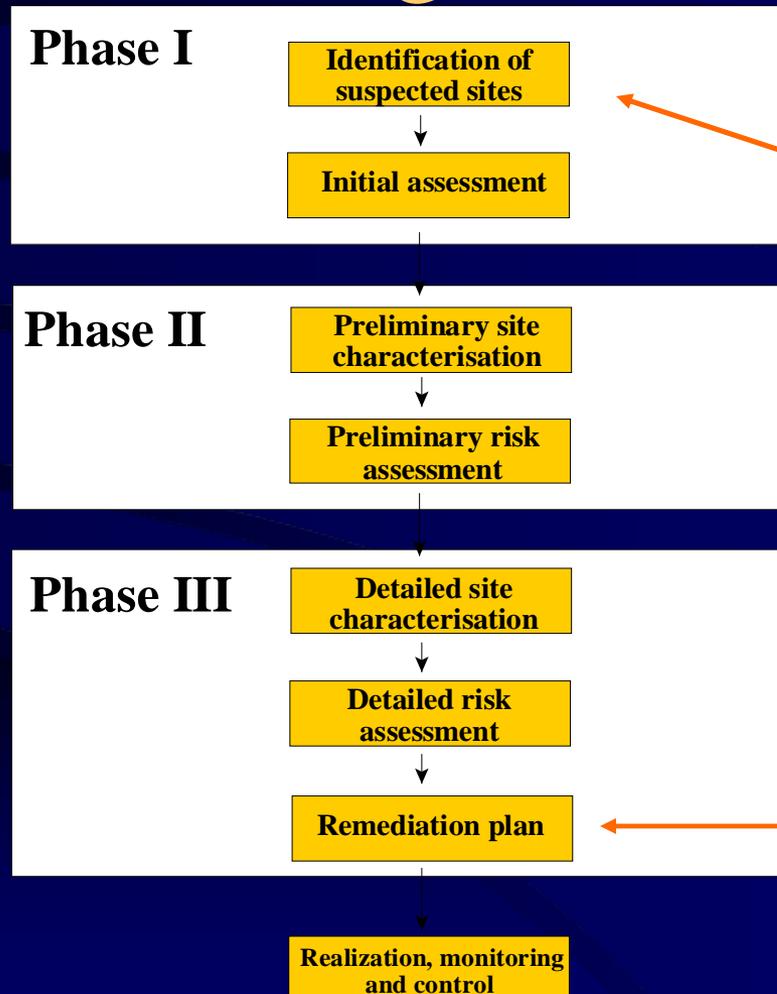
List of potentially soil polluting activities

1. Establishments where dangerous substances are or were present in quantities equal to or in excess of the amounts indicated in Parts 1 and 2, column 2 of Annex I to Council Directive 96/82/EC (Seveso)16.
2. Activities listed in Annex I to Council Directive 96/61/EC.
3. Airports.
4. Ports.
5. Former military sites.
6. Petrol and filling stations.
7. Dry cleaners.
8. Mining installations not covered by Council Directive 96/82/EC, including extractive waste facilities as defined in Directive 2006/21/EC of the European Parliament and of the Council17.
9. Landfills of waste as defined in Council Directive 1999/31/EC18.
10. Waste water treatment installations.
11. Pipelines for the transport of dangerous substances.

IPPC sites

- Energy industries
- Production and processing of metals
- Mineral industry
- Chemical industry
- Waste management
- Other activities

Procedure of contaminated land management



Upper Silesia Pilot Project inventory of potentially contaminated sites

- Identification of the potentially contaminated sites
 - verification of the objects descriptions - historical analyses
- Hypotheses built upon matrices: manufacturing activity - contaminant (French, German, Dutch UBI model, ISO, PECOMINES project approach)
 - geochemical profiles for the manufacturing activities
 - source environmental impact potential
- Risk Assessment
 - relative assessment of the potentially contaminated sites
 - ranking of contamination sources according to socio-economical and environmental criteria

Upper Silesia Pilot Project site identification

- Operational identification of the sites based on the ordinance maps - 6000 objects identified
- Use of IETU archival maps and information
- Use of data from thematic maps (environmental, geological)
- Data mining
 - **Historical information of the sites**
 - **Current industrial activities**
- Information on other inventory activities
 - **Silesia Voivodship Marshall Office initiative around 700 objects declared by the local authorities**
 - **Scientific projects i.e. non ferrous ores mining wastes characterisation**
 - **soil environmental quality data**

Upper Silesia Pilot Project object description

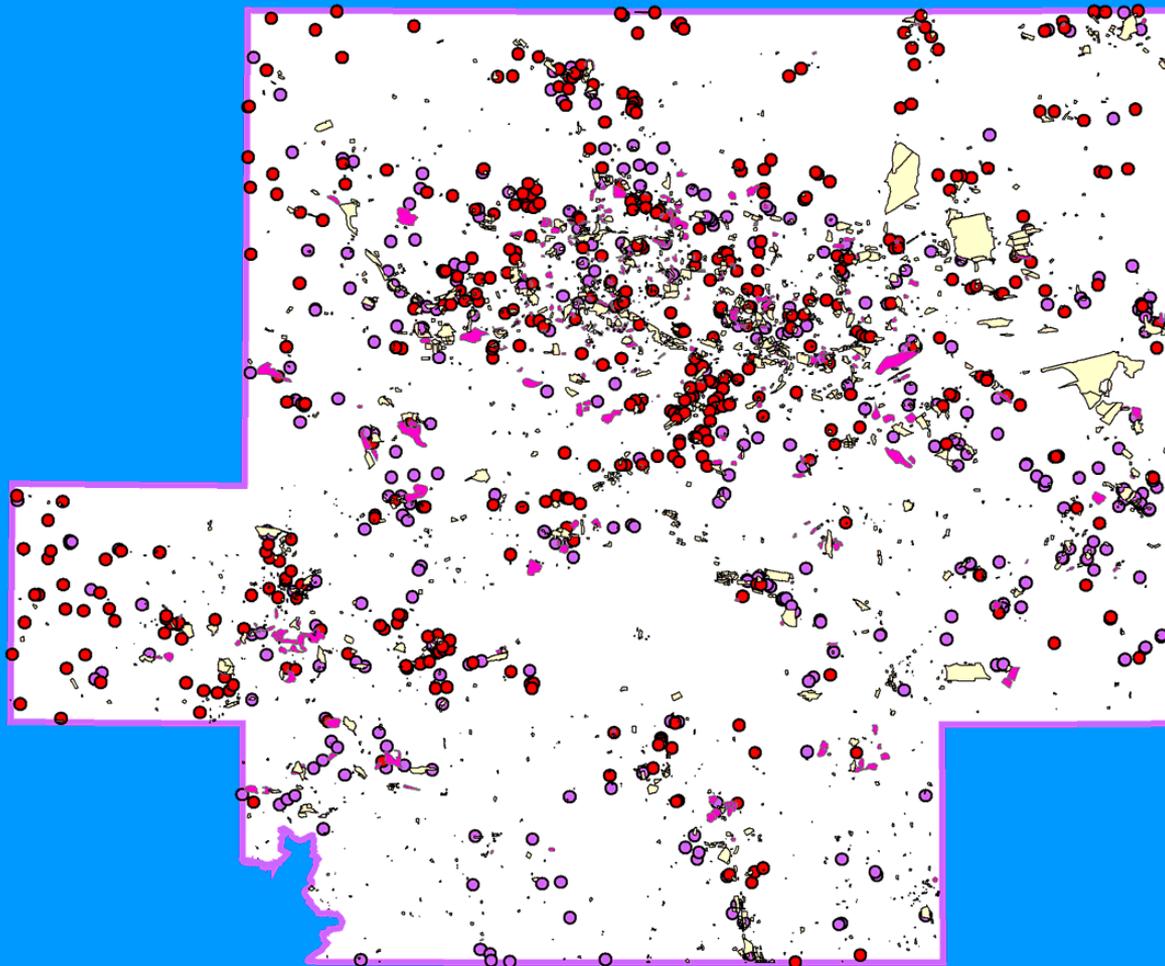
- Object of concern – every potential situation which could lead to soil contamination characterised with:
 - Spatial coordinates and area
 - Type of activity –NACE code (all)
 - Type of waste – origin category (all)
 - Period of activity (30% characterised)
 - Quantitative factor:
 - production amount (5 %)
 - waste volume (80 %)

Upper Silesia - state of potentially contaminated sites identification

Source category	now	past	USPP
1. Establishments where dangerous substances are or were present in quantities equal to or in excess of the amounts indicated in Parts 1 and 2, column 2 of Annex I to Council Directive 96/82/EC (Seveso) ¹⁶	a	c	
2. Activities listed in Annex I to Council Directive 96/61/EC	a	b	x
3. Airports	a	b	x
4. Ports		b	x
5. Former military sites	a	b	
6. Petrol and filling stations	a	b	x
7. Dry cleaners	a	c	
8. Mining installations not covered by Council Directive 96/82/EC, including extractive waste facilities as defined in Directive 2006/21/EC of the European Parliament and of the Council ¹⁷	a	b	x
9. Landfills of waste as defined in Council Directive 1999/31/EC ¹⁸	a	b	x
10. Waste water treatment installations	a	b	x
11. Pipelines for the transport of dangerous substances	a	b	

A- good quality data, b – uncertain data, c – insufficient data, x - fulfilled

POTENTIALLY CONTAMINATED SITES UPPER SILESIA



Legend

-  Potentially contaminated sites
-  Landfills (polygons)
-  Landfills of municipal waste
-  Small landfills of industrial waste
-  Domain boundaries

1:500 000

0 5 10 20 30 40 Kilometers

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Project leader:

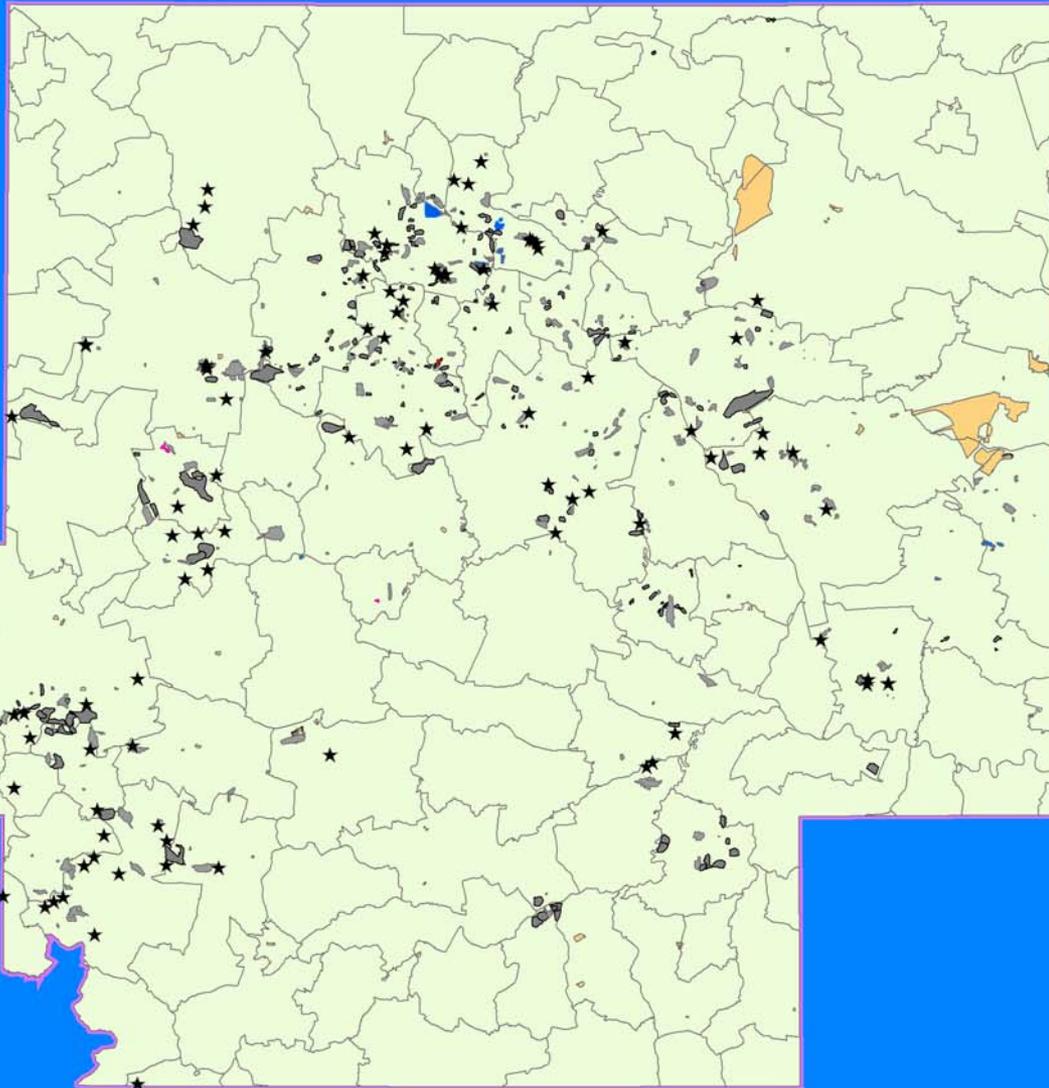
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in cooperation with PGI - Poland
dr Jacek Kasiński
dr Michał Gientka



IETU - Katowice 2006

MINING SITES - UPPER SILESIA EXAMPLE



Legend

Sites potentially contaminated by mining

Minerals

- Coal
- Fe, Zn, Pb, Cd ores
- other minerals
- ★ Mining landfills - point

Mining landfills - poly

- Mining
- Mining + Fe, Zn, Pb works
- Mining + Industrial
- Mining + Municipal
- NUTS_BOUNDARIES
- Domain boundaries

1:440 000

0 2,5 5 10 15 20 Kilometers

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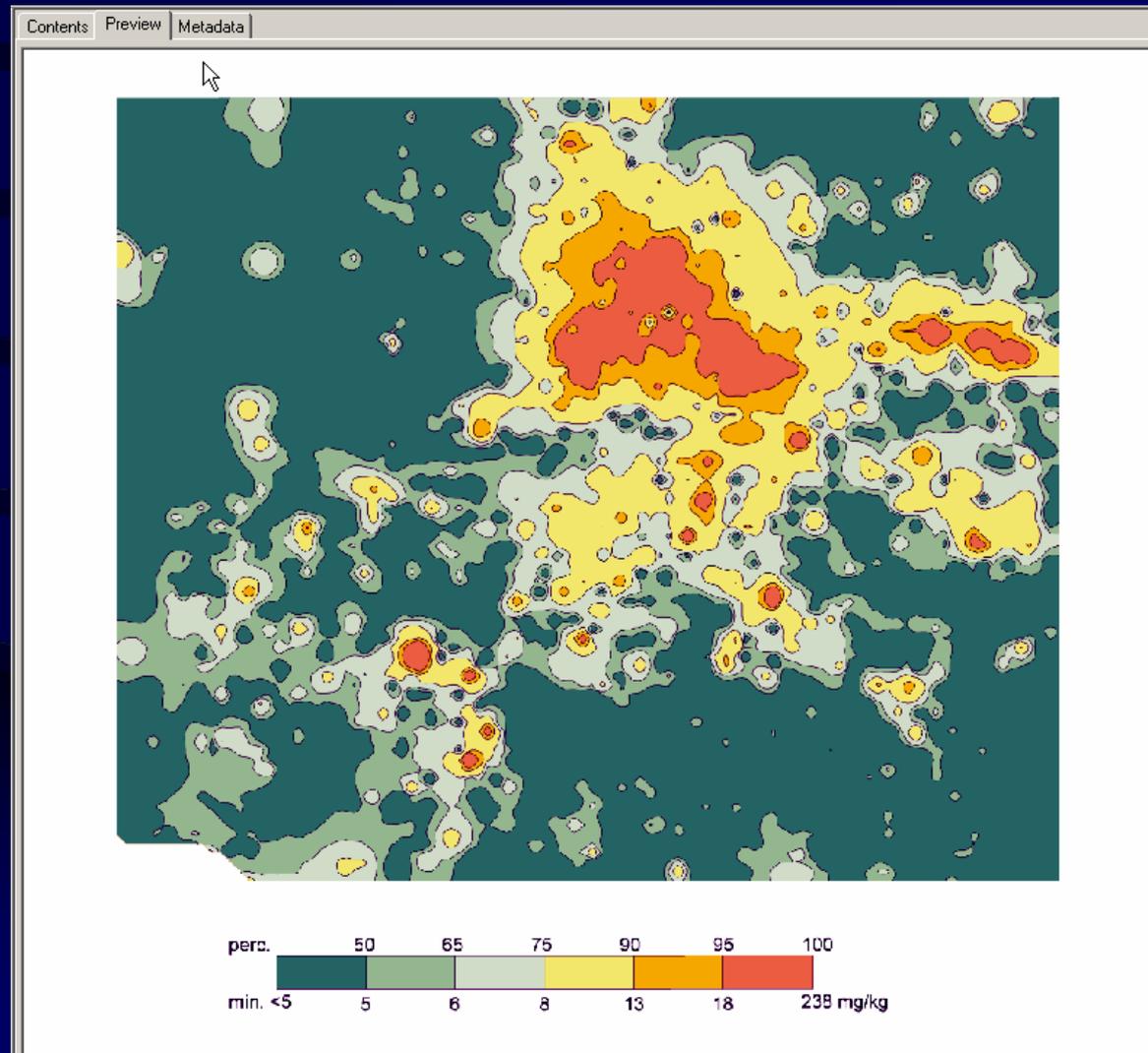
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Upper Silesia

- soil contamination



Potential geochemical profiles

Matrix: manufacturing activity - contaminants

European manufacturing Coding	Description	Antimony	Silver	Arsenic	Barium	Beryllium	Bismuth	Boron	Bromine	Cadmium	Chromium (VI)	Cobalt	Copper	Vanadium	Lithium	Manganese	Mercury	Molybdenum	Nickel	palladium	Lead	Selenium	Tellurium	Thallium	Vanadium
27	Manufacture of basic metals	X	X	X	X	X		X		X	X	X	X	X	X	X	X	X	X		X	X	X		X
27.1	Manufacture of basic iron and steel and of ferro-alloys			X	X			X	X	X	X	X				X	X	X	X		X				X
27.10	Manufacture of basic iron and steel and of ferro-alloys																								
27.2	Manufacture of tubes			X						X	X						X		X		X				X
27.21	Manufacture of cast iron tubes																								
27.22	Manufacture of steel tubes																								
27.3	Other first processing of iron and steel			X					X	X	X						X		X		X				X
27.4	Manufacture of basic precious and non-ferrous metals	X	X	X		X		X		X	X	X	X				X		X		X	X		X	X
27.41	Precious metals production			X																					
27.42	Aluminium production			X											X	X			X						
27.43	Lead, zinc and tin production	X		X						X				X			X				X		X		
27.44	Copper production			X		X	X						X			X	X		X		X	X	X		
27.45	Other non-ferrous metal production	X		X		X							X	X		X	X		X		X				
27.5	Casting of metals	X		X	X			X		X	X		X			X	X		X		X		X		X
27.51	Casting of iron	X		X				X						X		X	X	X							X
27.52	Casting of steel	X		X				X						X		X	X	X	X						X
27.53	Casting of light metals	X		X		X				X	X		X	X		X		X	X		X	X			
27.54	Casting of other non-ferrous metals	X		X		X				X	X		X	X		X		X	X		X	X			

Geochemical profiles verification

- reference data

- Silesian Voivodship Marshal Office activities – inventory of abandoned sites
- European Union funded projects:
 - e.g. ZCH Tarnowskie Góry – WELCOME project in 7th EU Framework Program
 - MAGIC project in INTERREG CADSES
- Already realized remediation projects
- Soil contamination and other environmental data
- Scientific projects and reports

Upper Silesia Pilot Project follow up

- Improvement of the contaminated land management procedures
 - Standards and tools for planning of site characterisation
- Improvement of the database content and quality:
 - Data mining for verification of objects and environmental characteristics
- Improvement of the database structure and functions
- Implementation of the management tools in practice in the context of new legislation in Poland and Polish government policy
- Development of reporting standards according to Soil Framework Directive requirements

Thank you for attention