The importance of environmental realism in 21st century risk assessment

A Danube Delta – Trace metal perspective

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• The work
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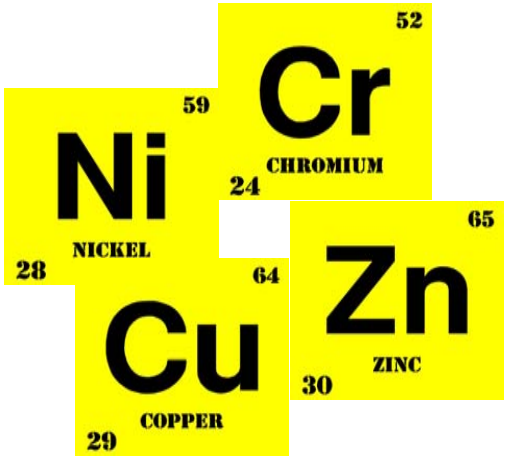
• The limitations and needs
• The take-home messages

The work (sampling)

Samples

- 24: Kiliya (2004)
- 25: Bystry Channel (2005–2007)

The work (analyses and elaboration)



As, Cd, Cu, Pb, Zn, Hg, (Cr, Ni)

Probable **E**ffect **C**oncentration **Q**uotient

(PEC–Q) (e.g., Long et al., 2006)

$$PEC - Q = \frac{\sum_{i=1}^{n} \frac{Me_i}{PEC_i}}{n}$$

The risk assessment: PEC–Q significant figures

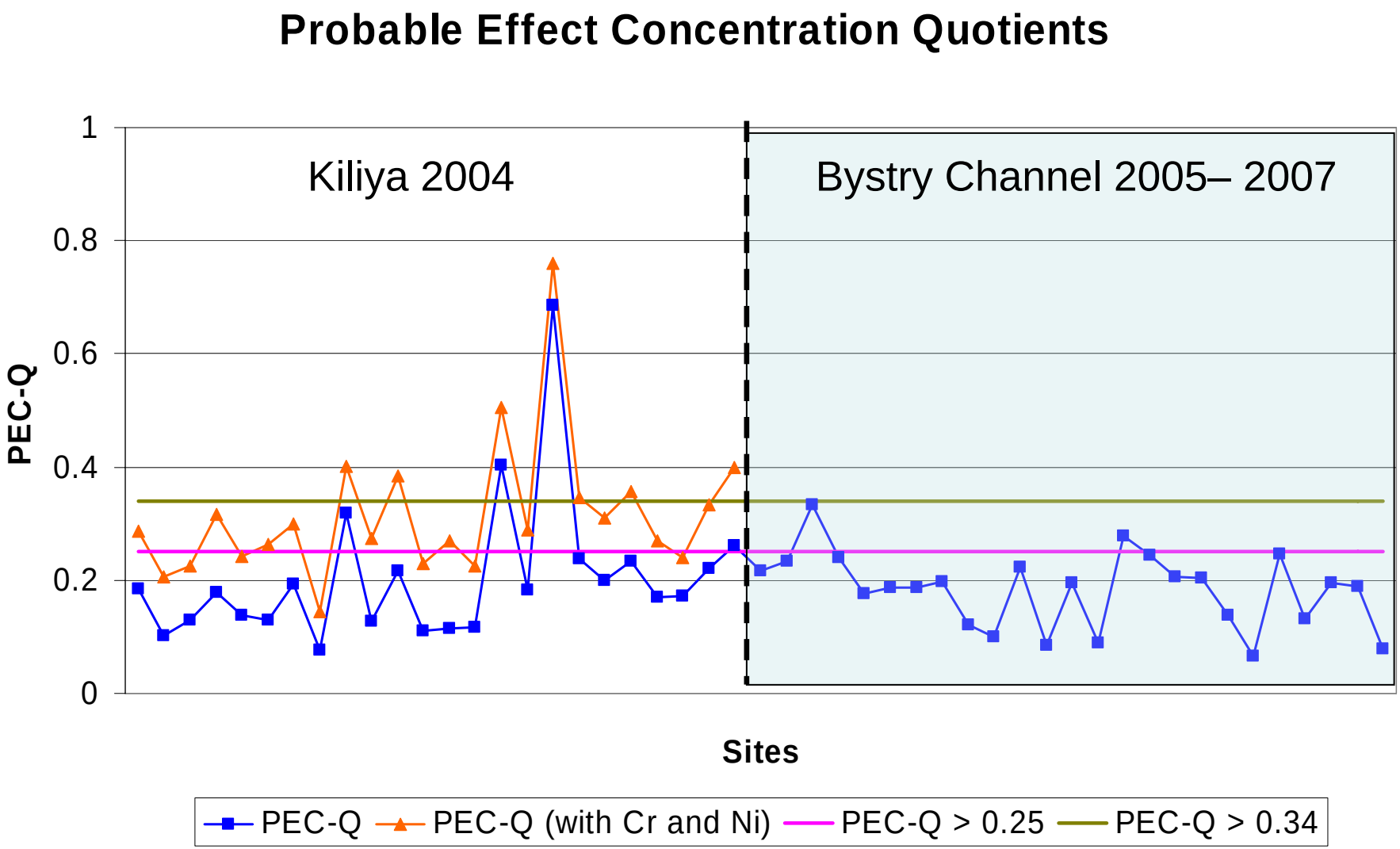
PEC-Q > 0.25

Toxicity in laboratory tests > 20%

PEC-Q > 0.34

Total abundance benthos affected

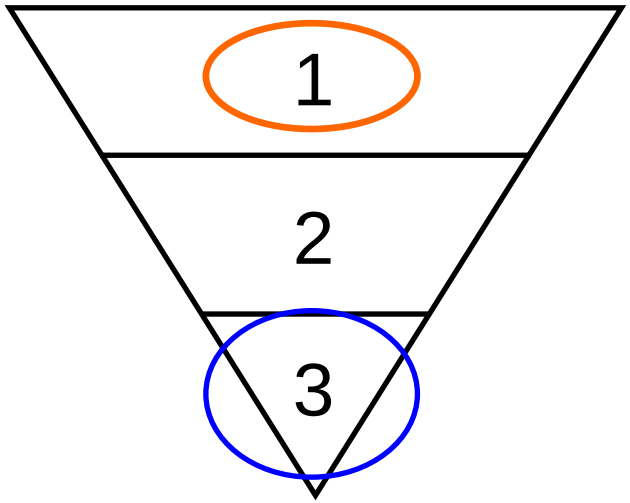
The risk assessment: results



The limitations: type 1,2,3 criteria

Sophistication

Least



Most

Applicability

Universal

Specific

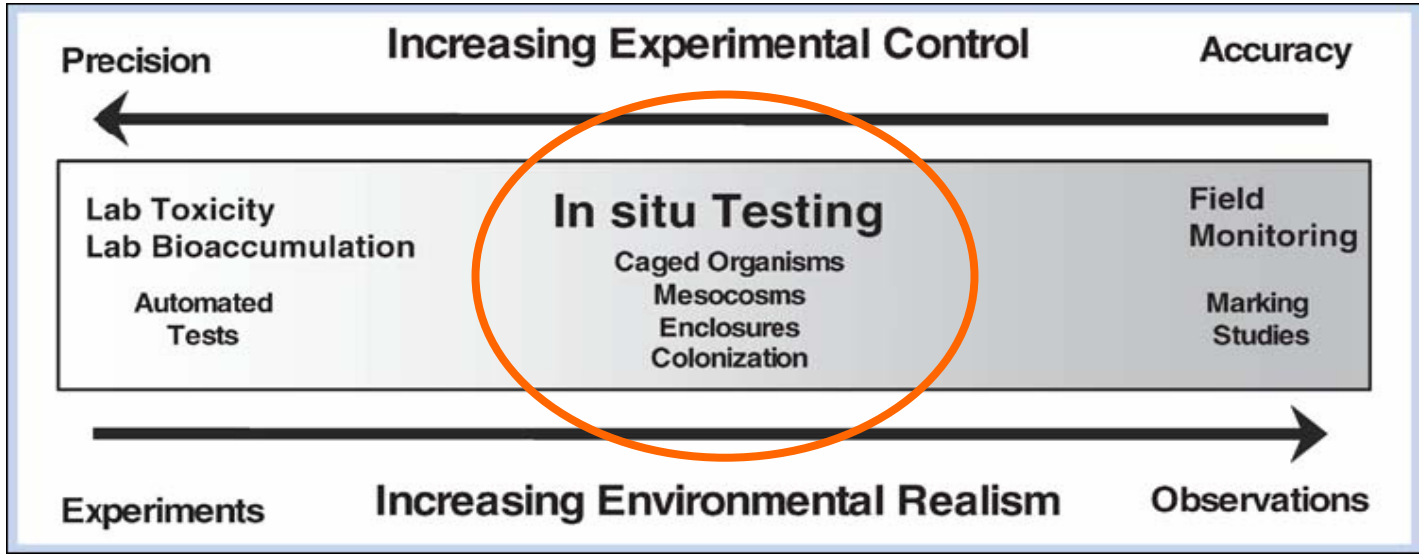
Availability

Immediate

Future

From Reiley et al., 2003

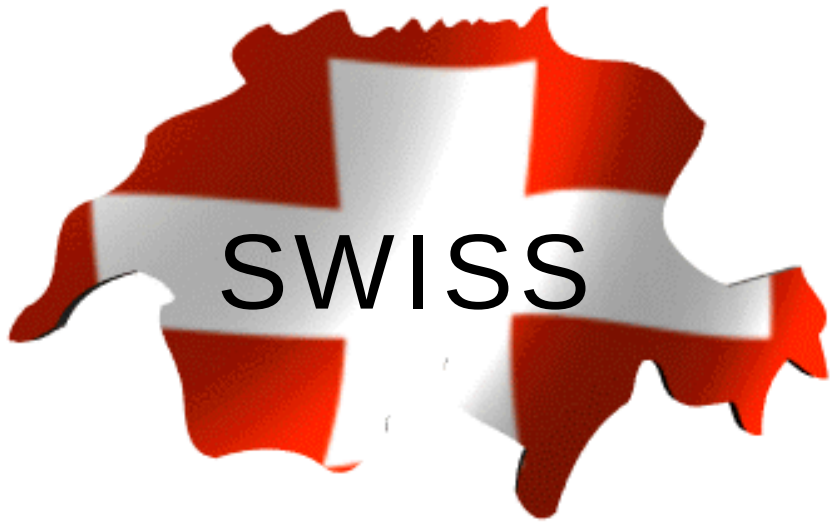
The needs: integrated biological tools



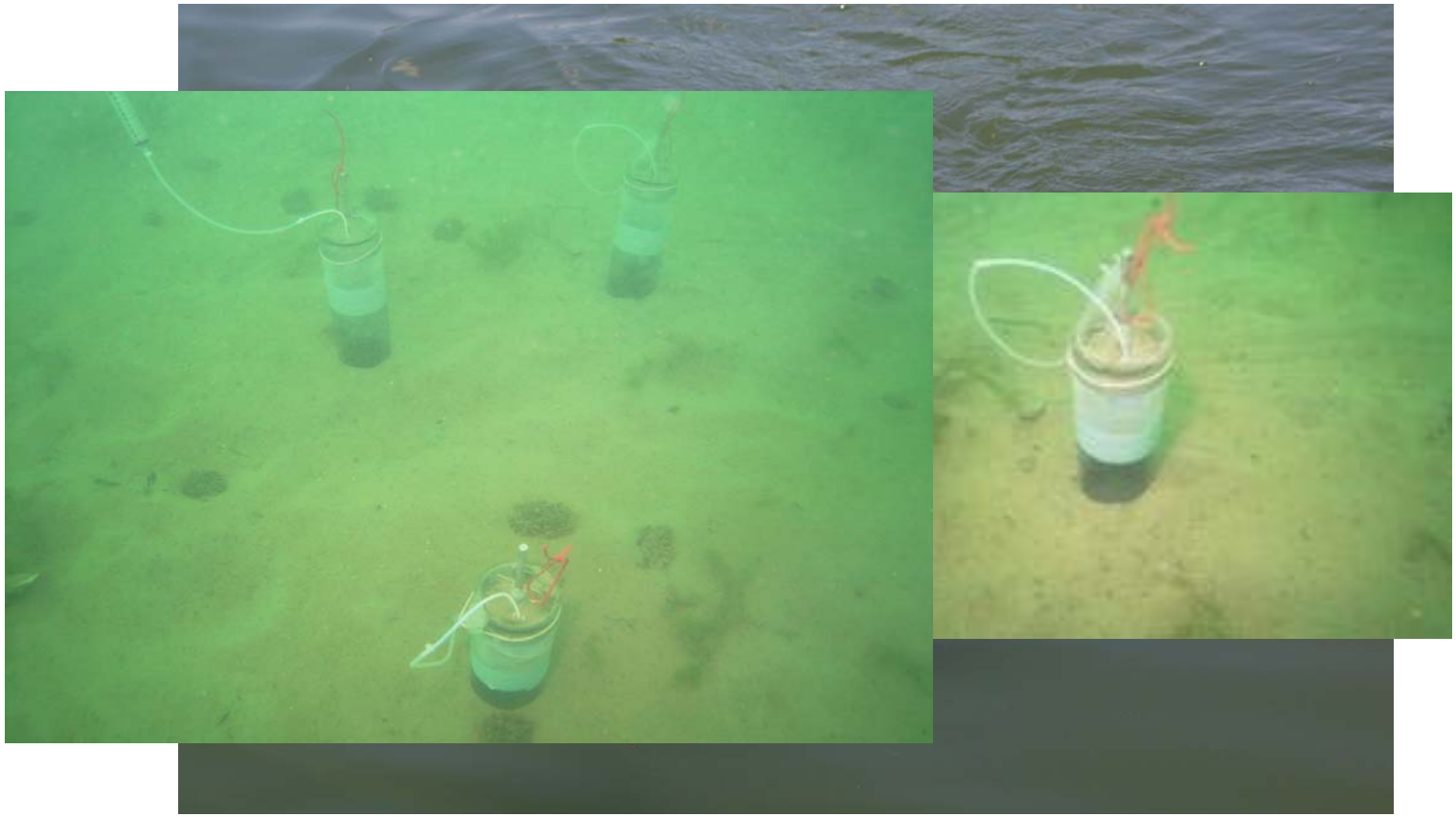
Crane et al. (2007), *IEAM* 3: 234

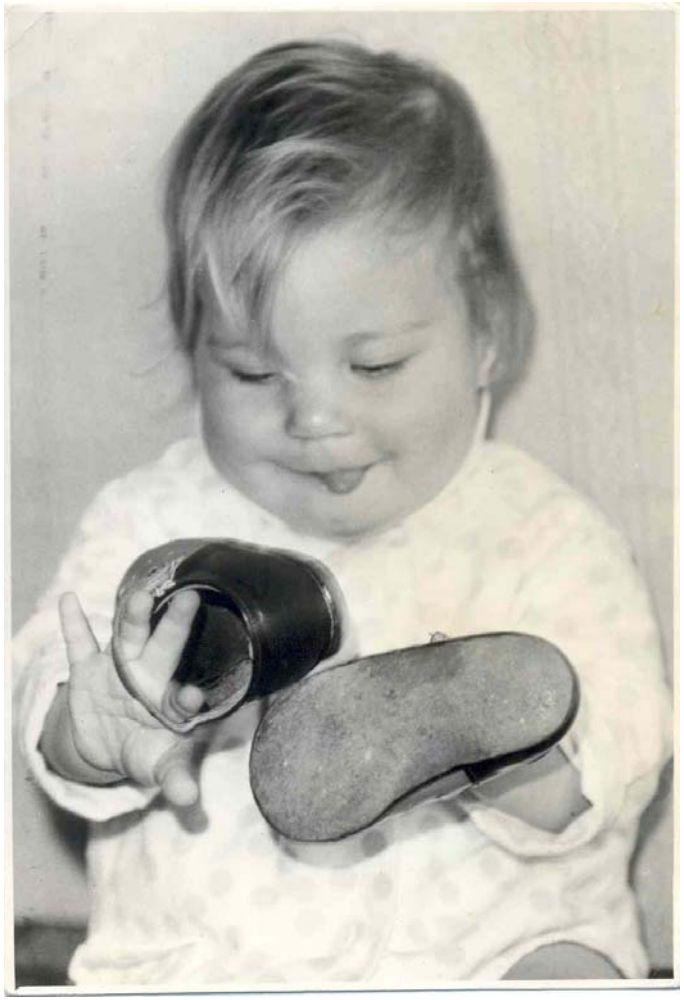
The needs: a SWISS answer

S ediment
W ater
I nterface
S tudy
S ystem

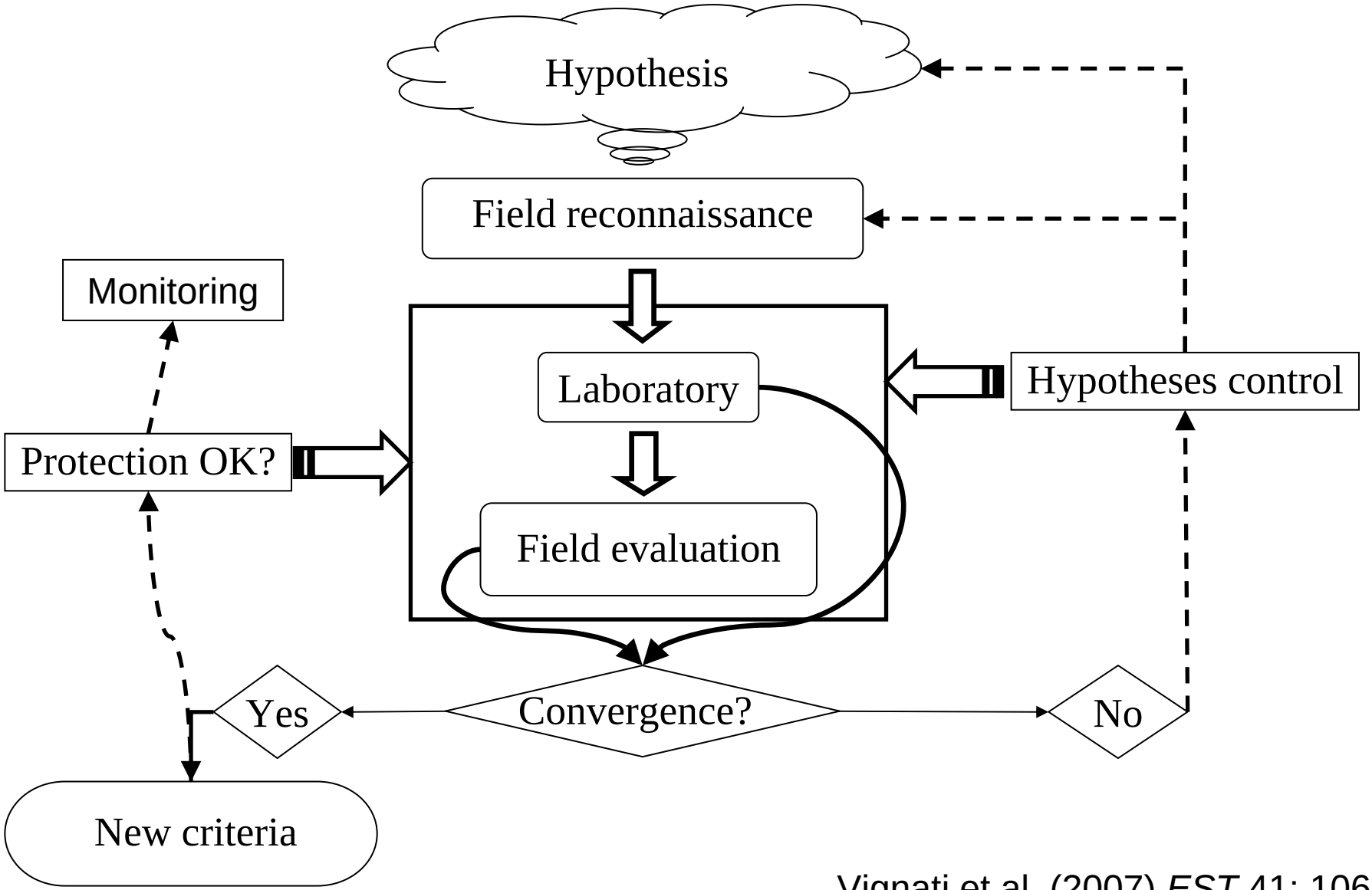


The « SWISS answer » at work



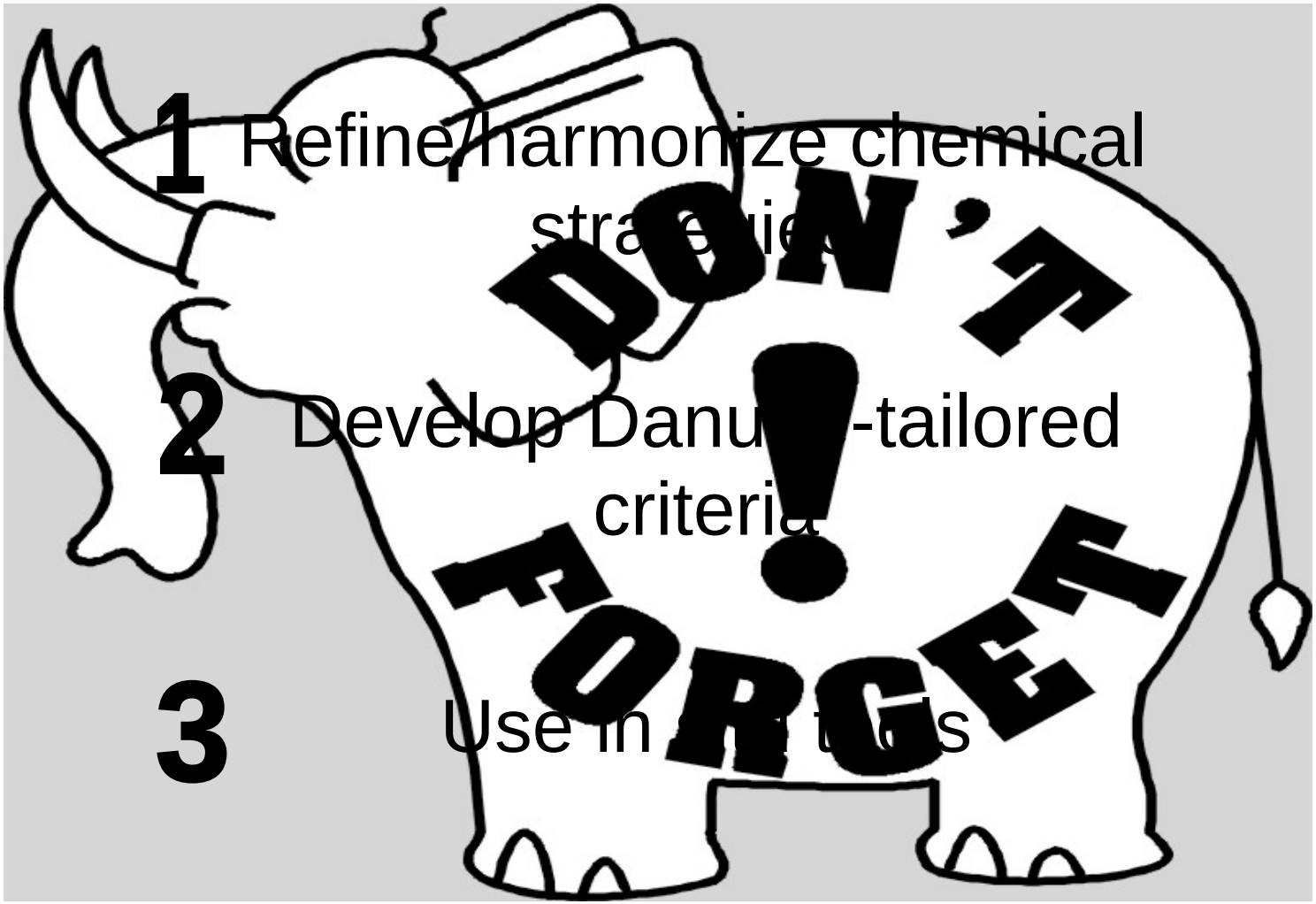


The needs: conceptual frameworks



Vignati et al. (2007) *EST* 41: 1067

Take-home messages



1 Refine/harmonize chemical strategies

2 Develop Danube-tailored criteria

3 Use in RBMPs

Thank You !