



Environmental Quality Standards (EQS) for Organic Substances in Sediments under the European Water Framework Directive (WFD)

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Abstract

Along with the current revision of the WFD priority substances, new Environmental Quality Standards (EQS) need to be established. In response to current discussions at the European Parliament, the setting of harmonised EQS for priority substances in sediments is currently discussed under coordination of the European Chemicals Bureau (ECB). An expert group is revising existing methodologies to derive a global European strategy providing guidance in deriving sediment EQS for organic substances. This guidance will include relevant selection criteria for "sediment relevant" chemicals, define the minimum information requirements to derive valid criteria and provide alternative strategies to generate missing data (modelling and QSAR approaches). Furthermore attention will be given to the problem of natural and historic background levels of organic substances. A tiered approach will be provided with the aim to protect freshwater, estuarine and marine sediments. This presentation will provide an overview of the current guidance.

Keywords:

Environmental Quality Standards, Organic chemicals, Water Framework Directive

Background

- > The European Commission adopted a proposal for a new Directive to protect surface water from pollution on 17 July 2006 (COM(2006)397 final). The proposed Directive, which is required to support the Water Framework Directive, will set limits on concentrations in surface waters of 41 dangerous chemical substances (including 33 priority substances and 8 other pollutants) that pose a particular risk to animal and plant life in the aquatic environment and to human health.
- > With the publication of this "Daughter Directive" the European Commission has clearly indicated its intention to derive new EQSs.
- > These amendments highlighted need to develop methodology for:
 - Sediment and biota EQSs
 - Mixtures and metals EQSs
 - Transitional waters EQSs
- > To anticipate this need, the ECB is currently supervising the activities of an expert working group (WG) to assist the Commission in this task

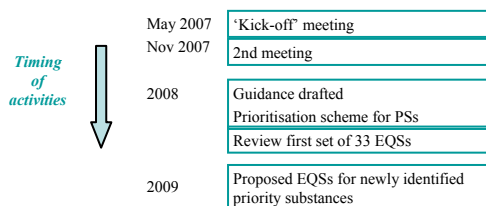
Tasks of this Working Group:

Revise EQS methodology

- > Propose new methodology suitable for EU-wide and national standards based on existing guidance (Lepper, 2005)
- > Taking account of CSTE comments and gaps identified by Bonnomet and Alvarez (2006)
- > Consistent with TGD (highlight any deviations and their significance)
- > Incorporate new guidance from Reach Implementation Projects
- > Incorporate guidance from other documents e.g. Batley et al (2005), Crane and Babut (2007)

Derive new EQSs

- > New additions to list of Priority Substances have been made
- > EQS sediment standards where they are needed
- > Review original list of 33 EQSs (new data?)
- > Develop method for prioritising substances for EQS development



References

Batley GE, et al. In: Use of Sediment Quality Guidelines and Related Tools for the Assessment of Contaminated Sediments. Pensacola (FL): SETAC Press, 2005: 99-120.
 Bonnomet V, Alvarez C. INERIS Background document, 2006: 49 pp
 COM(2006)397 final - Proposal for a Directive of the European Parliament and of the Council on Environmental Quality Standards in the Field of Water Policy and Amending Directive 2000/60/EC.
 Crane M, Babut M. Integr Environ Assess Manag. 2007 Apr;3(2):290-6
 Lepper P, Schmalenberg, Fraunhofer-Institute Molecular Biology and Applied Ecology, 2005: 51 pp.
 Schneider AR, et al., Environ. Sci. Technol. 2007; 41: 1097-1103.

Main Themes of Working Group Discussions:

The following themes are currently being discussed.

1. Selection of Substances of concern

- > Current selection practices of "sediment-relevant" substances refer to a log K_{ow} threshold value (> 3). Can the value of this parameter be confirmed with available data from monitoring networks? Certain studies, point out that field measurements display only weak correlations between measured partition coefficients, suspended solids organic carbon content, and K_{ow} (Schneider et al., 2007).
- > Within the WFD the WG will focus on (i) the 33 Priority Substances, (ii) the candidate substances as initial substances of concern.

2. Learn and extract from existing methodologies

- > The working group will compile an overview of the most important existing methodologies: Empirical approaches based on field data, Logistic regression modeling, Critical body residues...
- > Also recent reviews on sediment EQS will be taken into account.
- > For estuarine and coastal sediment-EQS comparison with OSPAR and NOAA experiences will be drafted.
- > The WG will provide an overview of these existing methodologies to derive the most applicable scenario(s) for the EU. From these different methods a weight of evidence approach will be developed to select the most relevant EQS value.
- > Concerns about bioavailability and its potential and weaknesses in sediment evaluations will be taken into account. The WG will highlight the main critical (bio-availability) factors that can influence the EQS setting.

3. Consistency with Biota EQS

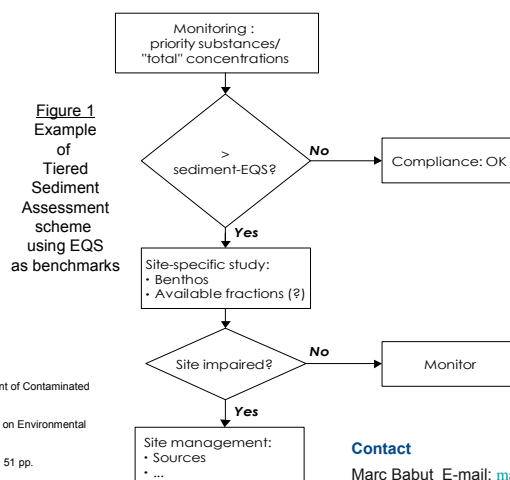
- > Due to the central role of sediments in the exposure route of many biota, a consistent approach in deriving EQS values will be followed in accordance with the Biota EQS working group.
- > Criteria triggering the need for sediment EQS will be developed in accordance with all other EQS groups.

4. Sediment monitoring practices among Member States

- > The WG will take into account the current sediment monitoring strategies going on in different member states. (Which sediments are monitored? How many times a year? How are results interpreted?..)

5. Applicability of Sediment EQS in a Tiered Strategy

- > Based on the themes mentioned above, the WG will propose an EQS derivation strategy that could be implemented in a tiered framework: based on the current monitoring practice, providing interpretation rules and a generic assessment framework.
- > The WG will further evaluate the use of these EQS as possible benchmarks and propose a possible application of such a tiered assessment scheme. See Figure 1 below.



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