

Third European Modelling Workshop

1st Workshop 2001 in Silsoe

“Pesticides in surface waters”

2nd workshop in 2002 in Lisboa

“Pesticides in Groundwater ”

3rd Workshop

Catania, Sicily, 17-19 February 2004

**Assessing the transport of pesticides to
ground- and surface waters using
standard and higher-tier experimental and
modelling approaches**

**Discussions are more important
than presentations!**

Therefore we need note takers !



Balancing research interests and regulatory requirements



Typical circles of workflow

Researcher

- Identifies problems
- Gets funding
- Makes research
- Identifies new and more complicated problems
- Gets funding ...

Regulator

- Is confronted with problems
- Has to provide solutions
- Makes decisions
- Is confronted with new problems
- Has to provide solutions ...



Balance problem: Model validation



Specify model types and validation objectives

- Screening model: standard scenario in model is conservative in comparison to reality (same magnitude or worse than experiments)
 - worst case scenario and parameter selection guidance necessary

Hypothesis: model calculations using standard scenario(s) are appropriate for registration purposes – model needs not necessarily be a good interpretation of the single processes

- Process model:
 - good agreement of observed and predicted results required
 - site specific scenario data and parameters required

Hypothesis: model describes the single processes with sufficient accuracy

- > prediction with independent parameters possible
- > extrapolation to other scenarios possible

Example Solution for Balance Problem

	Target quantity	Scenario	Criteria	Consequence
Level 1	Annual mean concentration	Standard scenario	predicted \geq observed (for concentrations around 0.1 $\mu\text{g/L}$)	Model can be used as registration screening tool
Level 2	Cumulative leachate outflow Cumulative substance outflow annual flux concentration Benchmarking versus analytical solutions	Site specific scenario with independent parameters steady state boundary conditions	Cumulative water outflow $\pm 20\%$ annual leachate concentration $<$ factor 5 Predicted – observed $< 5\%$ deviation	Model can be used to predict leaching at a given (non-standard) scenario with sufficient accuracy for registration purpose
Level 3	cumulative leachate outflow dynamics of water outflow cumulative solute outflow BTC	Site specific scenario also possible with inverse estimated parameters	Statistical parameters according to FOCUS kinetics ??	Model can be used to describe single processes Model can be used for inverse parameter estimation Model can be used to extrapolate results to other scenarios/locations

Come into discussion



- Identify your objectives
- Specify precisely what you want to achieve
- Define on which basis you discuss
- Find a compromise