

Priority substances

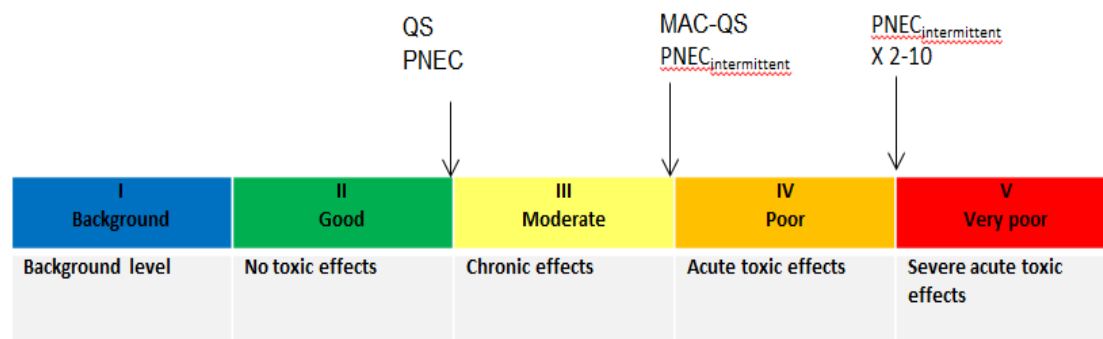
Nordic workshop, Oulu 2014

Status and challenges in Norway

- EQS in sediment and biota of priority substances
- Biota monitoring
- River Basin Specific Pollutants
- Monitoring metals (BLM and background levels)
- Can we use passive sampling and comply with the WFD?

Drawing up sediment and biota EQSs

- Revise EQSs for substances where there already exists a classification system from 2007
- Draw up EQSs for the EU priority substances
- Follow the Technical Guidance Document (TGD No 27) from the Commission
- Maintain the five class system for sediments



Local adaptations

- For some of the priority substances bioavailability depend on the organic content of the sediments
- The EU operates with a higher standard organic content than what is representative for Norwegian conditions
- Adjust for organic content in Norwegian coastal areas



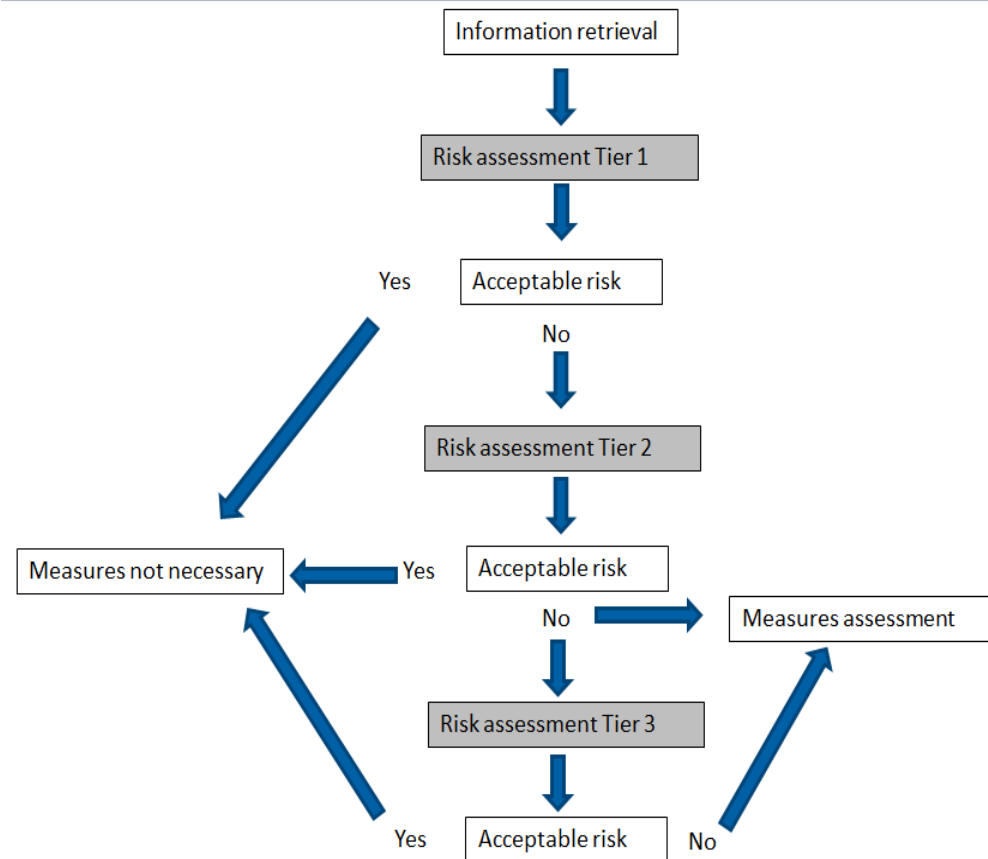
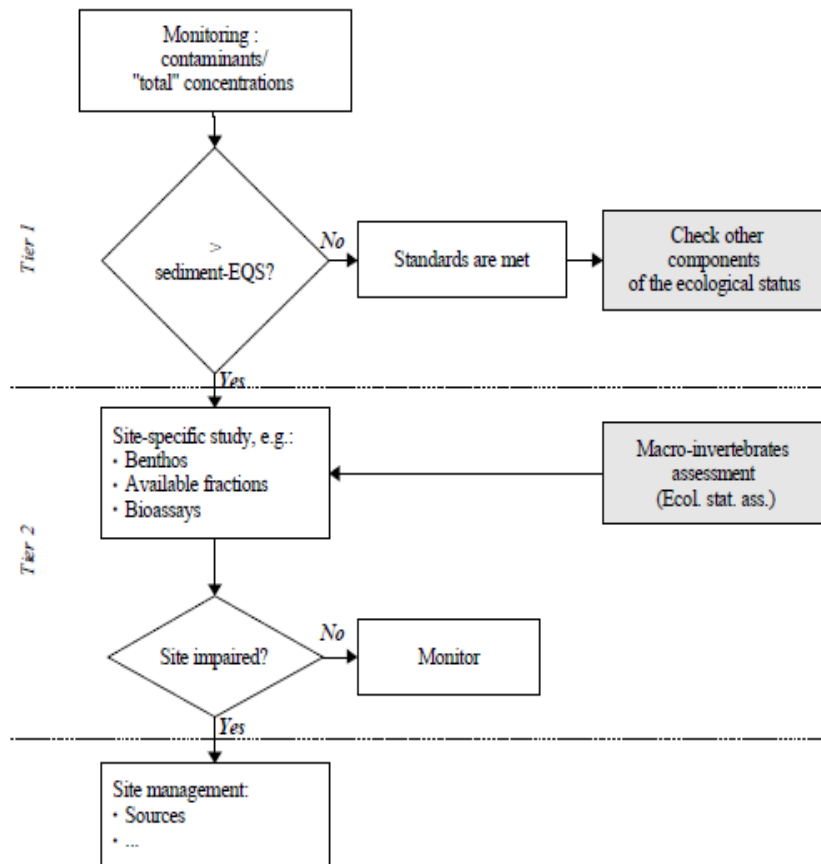
Can we continue with risk assessment and still comply with the WFD?



- Measures are required when levels of the priority substances exceed the EQS in water
- EQS values in sediments are subject to considerable uncertainty due to local variations
- Not suitable with a pass/fail approach on exceedance of EQS values in sediments

A three tiered approach

Guidelines from the EU- TGD No 27 Klifs guidelines



EQS in sediments and biota

Substance or substance group	Sediment EQS (coastal waters)	Biota EQS
Cadmium	x	
Nickel	x	
Mercury	x	EU EQS
Lead	x	
PFOS	x (coastal and freshwater)	
TBT	x	X
Brominated diphenylethers	x	
HBCDD	x	
HCB	x	EU EQS
Hexachlorobutadiene	x	EU EQS

Substance or substance group	Sediment EQS (coastal waters)	Biota EQS
Hexachlorocyclohexane	x	x
C10-13 Chloroalkanes	x	x
Pentachlorobenzene	x	x
Pentachlorophenol	x	x
Trichlorobenzene	x	x
Dioxins and dioxin-like compounds	x	x
Nonylphenol	x	x
Octylphenol	x	x
16 PAHs	x	Both EU EQS and national
Alachlor	x	
Chlorfenviphos	x	
Chlorpyrifos	x	

Substance or substance group	Sediment EQS (coastal waters)	Biota EQS
Endosulfan	x	X
Trifluralin	X	
DEHP	x	x

Monitoring biota

- «Fish»...prey tissue...
- Which species in freshwater?
- Which species in coastal waters?
- Tissue?
- Norway monitor fish muscle tissue (Hg) or liver tissue, not the whole fish



Monitoring biota in Norway

Marine environment:

- Atlantic cod
- Herring
- Whiting
- Blue mussels
- Brown crab
- ...



Freshwater:

- Trout
- Perch
- Common bream
- Common roach
- Pike
- ...



Regulated Pollutants under WFD

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graph TD; A[Regulated Pollutants under WFD] --> B[WFD Priority Pollutants]; A --> C[WFD River Basin Specific Pollutants];
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**WFD Priority
Pollutants**

**WFD River Basin
Specific Pollutants**

- Not clear whether MS are obliged to take RBSP into national legislation
- Norway decided not to put the substances in national legislation
- Classification guidance document will present EQSs for RBSP
- Have developed EQSs for about 20 substances

Monitoring metals - Biotic Ligand Model

- Member States may, when assessing the monitoring results against the relevant EQS, take into account:
 - a. natural background concentrations for metals and their compounds where such concentrations prevent compliance with the relevant EQS;
 - b. hardness, pH, dissolved organic carbon or other water quality parameters that affect the bioavailability of metals, the bioavailable concentrations being determined using appropriate bioavailability modelling.
- The BLM developed in the EU is not optimal for Norwegian conditions, where the waters are softer (less Ca and Mg)
- We have not started using BLM in Norway, have you...?

Monitoring metals

- Natural background levels, how do you take it into account when assessing the chemical status?
- Large areas of undisturbed nature in Norway
- Do you monitor all water bodies when assessing chemical status, or can one waterbody be a reference for several others?



Passive sampling

- Trend-monitoring coastal waters:
 - SPMD for Nonyl/octylphenols, HBCD and brominated diphenylethers (1 yr)
- Trend- monitoring freshwater:
 - DGT for metals (Pb, Cd, Cu, Ni, Zn, Ag) (2-4 weeks)
 - Alltech silicone sampler for PAH, BDE, HBCD (3 months)



Can we use passive sampling and still comply with the WFD?

■ Advantages

- Continuous sampling
- Low limits of detection
- For metals, the EQS refers to the dissolved phase

■ Challenges

- EQS set for whole water sample
- Passive samplers measure only dissolved fraction
- How to compare with EQS?

Workshop....

Photo: Jonas Thormar