

<b>MINUTES OF 1<sup>st</sup> PREMISS WORKSHOP</b>	
<b>IDENTIFICATION OF STAKEHOLDERS' DEMANDS</b>	
Authors : C. Merly (BRGM), with contribution of PREMISS project team A. Togola, B. Lopez (BRGM), E. Bouhoulle, P. Jacquemin, S. Remy (ISSEP), H Passier, L. Oste, R. Van der Meiracker (Deltares), J. Lijzen, T. Traas, P. Van Breemen, A. Wintersen (RIVM), J. Rabaey, R. Cartuyvels (Witteveenbos), K. Van Geert (Arcadis)	
Project : <b>PREMISS</b>	
Object : <b>1st PREMISS workshop, identification of stakeholders' demands CECs on prioritisation</b>	
Date : 26 January 2021	Location: web
Participants : See workshop participants in Annex 1	
Diffusion: Workshop participants, PREMISS project team, PREMISS project funders.	

## 1. Introduction and objectives

The EU research project PREMISS, funded by the Soilver network (namely the ADEME, Service Public Wallonia, the Dutch Ministry of Environment and the OVAM), proposes to develop an approach and a prototype tool to prioritise Contaminant of Emerging Concerns (CECs) in soil and sub-soil.

The PREMISS one year collaborative project (November 2020 – October 2021) is undertaken by public or private research bodies from France (BRGM), from Belgium (ISSEP, Arcadis and Witteveen & Bos) and from the Netherlands (DELTAIRES, RIVM).

The prioritization approach which is developed by PREMISS' team aims to be as useful and meaning full for foreseen users and therefore aims to meet as best as possible stakeholders' demands (SKH). So, one of first steps of PREMISS project was to engage with stakeholders and to discuss needs and expectations on prioritisation of CECs in soil and sub-soil. Identifying the stakeholders' demands was the objective of the 1<sup>st</sup> PREMISS stakeholders' workshop which was held at distance (web) on the 26<sup>th</sup> of January 2021.

## 2. Workshop participants and workshop structure

### 2.1. Workshop participants

Stakeholders who took part in the workshop were representative of the types of SKH who may have to deal with CECs in soil and sub-surface. They include problem owners (site

manager, natural resources manager, industry), regulators, service providers (consultant, contractor and laboratorie), funders and researchers.

The list of attendees is provided in Annex 1.

## 2.1 Workshop organization and content

The 1<sup>ST</sup> PREMISS workshop (WS) was organized in three parts (see agenda, Annex 2):

- A “Setting the Scene” plenary session gathering all the participants enabling to introduce PREMISS project, its preliminary outcomes and the objectives of the WS. Please see presentations in Annex 3.
- National sessions: Three parallel sessions (French, Belgium and Dutch sessions) aiming at gathering national stakeholders’ demands on CECs prioritization in soil and sub-soil. Prior to the workshop, a questionnaire was sent to the participants in order for them to be informed about the questions that will be raised for the national session (please see questionnaire in Annex 4). The national session was divided into 3 parts:
  - o Part 1: Current state of knowledge on CECs in soil and sub-surface;
  - o Part 2: Demands & expectations on prioritization of CECs in soil;
  - o Part 3: Exploitation of prioritisation output.
- A “discussion” plenary session aiming at sharing national session feedback and debating on specific questions.

## 3. Workshop outcomes

National sessions and plenary session discussions are compiled in the sections below.

### 3.1 Current SKH’s state of knowledge on CECs in soil and sub-surface

#### A. Level of awareness / expertise

In the Netherlands, all participants had some level of awareness of CECs on soils and most of them had already work on them. In France, most participants had some experience in CECs but mainly on the water compartment. In France and Belgium, level of knowledge of CECs *in soil* was considered limited by a large number of participants.

#### B. Main interests for CECs



The main interests for CECs in soil were as follows:








- **Avoiding** - *to avoid CECs management crisis*. For example, to prevent another PFAS situation/action perspectives as it happened in the NL in 2019 – As a reminder, the crisis blocked the Contaminated Land services providers and contractors for weeks.
- **Anticipation** - *to anticipate new substances of interest in order to prepare for these new substances* that will undoubtedly come:
  - o What are future pollutants to tackle?
  - o Which services and economic activities or R&D activities are needed to address the CECs?














- Which substances shall be regulated - REACH dossiers on PFAS and micro-plastics are coming? What substances shall come next?
  
- **Prevention enhancement:**
  - Prevention actions for substances that are already identified
  - Risk assessment at the source (production, product legislation)
  - Prevention is needed to avoid remediation that can be quite costly.
  
- **Regulations:**
  - CECs poorly regulated.
  - The polluter principle should better be applied upstream, within the REACH context.
  
- **CECs knowledge and data**
  - Lack of data in soil. We notice a lack of investigation for some CECs, due to absence of recommendations and lack of information from soil experts. Soil data are needed to derive background values in soils.
  - Lack of CECs knowledge in soil and terrestrial environment.
  
- **Risk and impacts** from CECs:
  - What are the impacts of CECs on human health, the environment (including terrestrial trophic chain)?
  - What are the risks from CECs to agricultural soils and to water resources?
  - What is the possible risk of chemicals to soil ecosystems?
  - CECs exposure: If CECs end up in soil: In what concentrations? How do they behave in soil in terms of persistence and mobility? Where do they accumulate (top soil, deeper layers)?
  - Hazards: How toxic are these chemicals upon short-term and long-term exposure? Do they accumulate? What is their mode of action? How do they act in mixtures?
  
- **Remediation and liabilities:**
  - What are remediation costs, dredging costs?
  - What substances are we missing when remediating?
  - Need to know potential future liabilities well in advance.
  - Need to derive background values, soil remediation values.




## C. CECs actions

The following CECs actions were reported by the participants. These actions are not meant to be exhaustive of all French, Dutch and Belgium past or on-going actions, but are given as illustrations below according to their types:

<b>Getting informed</b>	
Technical review on PFAS	
Service Publique de Wallonie (SPW) sets up a database of around 400 unregulated substances (without threshold values in Walloon legislation). This database contains physicochemical and toxicological parameters, threshold values for soil and groundwater and analytical methods. This database is regularly updated. SPW wants to publish recommendations to soil experts, for some CECs and for specific activities. But this task has not yet been initiated	

<b>Site investigation and monitoring</b>	
Groundwater monitoring at national scale	
Soil quality map PFAS - Bodemkwaliteitskaart PFAS	
Analysis of the PFAS has been requested in some soil studies (by Brussels Environment) given the risk-entailing activities carried out on the studied site	
Ongoing biomonitoring study in combination with local measurements (house dust, garden soil, home-grown vegetables and eggs) to estimate exposure routes for PFAS and limit exposure	
Monitoring of 110 substances (including some metabolites) in agricultural soils (Phytosol and RMQS)	
SAGIR monitoring program – Monitor death of wild fauna due to feed-poisoning	
Historical review for PFAS and site investigation undertaken on private owners' initiatives	

<b>CECs management (incl remediation and regulations)</b>	
Action perspectives on PFAS	
Prevention of CEC's in soil (emission reduction)	
Remediation of PFAS in soils and subsoils	
Enabling Activities (building etc) while still protecting soil, groundwater, drinking water	
Permits for activities, emissions	
Site management on a case-by-case basis: difficult to generalize	
OVAM derived background values for PFOS and PFOA in soils	
Elaboration policy framework: exploratory research, deriving threshold values, limited monitoring, giving policy advice to problem owners, setting up international collaboration (EmConsoil, SOILveR)	
Walloon Soil Remediation Direction also wants to publish recommendations to soil experts, for some CEC and for specific activities. But this task has not yet been initiated	
DPS (Wallonia) is financing research projects on CECs in order to determine thresholds for action and methods to follow (sewage sludge matrix, PREMISS and MISSOURI), but no dedicated regulation has been developed yet	
FPS (Belgian Federal Public Service) deals with REACH dossiers (on PFAS, microplastics...), CLP, etc.	
Monitoring CEC potentially related to substances used on the site, stop off-site export of soil (even if no pollution > legal levels for common contaminants is present)	
Remediation actions in process for pesticides producers	

<b>R&amp;D projects</b>	
Research done on uptake and effects of nanoparticles, research running on fate and effects of microplastics (new EU funded project to be started soon); also studies on effects of pesticides, single and in mixtures	
POP-UP project (emerging substances in soil and subsoil)	
Development of a prioritisation approaches for waters ( groundwater, surface waters); a lot of actions on waters, very few on solid matrices	

**D. BARRIERS FOR ACTION**

Main barriers, which may reduce or inhibit actions on CECs in soil and sub-surface included:

- **Very large number of substances:**
  - o Large number of substances made it difficult to know where the efforts shall be spent on. - FR
  - o Large variety: The broad range of CECs that can be contained in materials makes it difficult to identify which substances should be followed/regulated in priority - B
  - o Should we look at substances groups or zoom in on individual substances or mixtures? Should we consider many or few substances? - NL
  
- **Uncertainties associated with CECs;**
  - o CECs definition may be considered as unclear – B
  - o “Emerging substances” remain very abstract.
  - o It is difficult to create an action framework for all substances. That is why framing is important: Which specific substances/substance groups are we going to look at?
  
- **Data gaps on CECs:**
  - o Biodegradability data gaps – B
  - o Lack of data about CECs physical-chemical characteristics and CECs behaviour in the environment (eg transformation products or metabolites). – B and FR
  
- **Regulation**
  - o Lack of background values and norms for CECs in soil – B and FR
  - o We are struggling with the balance/trade-off between groundwater and drinking water protection and aboveground developments. How can we make safe choices? - NL
  - o What's relevant? When is something really a problem? How do we deal with setting standards for new substances? - NL
  
- **Ways & Means**
  - o Analyses:
    - Analysis is very challenging: a lot of analyses focus only on a small part of CECs - B
    - Which LOD is needed to say a CEC is present or not? (Conflict between regulators and analytical labs.) - B
    - CECs analytical (development) costs are very high, as emerging contaminant is not a chemical group and cannot be analysed as such - FR
    - New screening methods acceptance : How will local legislation allow/accept these modified screening techniques/methods as they will most probably be substantially different from the ones actually used – FR
  - o Management:
    - Manage new data: If analytical detection changes, conclusions will change: how manage the new data and insights?) - B

- **Time barrier.** It takes a long time to develop policies, protocols, regulations (so we need to prioritize to identify quickly the most important compounds) - NL
- **Lack of funding** is main factor limiting CECs activities - NL;

### 3.2 Demands on prioritisation

#### A. General demands

CECs prioritisation was meant useful as it enables to define which substances SKH shall spend their time and efforts on.

CECs prioritisation was seen as a mean **to save time**: it is important to bring focus in CECs activities in order to take targeted actions. It takes a lot of time to regulate a substance (enabling prevention and prohibition), the faster you can prioritize the faster restrictions can be imposed for the substances that really matter.

CECs prioritization was also deemed necessary **to be more cost effective**. Indeed, it is not economically viable to investigate all CEC families. As resources are limited, it is important to select the actions with most effect at reasonable cost, prioritizing on contaminations that are actually (or with high probability) causing risks to humans or the environment.

The overall **actions/ aims of CECs prioritization** include:

- To accelerate prevention and regulation:
  - o To prioritize efforts in policy approach (prevention of risks)
  - o To focus on preventing current emissions of CECs
  - o To set up warning system
- To gain insights on risk assessment (was considered as a priority):
  - o To understand potential risks from CECs (toxicology, behaviour in soil and in groundwater, exposure, ...).
  - o To properly undertake soil investigation, monitoring and risk assessment
  - o To get information on risks (mobility, toxicity). Can the substance become a problem somewhere else? Is there a need to take action by looking at the impact/risk of a substance, not only at the concentration. Assess how do the risks compare to the usefulness/essential use of a substance.
- To develop a robust management approach based on a limited number of substances:
  - o Focusing on a few substances, to develop a good methodology that can be used for similar substances;
  - o To start managing some CECs in order to gain experience and to be able to give rise to a legal framework.
  - o To develop a methodological approach which enable to take into account to enable CECs management in various contexts.
  - o To develop a methodological approach which goes beyond the substances screening process and which go as far as risks assessment and draft guidance / methodological approach on how to tackle and manage CECs.

- To identify knowledge gaps and point out where additional knowledge can improve prioritization. Identify where you need more information. You will sometimes run into the problem that you have insufficient information (substance behavior, toxicology, etc.) for prioritization.

CECs prioritisation shall give insights on which pollutants it is necessary **to develop activities** for including services (laboratory, consultancy, remediation, others) / economic activities and R&D activities.

## ***B. Specific demands on prioritisation process / approach***

Specific SKH demands are reported below according to whether they are related to sources and emissions; substances, toxicity/risk assessment; scenario (conceptual scheme).

### ***Sources and Emissions***

The following demands and questioning on source and emissions were raised by the participants:

- Importance to take into account compounds, which are not registered in REACH (ie, compounds which are not more used or produced, pharmaceuticals)
- For contaminated land management, there is the need to make the link between (industrial) activity and substances
- Difficulties to estimate emission: emission depends on the type of emissions (accidental, production, leak) and the production process which may vary overtime. To assess emissions, use of probability factor (depending on type of emission accidental, production, leak) to better estimate emission.
- How to link REACH emissions (which are not site scale) and the different scale of exposure (global, site scale) ?
- Include both local and diffuse pollution
- Include both past and current sources

### **Substances**

SKH demands and discussions on substances type and substance focus are given below:

- Substance types:
  - o Different substance families to consider depending on end-points, their properties:
    - Substances which accumulate in soils and are bio-accumulative induce risks to human health and ecosystems (trophic chain)
    - Mobile substances may impact drinking water
  - o Mixture of chemicals shall be considered.
  - o Demands on assessment of PBDE in WWTP sludge.
  - o Include degradation/ transformation product of CECs.
- Suggestions for substance focus / selection were quite varied:
  - o Focus on most persistent CECs, subsequently focus on exposure routes.
  - o Focus on substances widely produced and used in the past and now.



- Start with the most important CECs (what is causing most problems today?)
- Select / screen substances based on toxicity and not on occurrence ; then screen substances based on emission
- Use persistence, emission and use data (for exposure) taking eventually factor of change (such as Climate Change); exposure index KEMI (enabling to take into account dispersion / dissemination of emission according to substances use)?

## Exposure conceptual model – scenarii

SKH demands/discussions on routes and exposure to consider are listed below:

- Need to study various scenarii depending on the substances. For each substance, determine routes and action routes (exemplary substances / routes)
- Scenarii shall target vulnerable public receptors
- The participants expressed their interests for the following scenario:
  - CECs (pesticides) -> soil -> impact on trophic chain
  - CECs -> Soil -> biodiversity (soil, hunted fauna or other fauna)
  - CECs -> soil -> drinking water
  - CECs -> soil -> groundwater (DW or not)
  - WWTP Sludge / sediment -> agricultural soil (quality, quantity of CECs present in soil)
  - Site scale :
    - Industrial emission (Accidental)-> Soil -> Receptors
    - Industrial emission (Production)-> Soil -> Receptors
    - Industrial emission (Leak)-> Soil -> Receptors
  - Urban soil (large scale) : Emissions -> urban soils - > further media
  - Flooding : Sediment deposition -> agricultural soils
  - CECs -> dredged sediments
  - CECs -> sediments deposits due to hydraulic installations / production units
- Attention shall be paid to substance recirculation through circular re-use.

## Toxicity / Risk assessment

Specific SKH demands on toxicity / risk assessment include:

- How to take into account subjective criteria for risk assessment (ie the sensitivity of the targets)?
- Will there be different approaches for toxicity estimation between urban soil/agricultural soil/industrial polluted soil?
- Need for the toxicity / ecotoxicity values for CECs.
- Secondary poisoning important to consider for trophic chain.

## Other specific demands

Other specific demands / discussions include:

- Take into account geology to predict fate of CECs in soil and sub-soil

- Priorisation based on worst-case scenario: can solely be useful to discriminate some substances; cannot be applied to prioritise realistically (funding dedicated to environmental funding being set in advance).
- Prototype shall be tested on substances having heterogeneous set of data.
- Be careful on model results – prefer site investigation – uncertainties and adequacy of the prototype to simulate all the situation precisely
- Prioritising based on previous CECs experience (NL PFAS experience for example)
- Prioritization enables prevention of emissions, but can also be used to deal with contaminants that are already a problem in the environment. In this “After the fact” type of assessment persistence is deemed important as well as the local soil use.
- Need of funding to facilitate the monitoring of substances put into the environment. A common DB amongst countries would make it more efficient.

### 3.3 Prioritisation output exploitation

The following outcomes of the prioritization process will be useful for SKH:

- **Regulation**
  - o Information for policy decision makers and administrators.
  - o Signaling tool for substances at national / central level, mainly for governments / administrators / competent authorities.
  - o EU Signalling system – Flag out substance for which attention is needed.
  - o Designing a clear action plan
  - o Link between PREMISS and soil directive
- **Robust methodological and management approach:**
  - o The emphasis of the tool should be (for competent authorities) estimating the risk of substances, at what quantities, etc.
  - o Would like to be able to use the tool to gain insight into which substances can pose a problem. What is the criterion for being included in the list of substances?
  - o Not too many substances, but link them to an action framework: what should I do about this?
  - o Input to gain insight into which actions must be carried out using a general method (output).
  - o A guide/tool/handbook telling us the amounts of CEC used, risk on environmental damage, and persistence and toxicity in the environment. This should technically prioritise the CECs and become available to determine locally which CEC is most important in that setting.
  - o Guidance for the investigation of CECs and recommendations, which may include kind of priority classes given to certain (groups of) contaminants, which help in defining how to deal with ...
  - o Clarified S-P-R transfer patterns, recommendations for actions at different points of management (including legislation, local/diffuse pollution issues), open/shared databases, ...

- **List of substances**

- One outcome of the project may be to propose a watch list on CECs for soil. ( in order to identify major CECs on which analytical efforts and monitoring campaigns shall be focused on ).This watch list shall describe how to deal with the substance depending on the scenario (SPR) considered.
- List of substances for which adequate services shall be developed.
- Identify substances where additional research is needed/Recommendation for future research? And coupling to existing (inter)national knowledge infrastructure.
- Target the most dangerous families/species CEC an identify the risk linked to these CEC

- **Database**

- Data(base) inter-operability
- Improved database

## Annex 1 – Workshop participants' list

Country / Region	Name	Surname	Organisation
France	Mathias	Broquaire	SOLVAY
France	Hubert	Leprond	EDF
France	Pierre-François	Staub	OFB
France	Philippe	Ricour	Agence Eau Rhin Meuse
France	Xavier	Dauchy	ANSES
France	Valeria	Dullio	INERIS
France	Yves	Duclos	ADEME
France	Yolanda	Boisson	ANTEA GROUP pour UPDS
France	Valentin	Gondy	SDDEA
France	Guillaume	Gay	MTE - DGALN/DEB/EARM4
The Netherlands	Gita	Maas	Ministry of Environment and Watermanagement
The Netherlands	Marije	Schouwstra	Ministry of Environment and Watermanagement
The Netherlands	Stefan	Kools	KWR
The Netherlands	Kees	Van Gestel	Vrije Universiteit
The Netherlands	Coert	Fossen	Omgevingsdienst
The Netherlands	Michiel	Gadella	RWS
The Netherlands	Michiel	Nass	Gemeente Helmond
The Netherlands	Hans	Slenders	ARCADIS / Exp.centrum PFAS
The Netherlands	Henriette	Korpershoek	Port of Rotterdam
Belgium / Wallonia	Lambrechts	Thomas	SPW-ARNE-DPS
Belgium / Wallonia	Goidts	Esther	SPW-ARNE-DPS
Belgium / Wallonia	Ponzoda	Olivier	FEDEXSOL
Belgium/Wallonia	Colinet	Gilles	ULG Gembloux
Belgium (national)	De Boosere	Isabel	SPF Environnement
Belgium (national)	Martine	Piras	SPF Environnement
Belgium / Bxl	Bouamama	Mohamed	Environnement Brussels
Belgium/Flanders	De Ren	Luc	SGS
Belgium/Flanders	Touchant	Kaatje	VITO
Belgium/Flanders	Ryken	Els	VMM
Belgium/Flanders	Cattoor	Time	Essentia
Belgium/Flanders	De Moor	Gerlinde	BASF

## Annex 2 – Workshop Agenda

26 January 2021, TEAMS meeting

09.30 – 09.45	Registration and connecting to TEAMS
<b>Setting the scene - plenary session</b>	
09.45 – 09.50	Welcome and Agenda ( <i>Anne Togola, BRGM</i> )
09.50 – 10.05	Presentation of PREMISS project ( <i>Corinne Merly, BRGM</i> )
10.05 – 10.20	Focus on the PREMISS prioritization prototype ( <i>Léonard Oste, Deltares &amp; Johannes Lijzen, RIVM</i> )
10.20 – 10.30	Overview on national available information on CECs in soil and sub-surface ( <i>Elodie Bouhoulle, ISSeP</i> )
10.30 – 10.35	Objectives of the workshop ( <i>Corinne Merly, BRGM</i> )
10.35 – 10.45	Questions & Answers
10.45 – 11.00	Break and directed to specific break-out session
<b>National break-out sessions</b>	
11.00 – 12.30	National discussion based on questionnaire
12.30 – 13.15	Lunch break
<b>Plenary discussion</b>	
13.15 – 13.50	Feedback from national break-out sessions
13.50 – 14.25	Plenary discussions
14.25 – 14.30	Conclusions and Closure

## Annex 3 – PREMISS presentations

Presentation 1: Presentation of PREMISS project

Presentation 2: Focus on PREMISS prioritisation prototype

Presentation 3: Overview on national data available for CECs in soil and sub-surface