

# Improving the methodology for deriving environmental quality standards in context of the Water Framework Directive

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# Outline

- Background
- State of play of legal implementation of EQS under WFD
- Expert Group for Environmental Quality Standards
- Strategy for refining the methodology to derive EQS
- Deadlines of deliverables

# Background

## *Water Framework Directive (2000/60/EC) objectives*

### Art. 16

Legal framework for **prioritisation of substances** presenting a significant risk to or via the aquatic environment

Adoption of a **List of Priority Substances** (Annex X) by EP and Council Decision in Dec. 2001 ⇒ **33 substances**

Stipulates for all PS the establishment of harmonised **Environmental Quality Standards (EQS)**

applicable to concentrations in **water, sediment or biota** (inland waters as well as transitional, coastal and territorial waters)

# Methodology to derive Environmental Quality Standards

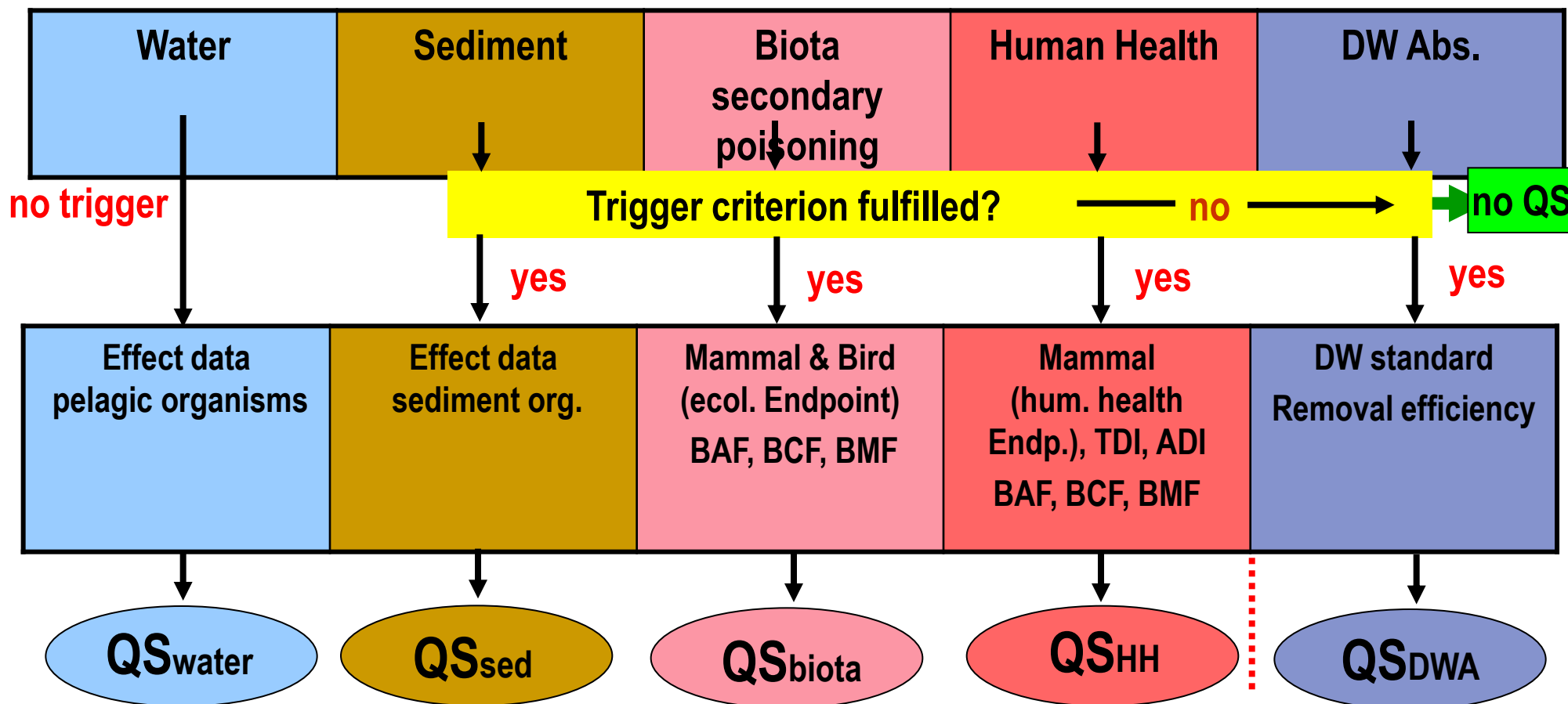
- Specified in **Annex V** and developed by **Fraunhofer-institute** (Lepper, 2005)
- Mainly based on **EU frameworks for RA (TGD, 2003)**
  - maintain consistency in ecological effects assessment methodology on EU-level
  - use of elements for QS-setting that are already accepted by Member States and other Stakeholders
- However **issues have emerged** for adopting the EU TGD for developing EQS

## Main identified issues in the current methodology

- QS proposals limited to water
  - In the absence of extensive and reliable data on the effects of PS on sediment organisms
  - Biota Standards only for Mercury, Hexachlorobenzene and Hexachlorobutadiene (due to uncertainties regarding possible bioaccumulation)
- EQS for metals
  - MS to take account of background levels and bioavailability

# General Approach to derive Environmental Quality Standards

## Protection Objectives



⇒ Lowest specific QS is used as Overall Quality Standard

# Legal Implementation of WFD EQS

## *State of Play*

- **Commission:** Adopted proposed Daughter Directive on EQS (17 July 2006)
- **European Parliament:** First Reading (22 May 2007): adopting 71 amendments

Strengthen the **need for biota and sediment EQS** – COM to propose new EQS  
Addition of **30 new chemicals to the PS list** (incl. Dioxins and PCBs)

- Adoption of Common Position by the Environmental Council (20 Dec 2007)  
Art 3, **MS may opt to apply EQS for sediment and/or biota** in certain categories of surface water

# Expert Group on Environmental Quality Standards (EG-EQS)

- **Mandate for EQS setting**

- Identify the methodological themes to be addressed for further work
- Develop and agree a refined methodology for setting EQS
- Draft a TGD on setting EQS in the context of the WFD
- Assist the Commission in setting EQS

- **Basis**

Manual on Methodology (Lepper, 2005), INERIS document on open issues (2006), CSTEEO opinion (2004) and comments by Expert Groups (e.g. EAF) and other documents (e.g. SETAC workshops...)

- **Consistent with the approaches to RA**

new and existing substances (E.C., 2003) and REACH



# EG-EQS organisation

## *Drafting groups*

- 1 - General Issues
- 2 - Metals (specific issues: water, sediments, biota)
- 3 - Organic substances (water, biota)
- 4 - Organic substances (sediments)
- 5 - Standards for substance groups (e.g. PAHs)

# Work program

## *DG1 General issues*

- **Criteria for triggering water, sediment or biota standards**  
decision tree based on physico-chemical properties, persistence and bioaccumulation...
- **Data issues**  
Minimum data requirements; Quality assessment of data; Assessing the relevance of data; 'Critical' vs 'supporting data'; Role of QSARs; 'Pooling' of FW and SW data; Use of field and mesocosm data
- **Dealing with uncertainty– policy implications**
- **Implementing EQSs – interface with monitoring regime**

# Work program

## *DG2-Metals (Water, Sediment and Biota)*

- **Scope of the guidance:** Inorganic vs. organics metals
- **Natural background levels:** derivation and use
- **Metal bioavailability:**
  - In water: Influence of WQP on ME speciation, use of Speciation and Biotic Ligand Modelling
  - In sediment: OC and other ME binding phases - role in ecotoxicity
  - In biota: parameters influencing ME uptake and accumulation by aquatic biota, biomagnification in the food web and secondary poisoning

# Work program

## *DG3-Organics (Biota)*



- **Assessment of risk of secondary poisoning in pelagic species**  
water vs. food exposure and applicability of Critical Body Burden (CBB) methodology to set EQS for bioaccumulating substances
- **Development of refined bioaccumulation and food web models**  
review and development of models for prediction of pollutant concentrations in organisms along different food web levels in a site-specific way
- **Identification of suitable organisms for monitoring**  
appropriate indicator organisms for different EU aquatic systems accounting for animal welfare and chemical monitoring activity



# Work program

## *DG3-Organics (Water)*



- Derivation of AA and MAC
  - Transformation of EQS for water and SPM
  - Extrapolation using Assessment Factor (AF) method  
Freshwater (FW) and Seawater (SW)
  - Extrapolation using Species Sensitivity Distributions (SSD)  
Quantity and quality of data required, Aggregation of data (one species), Testing goodness of fit, Choice of AF, Special considerations for using SSD for deriving SW EQS
- Deriving EQSs for water abstracted for drinking  
Update according to the revision of the Drinking Water Directive

# Work program

## *DG4-Organics (Sediments)*

*Refers to the bottom sediment*

- Existing monitoring practices among member states and methodologies for deriving sediment EQS  
Review and discussion
- Methodologies for setting sediment EQSs: Tier approach  
*Derivation of sediment benchmark concentrations*
  - Ecotox tests + AF; Equilibrium partitioning if no sediment data
  - Other methods: Empirical approaches based on field data; Logistic regression modelling; Critical body residues

# Work program

## ***DG5-Grouping of substances to set EQSs***

- Analysis of chemical legislations (e.g. REACH)
- Possible Application of non-testing Methods in setting EQSs
  - QSAR approach
  - Category approach
  - Analogue approach
- Deriving a QS using Toxic Units

# Expert Group on EQS

## *Deadline of deliverables*

- **Technical Guidance Document** for EU-wide and national EQS derivation: **Sept 2008**  
First draft. Consultation of scientific committee.
- **Review of existing EQS: 2009**  
After proposal is adopted if scientific evidence changed (for Ni, Pb and PAHs)
- **Development of EQS in biota and sediments for existing PS: 2010**
- **Development of EQS for new PS list: 2012**



## Further information

- Poster on Biota EQS: [TH 246](#)
- Poster on Sediment EQS: [TH 249](#)
- Poster on Metals
- Poster on Priority substances selection: [TH 245](#)

**Thank you for your attention**