

Exposure and risk assessment of contaminants in fertilisers

Comparison of exposure tools and establishment of a strategy for meaningful 'screening' assessment

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The exposure/risk assessment methodology presented in this poster was the methodology followed in the project "Contaminants in fertilisers*: Assessment of the risks from their presence and socio-economic impacts of a possible restriction under REACH" performed for the European Commission, DG Environment.

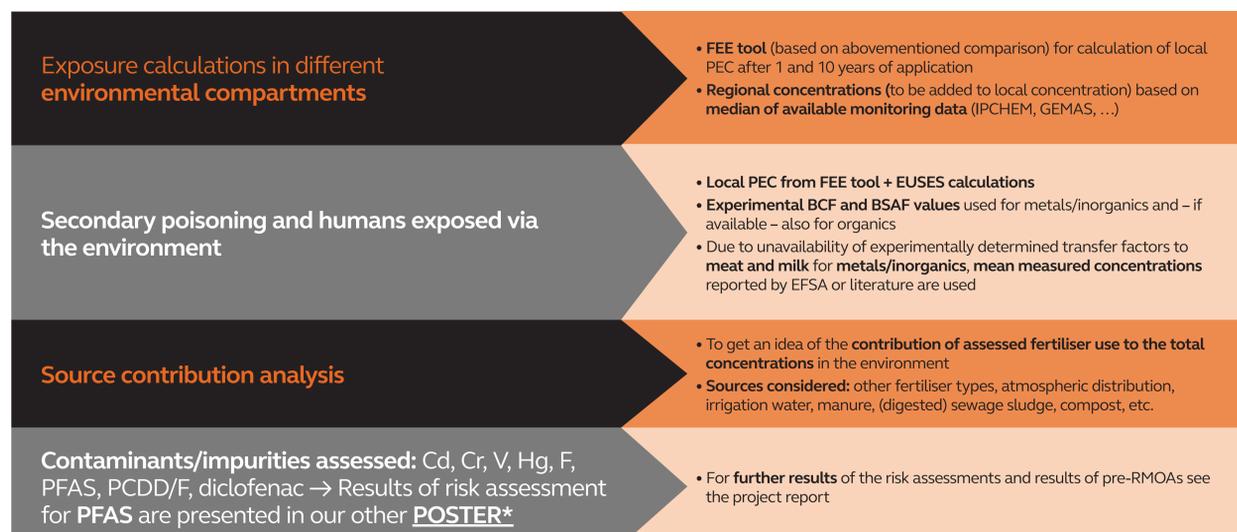
* Fertilisers as defined by the EU Fertilising Products Regulation (EU 2019/1009)



Methodology explained

Comparison of available exposure assessment tools

	EUSES (European Union System for the Evaluation of Substances) Developed for assessment of chemicals and biocides	ECPA-LET (European Crop Protection Association – Local Environment Tool) Developed for assessment of co-formulants in pesticides	FEE tool (Fertilizers Environmental Exposure Tool) Developed by Fertilizers Europe in cooperation with ARCHE Consulting for assessment of fertiliser constituents
Local scenario	✗ No direct releases to agricultural soil in EUSES version 2.1.2. Direct releases to soil included in EUSES 2.2.0, but specifically developed for outdoor applications of biocides, not relevant for agricultural fertiliser applications. Local scenario = point source scenario with direct/indirect emissions to environmental compartments. Local agricultural area = circle with a radius of 1000 m around the point source.	✓ Considers direct releases to agricultural soil. Similar dimensioning and based on similar calculations as the FEE tool, with small differences (e.g. mixing depth of soil, residence time for calculation of surface water concentration, ...)	✓ Considers direct releases to agricultural soil. Local scenario based on Steps 1-2 in FOCUS, i.e. the first-tier model used for exposure assessment of plant protection products. Local scenario = 1 ha agricultural field surrounded by shallow water body (2.5 m width, 0.3 m depth, 1000 m ² surface area).
Regional scenario	✓ Regional PEC can be calculated (based on SimpleBox 4.0 model).	✗ Regional PEC cannot be calculated.	✗ Regional PEC cannot be calculated but needs to be entered as input value.
Environmental fate calculations	✗ REACH R.16 guidance Run-off, drainage and erosion only taken into account in regional assessment. Drift only included in certain biocide scenarios not applicable to fertilisers. Crop offtake not taken into account.	✓ REACH R.16 guidance, complemented with calculation methods and parameters from FOCUS Step 2 (FOCUS, 2015). All relevant processes included (run-off, drainage, drift, erosion) Crop offtake is not taken into account.	✓ REACH R.16 guidance, complemented with calculation methods and parameters from FOCUS Steps 1-2 (FOCUS, 2015) and SimpleBox 4.0 (RIVM, 2015). All relevant processes included (run-off, drainage, drift, erosion). Crop offtake can be taken into account.
Secondary poisoning	✓ Included.	✓ Included.	✗ Not included.
Humans exposed via the environment	✓ Included.	✗ Not included.	✗ Not included.
spERCs	✗ spERC settings to be added manually.	✓ 2 scenarios (ECPA).	✓ 4 scenarios (REACH FARM Consortium).
Refinement options (risk reduction measures)	✗ No options foreseen relevant for agricultural practices.	✓ Specific risk reduction measures relevant for agricultural practices included (application frequency, crop type and growth stage, soil incorporation, spatio-temporal adjustments).	✓ Specific risk reduction measures relevant for agricultural practices included (application frequency, crop type, growth stage, concentration and yield, soil incorporation, drift and run-off reduction).
Applicability for organics/inorganics	✗ Only applicable to organics – modification needed to adjust calculations for inorganics/metals.	✗ Developed for organics , not specifically adapted for inorganics/metals.	✓ Fully adapted for both organics and inorganics/metals.



Disclaimer

It should be noted that the views expressed in the poster are those of the contractor with the context of the service contract 070201/2019/817112/SER/ENV.B2 and according to the terms of reference associated with that contract.

Acknowledgement

The results presented were generated in view of the project "Contaminants in fertilisers: Assessment of the risks from their presence and socio-economic impacts of a possible restriction under REACH" (European Commission – DG Environment). The project team was composed of Arcadis, DHI, Arcadia International and Vander Straeten Consulting Services. Presented work was performed by Arcadis.

The report can be found here (QR)

