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BANSKÁ BYSTRICA, SLOVAK REPUBLIC, 8 – 10 OCTOBER 2018

*The activity has been implemented within the framework of national project
Information and providing advice on improving the quality of environment in Slovakia.
The project is cofinanced by Cohesion Fund of the EU under Operational programme Quality of Environment.*

Development of database and protocols to select physical, chemical and toxicological parameters for almost 280 pollutants in Wallonia (Belgium)

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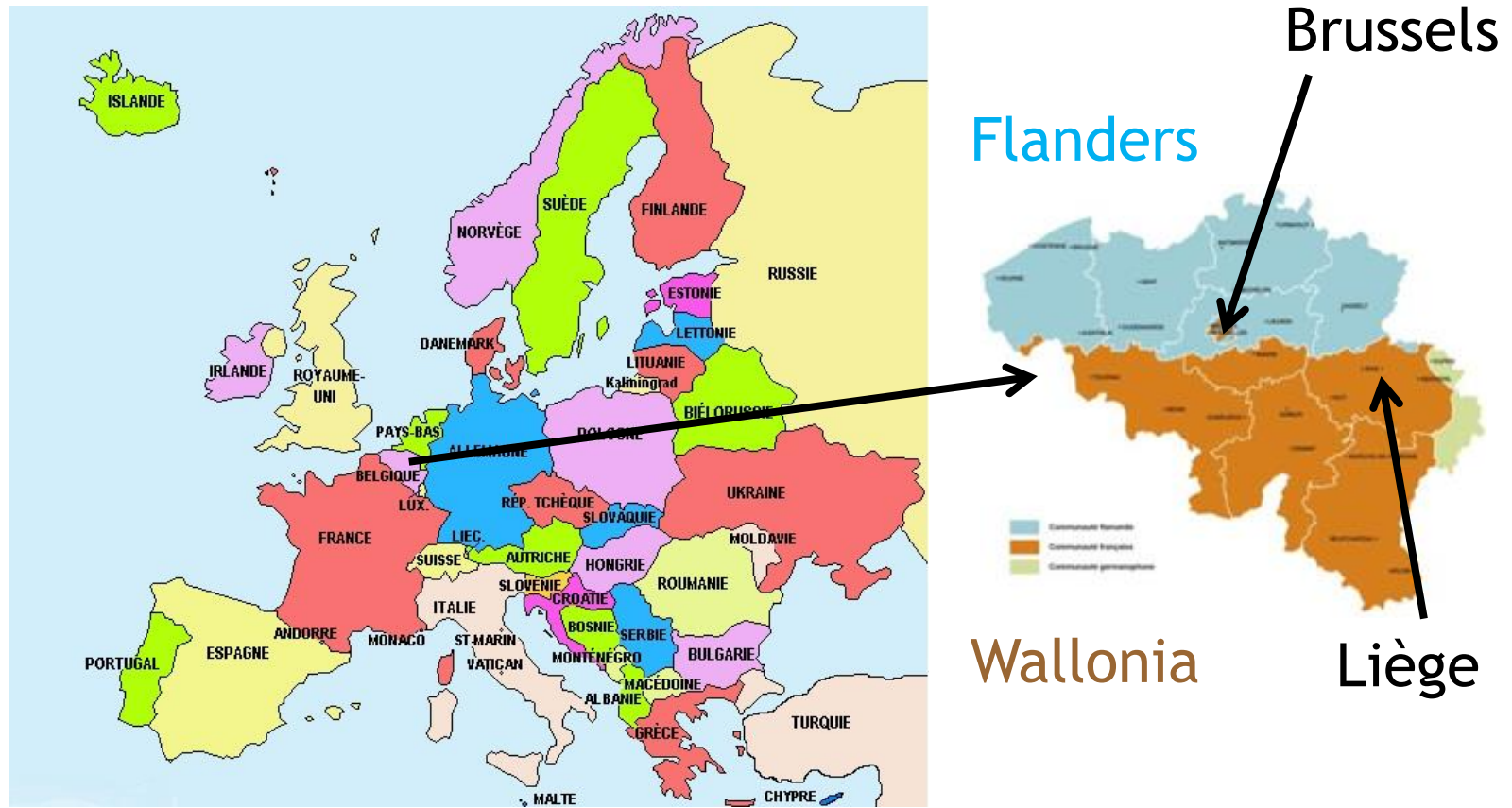
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1. Role of SPAQuE

Belgium : 3 regions -> 3 soil regulations



1. Role of SPAQuE

Consultancy company, financed by public funds, in charge of remediation of brownfields and landfills for the Walloon Government

Since 2005 :

- **Regional funds : 399 Million euros - 74 sites**
- **European funds : 199 Million euros - 47 sites**

2. Soil legislation in Wallonia

Industrial Emissions Directive
(IED)
European Directive
(2010/75/EU)

transposed in 2014



Baseline report



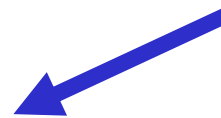
relevant pollutants
in soil and groundwater

Walloon Soil Decree
(05/12/2008)

modified in 2018



characterization
study



3. Context of developing protocols

Many pollutants analyzed in soil and groundwater

 the acceptable threshold above which a risk is expected for human health and groundwater

APPLICATION : the calculation of screening values = Limit Values (LV)

HOW ? By selecting physicochemical and toxicological properties of pollutants

DIFFICULTIES :

- various international/national databases
- different values for one property

3. Context of developing protocols

DECISION :

- To establish a common standardized protocol for searching for and selecting properties
- To calculate the soil and groundwater screening values (LV)

WHO ? A working group has been implemented by the Walloon Government

- Ministry of the Environment in Wallonia



- ISSeP : Walloon public institute



- SPAQuE



SPAQuE



4. Methodology of selecting properties

What properties ?

- Physical and chemical properties
- Toxicity reference values

➡ 2 protocols

➤ Feedback over 6 years

➤ balance between quality scientific data/time spent searching

4. Methodology of selecting properties

14 physicochemical properties

Physicochemical properties	
Molecular weight (g/mol)	Acid dissociation constant = pKa
Vapor pressure at 10° C (Pa)	Henry's law constant at 10° C (Pa.m ³ /mol)
Solubility in water at 10° C (mg/L)	Soil/water partition coefficient (L/kg) - Kd
Octanol-water partition coefficient - Kow	Organic carbon-water partition coefficient - Koc
Permeation organic substance through PE drinking water service pipe (m ² /d)	Bioconcentration factor for contaminants soil/plant ((mg/kg plant dm)/(mg/kg soil dm) or (mg/kg plant dm)/(mg/m ³) - BCF
Dermal permeability coefficient for water (cm/h) - Kp	Biotransfer factor to meat, kidney, liver and milk ((mg/kg fw)/(mg/d)) - BTF
Dermal absorption factor for soil and dust - ABS _{dermal soil/dust}	Fraction absorbed water - FA

4. Methodology of selecting properties

First step : CAS number

Second step : searching for properties

- List 1, priority list, recommended by other agencies

➔ HSDB, Mackay D. and *al.* (2006), Verschueren K. (1996, 2008), SRC-PHYSPROP

- List 2, not exhaustive => 12 sources

➔ Ex : IUPAC, ATSDR, Lide D. (2009-2010), Sander R. (2015) (Germany), US EPA - Regional Screening Levels, INERIS (France), INRS (France)

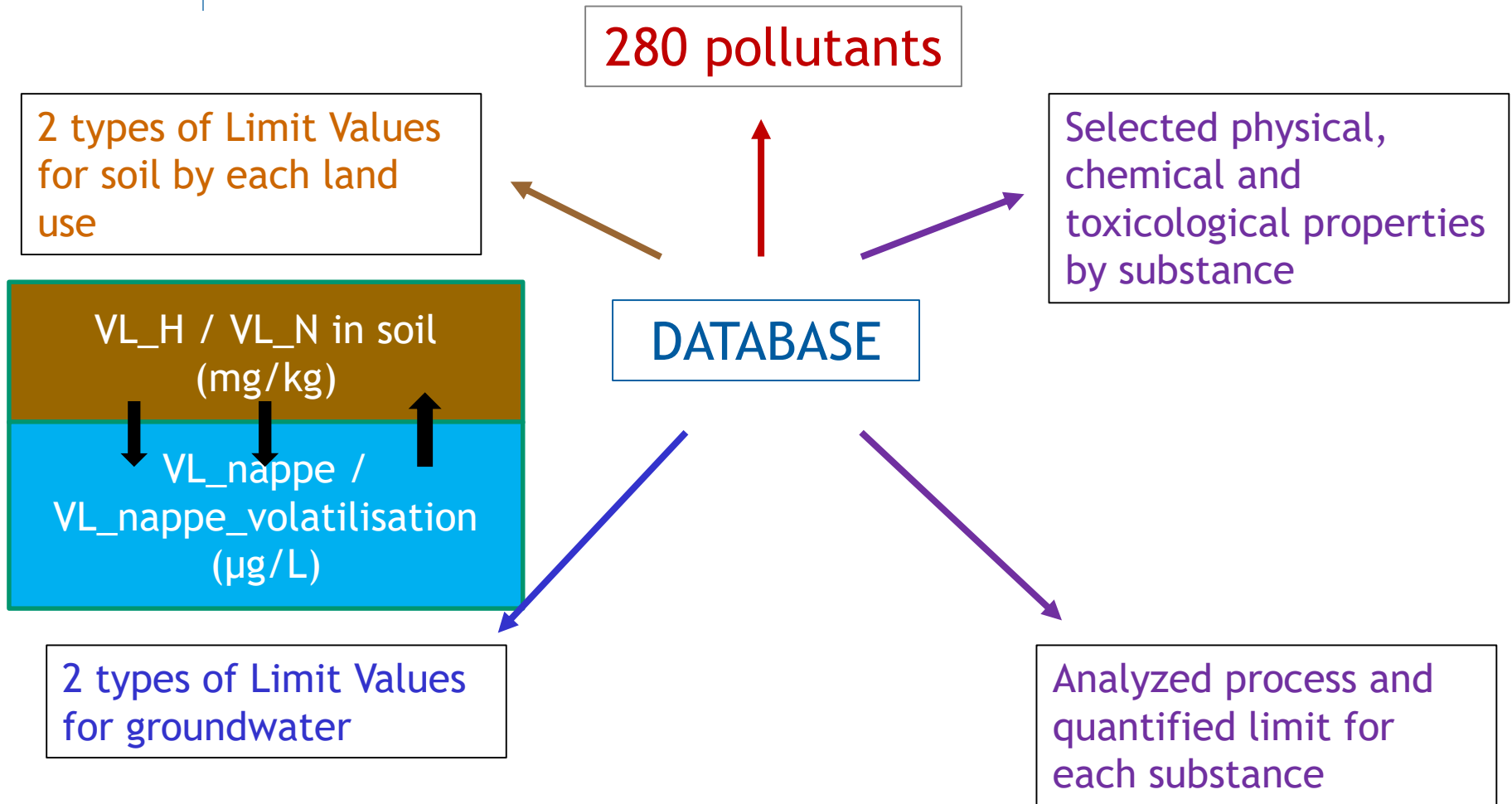
4. Methodology of selecting properties

Third step : selecting properties => 3 rules

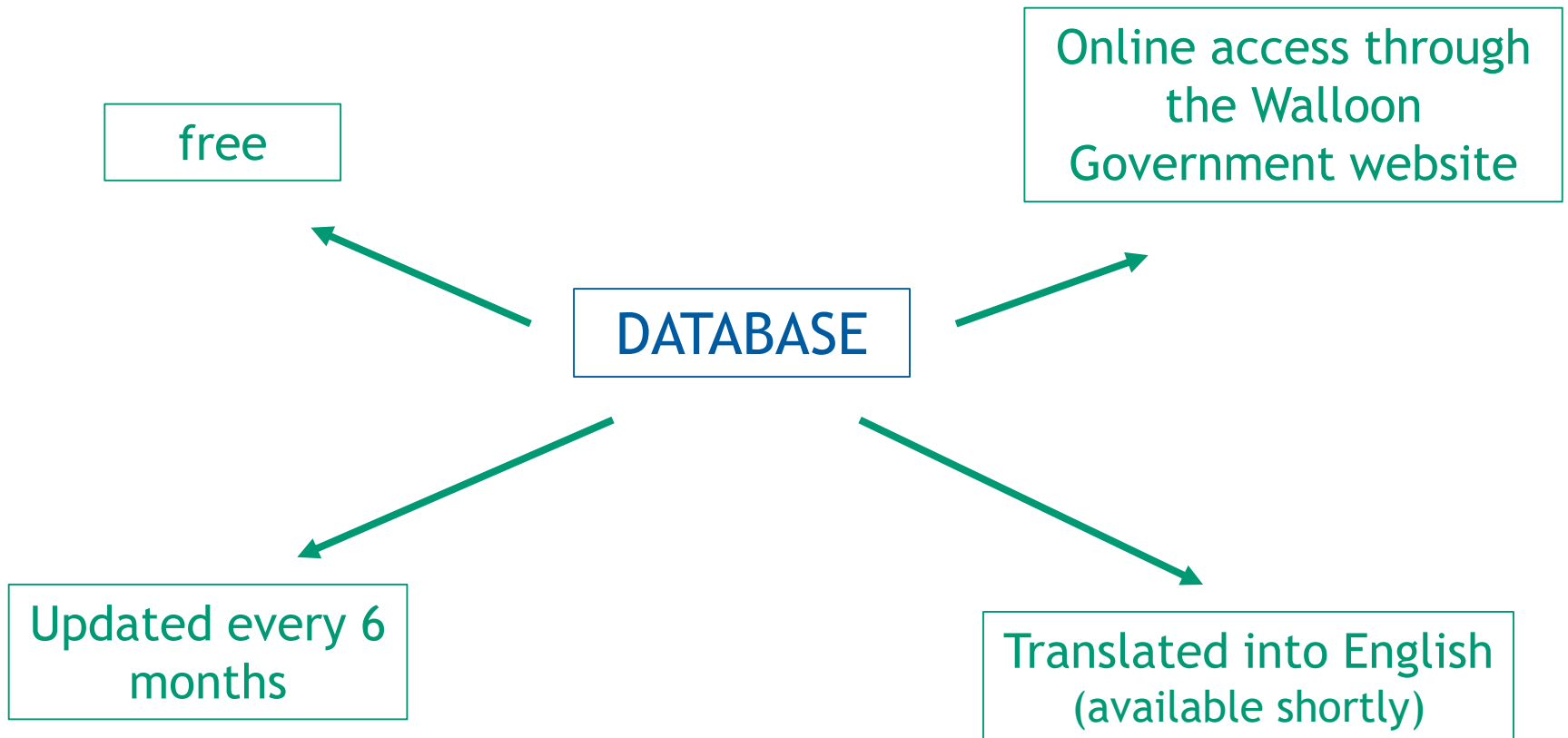
- experimental data
- consistency of the selected value
- value at 10° C ($\pm 2.5^{\circ}$ C)

 Exemption to these recommendations is possible, under justification

6. Perspectives : database



6. Perspectives : database



➤ dps.environnement.wallonie.be

THANK YOU

- QUESTIONS ?