

# Development of sediment quality criteria in Norway.

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2

**Introduction:** Environmental quality standards for contaminants in seawater and marine sediments have been in force in Norway since 1997, implemented by the pollution Control Authorities (SFT). During 2007 the standards were revised and amended, and at the same time harmonized with concurrently revised national guidelines for risk assessment of contaminated marine sediments. The new standards are in force from February 2008.

**Sediment Quality criteria in Norway.** During the early 1990s SFT produced a series of guidelines on environmental classification of fjords and coastal areas. These covered classification of condition and degree of pollution from nutrients and organic matter (eutrophication), and contaminants. The guidelines also included classification of water bodies for different usage. The latest version of this system was published in 1997. Classification of contaminants in seawater and marine sediments is based on the statistical distribution of known levels of the selected contaminants along the coast of Norway. Class I describes the known or assumed background levels in areas with only diffuse inputs, Class II – V describes 4 intervals of concentrations after a percentile division of the total distribution.

In 2006-2007 SFT has revised the contaminant classification of seawater and sediments. It is now based on toxicity of the contaminants rather than range in concentrations. The revised system also covers a total of 43 compounds compared to 28 in then the previous version. New major groups are e.g. brominated flame retardants, alkyl phenols, alkyl sulphonates, and chlorinated paraffins.

The new class definitions are based on internationally established systems for defining environmental quality standards and performing risk assessment within the EU. The classes describe increasing level of damage to marine organisms. Class I is still the background range. Class II is the interval between the upper background limit and the PNEC (Potential No Effects Concentration) level for chronic exposure, i.e. a no effects range above background. Class III is the interval between the chronic PNEC and the PNEC for short term (intermittent) exposure, i.e. the interval of only chronic effects. The upper limit of Class IV is also based on the PNEC intermittent, but with less conservative assessment factors (2-5 x PNEC intermittent). Class V is everything above this.

The most important element of the new classification system is the border between Class II and Class III, separating no-effects situations from those that may cause environmental effects.

From a sediment management point of view this also separates “safe” bottom areas from those for which remedial actions have to be considered. In this context the classification system is harmonized with a simultaneously revised national guideline for risk assessment of contaminated marine sediments. This guideline describes how a risk assessment should be performed based on a tiered approach. Tier 1 in the risk assessment is in fact the environmental classification. Any sediment area that has any contaminant level in Class III should proceed to a more thorough Tier 2 risk assessment to improve the basis for decisions on remedial actions.

