

Monitoring of contaminant transport from Nearshore Confined Disposal Facilities - study of full scale stabilisation of dredged sediments in the Port of Trondheim

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As a part of the Norwegian Pollution Control Authorities (SFT) initiative to remediate contaminated sediments in Norwegian harbours and fjords, five pilot projects were initiated to gain experience and develop remediation technologies suitable for Norwegian conditions. In the Port of Trondheim contaminated sediments were stabilised with cementitious binders in a full scale confined disposal facility (CDF). The CDF is situated at the outlet of the river Nidelva in the heart of the Port of Trondheim, and is influenced by both salt and fresh water and large tidal fluctuation.

Monitoring contaminant leaching from the facility by using traditional monitoring methods is both time-consuming as well as costly. Due to the normal activities in the port and the fact that there still are some active sources of contaminant release to the sediments, interpretation of the water monitoring results from the harbour is complicated. Instead documentation of contaminant migration from the CDF in Trondheim has been conducted using several innovative monitoring methods. This included laboratory tests, theoretical modelling and field experiments. Outside the CDF, biomonitors, mussels and seaweed, have been analysed yearly from before the CDF was established. In the CDF dye and non-reactive tracers, have been used to study migration to the fjord and the river Nidelva. Wells are installed in the CDF in a gradient towards the fjord and the river. This has allowed analysis of the porewater chemistry as well as response in ecotoxicity tests.

Combining the results from all the various monitoring methods gives a thorough documentation of the contaminant transport from the facility and allows to make model predictions of long-term response of the CDF.