Implementing a PFAS-action plan to secure Environment and Public Health

the Wallonia experience

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PFAS-event Flanders "Tackling PFAS Pollution"

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A. PFAS Situation in Wallonia

1) For now, no online mapping

2) Current strong increase of soil investigations

November 2023: 37 polluted sites

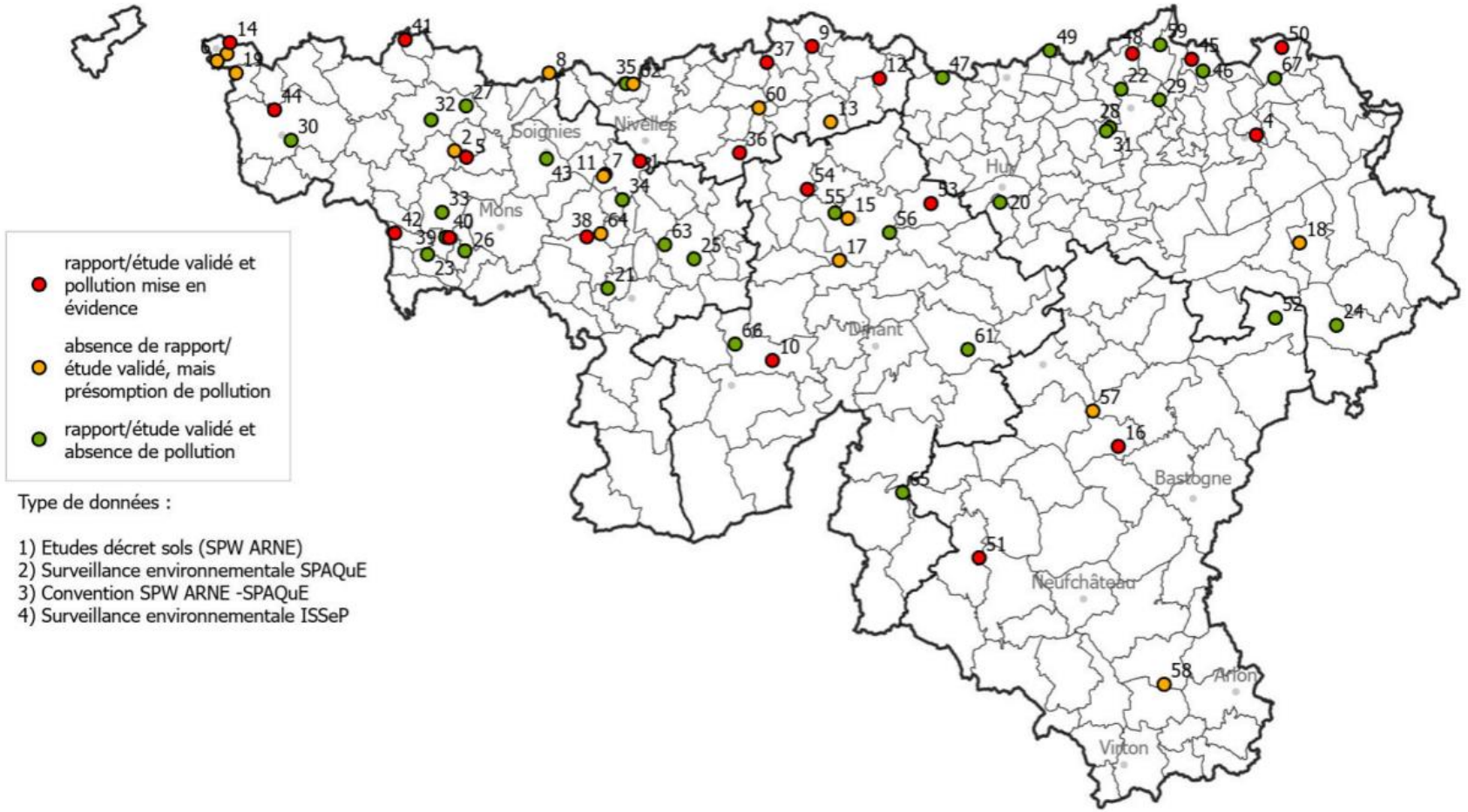
January 2024: from 37 to 57 polluted sites

It is still the beginning…

3) New guidelines for soil studies in December 2023

Wallonie

Mapping of PFAS local pollutions in soil and groundwater – 13/11/2023



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Soil Legislation in Wallonia

→Soil Decree, 2018

→Trigger values for 50 usual pollutants

How does this work for other pollutants, like PFAS ?

The administration (SPW) can determine **guideline values** for soil and groundwater, based on technical reports from ISSeP and SPAQuE

→A procedure has been developed for data selection and values calculation

→All guideline values and associated data are published in a single database on our website

These guideline values are not legal values, but only **recommendations**

→ Second opinions from soil experts are welcome

B. Derivation of guideline values in soil (risk-based assessment)

How to determine guideline values for a mixture of substances ?

Single guideline value for a sum of concentrations

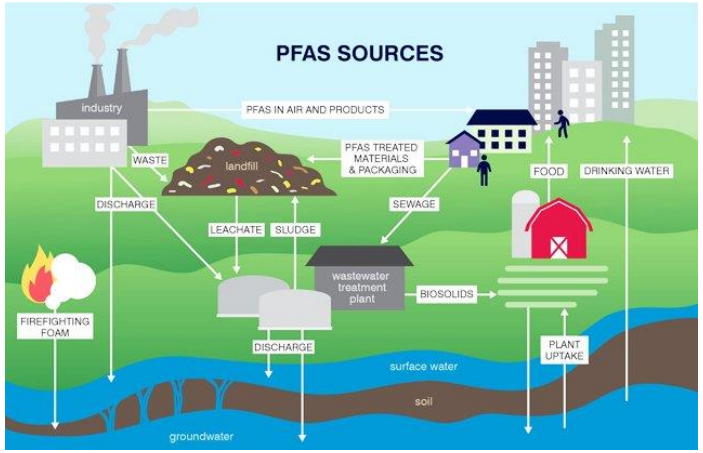
Example: PCB – sum of 7 Ballschmiter congeners

Toxicological equivalency for chemicals from a same family

Example: dioxins and furans (TEF, based on the toxicity of Seveso dioxin)

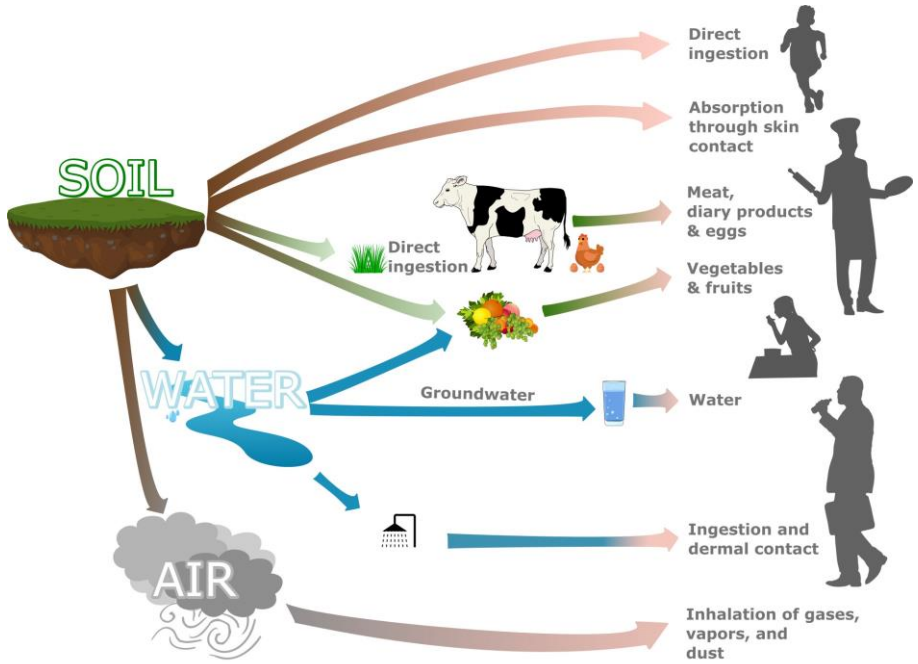
Specific guideline value for each substance

Choice made for PFAS in soil



Source : omnieg.com

Source + Pathways + Receptors



Chemical behaviour in the environment
+
exposure scenario
+
Toxicological reference values

Human Health Risk Assessment Tool

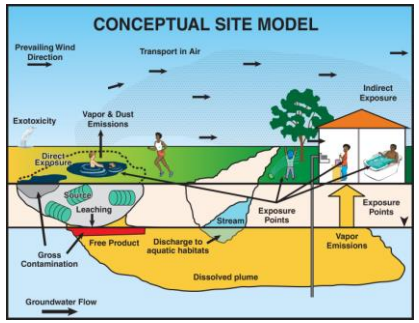
S-Risk
contaminated Sites RISK Assessment

guideline values in soil

[µg_chemical/kg_soil]

1. Derivation of risk-based guideline values in soil for PFOS, PFOA (++ data, evaluation date 2020) and PFDA (+/- data, evaluation date 2023)

   For a residential land-use human health protection
   - PFOA: 30.9 µg/kg
   - PFOS: 21.5 µg/kg
   - PFDA: 1.5 µg/kg



Source : https://pfas-1.itrcweb.org/

But already new Toxicological Reference Values (**TRV**) available !!

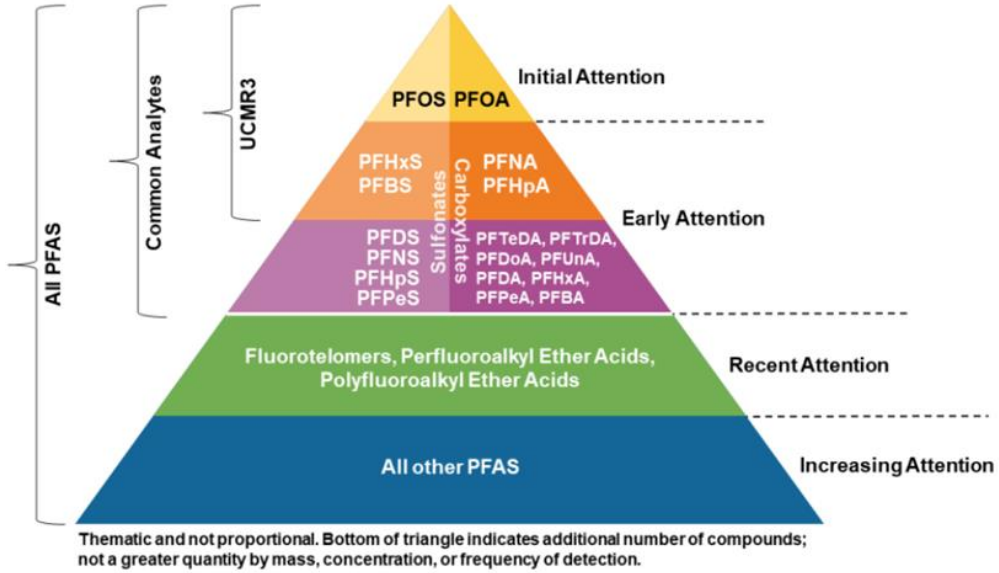


Figure 2-18. Emerging awareness and emphasis on PFAS occurrence in the environment

Source: J. Hale, Kleinfelder. Used with permission.

Source : https://pfas-1.itrcweb.org/

2. For other PFAS, use of guideline values from the State of Hawaii (USA)
   Derivation from a simplified risk model and using Zeilmaker ‘s approach (relative potency factors) to surrogate TRV for the mixture toxicity assessment
   Our opinion : not the best choice but temporary useful

3. For others, use of 2 x laboratory limit of quantification

Issues in the soil legislation: 2 fields in progress

Knowledge about PFAS toxicity is quickly improving, leading to awareness about the toxicity
(→ a lower Toxicological Reference Value)

Year	Organisation	PFOA Oral Toxicological Reference Value (ng/kg bw.day)	Target Organ/system
2008	EFSA	1 500	Liver
2016	US-EPA	20	Development and reproductive toxicity
2020	ATSDR	3	Development and reproductive toxicity
2020	EFSA	0,63 (for PFOA+PFOS+ PFHxS+PFNA)	Immune system

Guideline value

Analytical ability of the laboratories is limited but in progress

LC-MS/MS
Liquid chromatography coupled with tandem mass spectrometry

Current Limit of Quantification (soil) = 0,5 – 1 µg/kg

Assessment of risk on potentially contaminated sites is complicated and tricky
→ between precautionary principle and sustainability (remediation cost)

C. Selection of guideline values in groundwater

How to calculate guideline values for groundwater, according to our protocole ?

1) Search for drinking standards in national and international regulations

2) Calculation of maximum admissible concentration in water intented for human consumption based on WHO methodology (and thus on oral TRV)

Results for PFAS

→Directive UE 2020/2184 on the quality of water intended for human consumption : PFAS(20) 100 ng/l + PFAS(total) 500 ng/l

→ Specific values based on WHO methodology

Need to select a single system of guideline values

PFAS(20) and PFAS(total)

- How to interpret a sum value in terms of human risk ?
- Not based on toxicological criteria but current revision
- **Harmonization with other national and international regulations**

Specific guideline values

- Values based on toxicological criteria. Human risk assessment is possible
- Difficulty to explain the use of different guideline value systems in a same media

PFAS(20) and PFAS (total) selected

Take home messages

- **New PFAS guidelines for soil studies in December 2023**

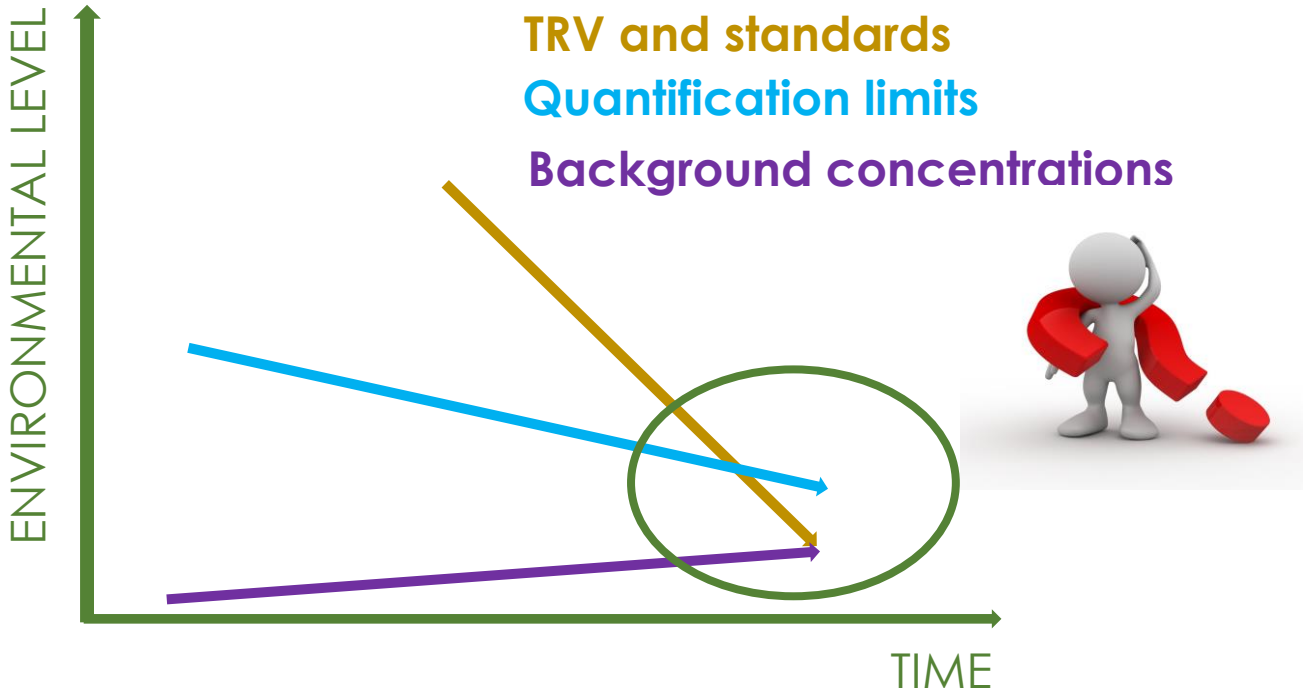
https://sol.environnement.wallonie.be/home/documents/le-coin-des-specialistes-experts-laboratoires/polluants-non-normes-pnn.html

- **How to define safe and operational PFAS standards ?**

➢ **Scientific watchful**

➢ **Exchanges / network**

➢ **Pragmatism :** Scientific uncertainties vs sustainable remediation



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ISSeP
Institut scientifique de service public

Thank you for your attention !

Any questions ?