



Kick-off meeting Call 3 and Midterm meeting Call 2 SNOWMAN projects

8th and 9th of November 2011
Paris



STUDIECENTRUM VOOR KERNENERGIE
CENTRE D'ETUDE DE L'ENERGIE NUCLEAIRE



Géosciences pour une Terre durable
brgm

CLAIRE





Enhanced knowledge in mercury fate and transport for Improved Management of Hg soil contamination

Partner	Funder
BRGM: the french geological survey	Ademe
SCK•CEN: Belgian Nuclear Research Centre	OVAM
SGI: Swedish Geotechnical Institute	SEPA
CL:AIRE: Contaminated Land: Applications in Real Environments	

Start	End	Duration (months)	Total Funding (k€)
October 2011 the 1st	March 2013 the 31 st	18	287



Contexte (1/2)

Background

- Mercury a pollutant of interest,
- Important industrial sources of mercury emissions into the environment,
- Industrial use of mercury : end in Europe between 2020 and 2028,
- Export of metallic mercury outside of Europe banned by the council of Europe October the 22nd 2008,
- Need for improving and sharing expertise in identifying, assessing, managing and remediating mercury has been stressed (BIO/GRS 2010).



Common mercury management approach must be elaborated at the European scale



Contexte (2/2)

Position of the project

- Inventories already exist,
- Dealing with mercury management on former industrial site or on operating plant, focussing on soil pollution,
- Mercury is usually characterised through measurement of total mercury,
- Mercury presents in four different phases (gaseous, aqueous, free phase and fixed to the soil matrix).

Understanding of mercury forms determines :

- *Fate and transport,*
- *Risks associated,*
- *Subsequent management.*



Partnership (1/3)

Objective/construction

- Trans-national collaboration,
- Fundamental researchers and practitioners in contaminated land management,
- Involvement of third parties
 - Common Forum,
 - Eurodemo+,
 - Representatives of industrial group.



Connectivity between fundamental knowledge and practical application will enhanced contaminated land management.



Partnership (2/3)

The Partners

- Brgm: French geological survey. BRGM. EPI division, expert to public authorities,
- SCK-CEN: section Performance Assessment, development and integration of conceptual models for contaminant fate and transport in vadose zone (soils), ground water and biosphere,
- SGI: Swedish Geotechnical Institute is a government agency. R&D and knowledge dissemination concerning contaminated land in Sweden,
- CL:AIRE: independent not for profit organisation, promoting contaminated land management and innovation in the UK.



Partnership (3/3)

Experiences/References

BRGM

- Expertise in fate and transport of the metal traces in vadose zone
- In-situ and laboratory analytical (including isotopy) skills in mercury characterisation
- Expertise in remediation technologies
- Science policy interfacing
- Contaminated land and Remediation management

SGI

- Expertise in biogeochemistry with focus on metals binding, transport and speciation in soils and waters, including analytical chemistry and geochemical modelling
- Expertise in risk assessment models
- Long experience from management of contaminated land, including investigation, risk assessment and evaluation of suitable remediation techniques

SCK-CEN

- Expertise in soil science including fate and transport of the metal traces in vadose zone
- Expertise in modelling fate and transport of contaminants in variably-saturated porous media including biogeochemical reaction networks

CL:aire

- Expertise in organising stakeholder consultations and questionnaires.
- Has independent advisers (Technology and Research Group) that can provide technical input to the project
- Operates with a large, cross-sectoral contaminated land database of 5,000 contacts (10% of which are non-UK based).



Aim of the project (1/2)

General scope

- Improving the understanding of mercury speciation (chemical forms) and partition (physical forms) in the vadose zone,
- Give recommendations for characterisation, assessment and management of mercury contamination in the vadose zone,
- Highlight needs to improve management of sites contaminated by mercury.



Aim of the project (2/2)

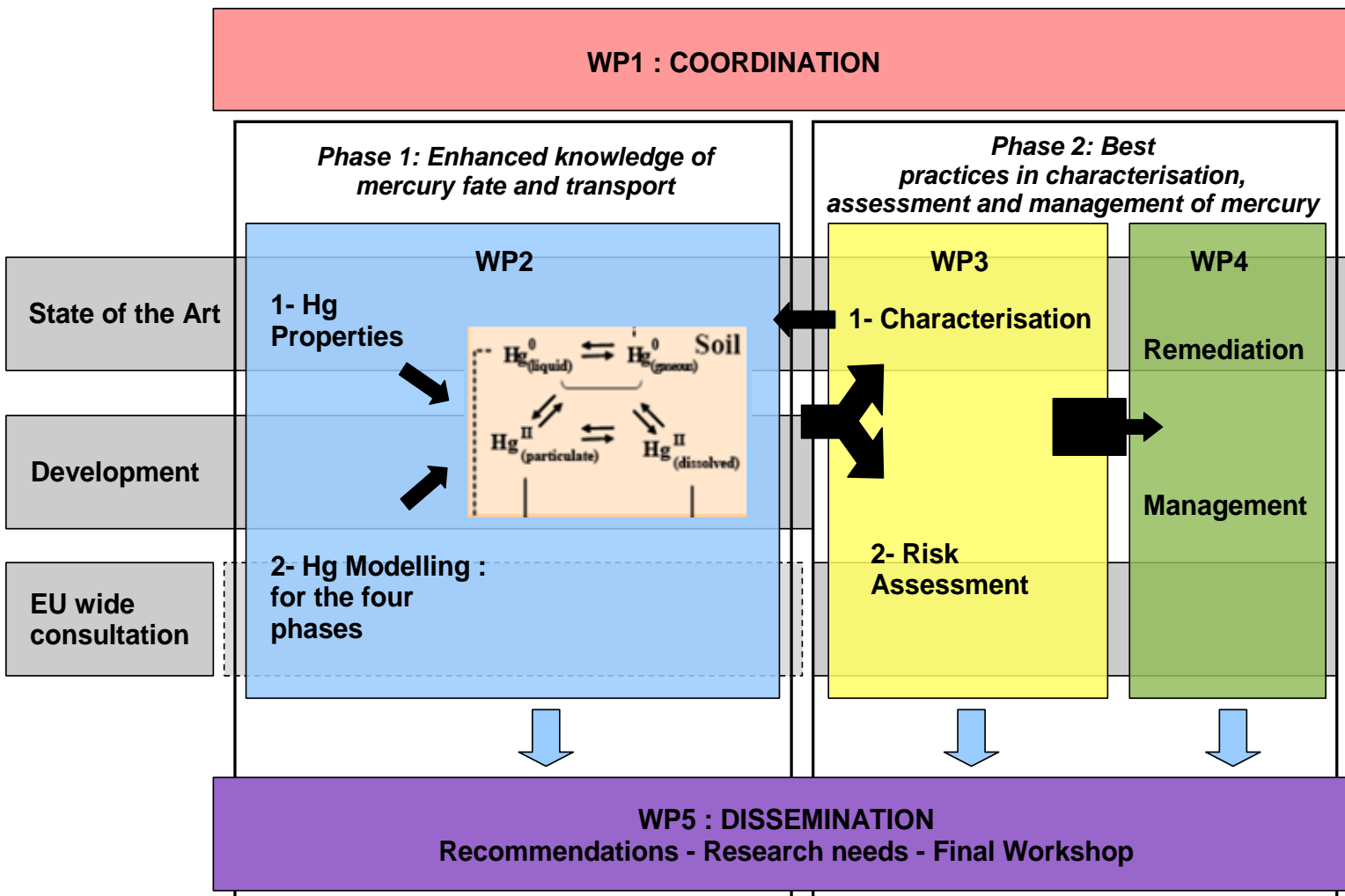
Specific objective/means

- To compile physical, chemical and thermodynamic constants of mercury forms,
- To improve mercury geochemical modelling,
- To compare available and currently used practices in characterisation, risk assessment and management of mercury,
- To draw some recommendations and identify further research needs for mercury



Work plan (1/4)

Organisation of WPs



Work plan (2/4)

Phase 1- WP2 – Fate and transport of Hg in the vadose zone

Objective: understanding in mercury behaviour in the vadose zone

Focus:

- ◆ Hg-OM interaction,
- ◆ Gas, liquid, and colloïd forms,
- ◆ Modelling tools.

Means: litterature review ; up to date of thermodynamic database, test of a numerical tool

D 2.1 Mercury associated physical and chemical constants (including updating of the THERMODDEM database) for a comprehensive mercury fate and transport in the vadose zone of polluted sites

D2.2 Numerical tool for mercury fate and transport in soils

D2.3 List of critical processes and parameters in simulating mercury fate and transport in soils



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Work plan (3/4)

Phase 2 – WP3 – Characterisation, and risk assessment of site contaminated by Hg

Objective: determined practices used for mercury characterisation, and assessment and propose improvement

Focus:

- ◆ For characterisation on Evaluating of existing methods for all the form of mercury,
- ◆ For risk assessment on assessment models for soil, guideline values and the assumptions behind the values.

Means: litterature review ; european wide consultation ; partners experience

D 3.1 Best available practices in mercury characterisation and risk assessment and recommendations



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Work plan (4/4)

Phase 2 – WP4 – Mercury contamination remediation and management

Objective: improved mercury management and remediation based on available and currently used remediation technologies

Focus:

- ◆ Limits and boundaries of application,
- ◆ Basic screening matrix (vadose zone characteristics and source type (mercury forms)),
- ◆ Environmental impact (Hg liberation in the air or in the water).

Means: literature review ; european wide consultation ; partners experience

D 4.1 Best available practices in mercury management and recommendations



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Timetable (1/2)



- 16 milestones
- 9 deliverables
- 15 tasks

1Q	2Q	3Q	4Q	5Q	6Q	Quarter
M1.1 WP1 M1.2 WP1 M1.3 WP1 M5.1 WP5	M2.1 WP1 M2.2 WP2 M3.1 WP3	M1.4 WP1 M5.2 WP5	M1.5 WP1 M3.2 WP3 M4.1 WP4	M5.3 WP5	M1.6 WP1 M5.4 WP5	Milestone
	D2.1 WP1	D1.1 WP1 D2.2 WP2		D2.3 WP2 D3.1 WP3	D1.2 WP1 D1.3 WP1 D4.1 WP4 D5.1 WP5 D5.2 WP5	Delivarable

Timetable (2/2)

1Q	2Q	3Q	4Q	5Q	6Q	Quarter
X		X			X	Task 1. 1 – Main contact point for SNOWMAN secretariat and PB
X	X	X	X	X	X	Task 1.2 – Management of the project and project consortium
X	X					Task 2.1: Geochemistry of Mercury, data collection to improve fate and transport:
X	X					Task 2.2: Mercury Modelling: Review of existing modelling tools and selection of the best numerical tool for mercury modelling
		X	X	X		Task 2.3: Determination of key processes and parameters for mercury modelling via tests of scenarios with HP1
	X	X				Task 3.1: Literature review of state of the art practices, tools, methodologies for mercury characterisation and risk assessment
		X	X			Task 3.2: Feedback on practices currently used for mercury characterisation and risk assessment
			X	X		Task 3.3: Recommendations for mercury characterisation and risk assessment
X	X					Task 4.1: Literature review of state of the art mercury remediation and management options
		X	X			Task 4.2: Feedback on mercury remediation and management options currently used
			X	X		Task 4.3: Recommendations for mercury remediation and management
					X	Task 5.1 – Summary of best practices and recommendations
					X	Task 5.2 - Final workshop
					X	Task 5.3 Making the project findings available



Budget and ressources

- Budget

BRGM	SCK-CEN	SGI	CL:aire		Partner
174	56	137	12	380	Total cost (k€)
108	41	137	0	287	Total funding amount (k€)
ADEME	OVAM	SEPA	-		Funding organisation

- Ressources

WP1	WP2	WP3	WP4	WP5	Total	
3.2	5.5	7.5	5.5	3.7	25.4	month



Risk of the project

- Phase 1,
 - ◆ Risks associated with the existing data and capabilities of existing codes,
 - ◆ At least the project will:
 - give recommendations for improved modelling of mercury,
 - identify the most critical processes,
 - Show needs of data acquisition,
- Phase 2,
 - ◆ Risks associated with the consultation phase,
 - ◆ Consultation:
 - with a generic questionnaire,
 - using identified national contact points and the support of existing and past networks.



Dissemination (1/4)

Internal communication

- With the PB
 - ◆ Participation to the kick off IMaHg meeting
 - ◆ Report timely to the PB on project progress and achievements,
 - ◆ Submitting mid-term and final reports,
- Within the consortium
 - ◆ Regular contact with project partners:
 - Emails,
 - Collaborative site,
 - Meetings.

Person/month	Numbers of meeting	Means
3.2	6	Email + Collaborative site to share files and data



Monitoring in time and content the progress of the project, will guarantee its smooth and successful running.



Dissemination (2/4)

Communication during the project

- Project description but also update of project (existing deliverable, organisation of the final workshop) will be post on websites, eMailing list of CL:AIRE,
- European wide consultation by contacting the key soil and groundwater networks across Europe, professional organisation, regulator,
- Possibly, web-based training (e.g. Webinars) could also be organised with the help of CL:aire.

Person/month	Means
2	websites + email + ealert + webinars Consultation



All these actions will guarantee the visibility of ImaHg project



Dissemination (3/4)

Dissemination of the results

- Technical tools
 - Thermodynamic database
 - Detailed instructions on setting up a HP1 model for Hg migration and Input files of models(HP1 or another one)
- Guidelines
 - Best available practices in mercury management and recommendations
 - Best available practices in mercury characterisation and risk assessment and recommendations
 - Review of numerical tool and critical processes and parameters for simulating mercury fate and transport in soils
- Short technical bulletin summarising the results
- Final workshop



Dissemination (4/4)

Dissemination of the results

To disseminate project results to relevant end users and stakeholders

To provide synthetic document on main outcomes of the project

To promote European experience and expertise sharing on mercury contamination

Person/month	Means
5,7	Technical tools, guidelines, technical bulletin Workshop : ImaHg Workshop, and call3 SNOWMAN seminar





Thank you for your
attention