

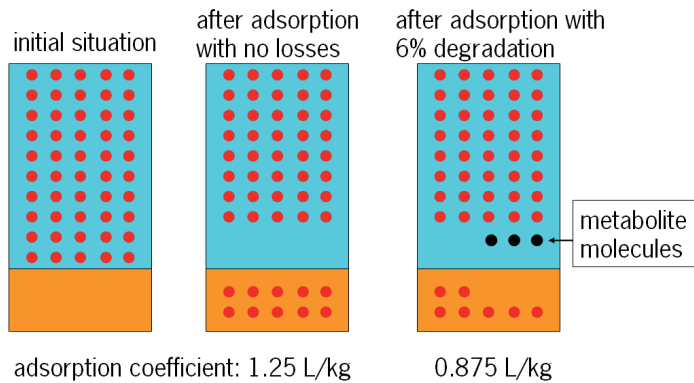


Correction procedure for adsorption coefficients from batch studies based on measured recovery

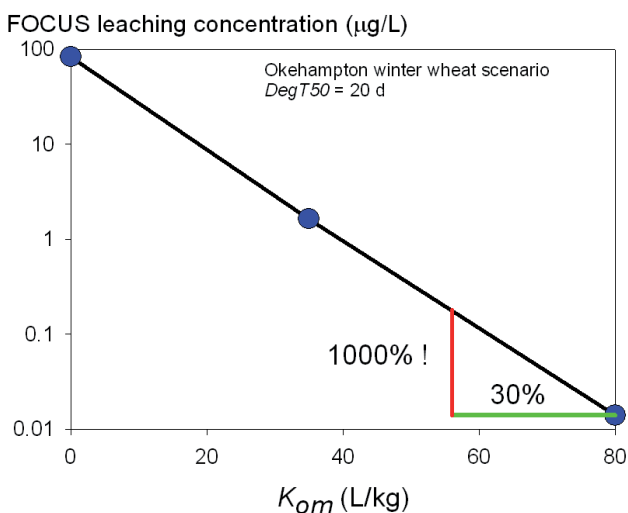
Boesten, J.J.T.I.^{1*}, van der Linden, A.M.A.², Pol, J.W.³ & Beltman, W.H.J.¹

Problem

- Guideline OECD-106: if recovery of test substance is at least 90% and decrease of concentration in liquid phase is at least 20% then assume that decrease is result of adsorption
- consider example: adsorption study with 100 mL water and 20 g soil with 20% decrease in concentration: 50 molecules of test substance of which 10 adsorb



- so, if 6% is degraded then measured sorption coefficient is 30% too high



- 30% lower adsorption coefficient may lead to leaching concentration that is 1000% higher!

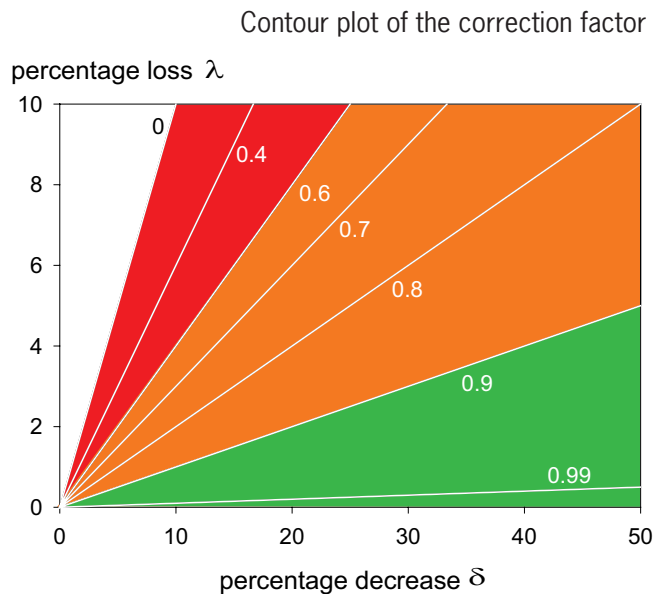
Solution

- assume that lack of 100% recovery is result of some loss process of test substance
- multiply measured adsorption coefficient by following correction factor

$$\frac{\delta - \lambda}{\delta}$$

where

- δ = % decrease of concentration in liquid phase
- λ = % loss of test substance during study (so if recovery is e.g. 94% then $\lambda = 6\%$)



if only 90% recovery (so 10% loss) then correction factor always much lower than 0.9.

Conclusion

Applying this correction factor will often have large effect on resulting leaching concentrations.