Remediation of TBT contamination at Vuosaari Harbour in Helsinki
Ari Pilipainen, Ramboll Finland Ltd

www.vuosaarenالية.org

Niinilahti Bay
Käärmeniemi
Lehdes-
Varissaari
Kalkkisaari
Ruusuniemi
Pikku Niinisaari
Käring-
Matosaari
Skata

PORT OF HELSINKI, VUOSAARI HARBOUR
STARTING POINT IN THE BEGINNING
OF THE YEAR 2003

Vuosaarenlahti marina
Former Vuosaari
shipyard area
Shipyard basin

90 hectares will
be filled from the
sea

Embankment for deflecting
the cooling waters from
Vuosaari power plant


The stabilised TBT clay is deposited as a layer about five
metres in thickness on a bearing fill layer. The stabilised layer is
covered with a drainage layer and a surface layer, with an
asphalt layer on top. The stabilised structure is surrounded by
a system of drainage pipes.
Principle of mass stabilisation

- Stabiliser tank
- Mass stabilisation machine
- Mixing device
- Mass-stabilised dredged materials
- Dredged materials: 2...6 m
- Reinforced fabric: 3...5 m
- Pre-loading embankment: h ≈ 1 m

Installation of the silt curtain structure in the end of April 2005

Decontamination dredging area and Niinilahd filling area

Silt curtain structure in action
Remediation of TBT contamination at Vuosaari Harbour in Helsinki

Summary

- A very significant TBT source of 96,5 kg was removed from the sea environment and was transferred to the Niinilahti filling area
- TBT concentrations in sediments, molluscs and fish have already decreased in the sea area surrounding the harbour building site
- The TBT contaminated sediment will be mass stabilised and utilised as harbour field structure
- The present cost estimate of the TBT removal and stabilisation process is 10,5 million euros
- The removal of TBT has been a seamless part of the construction work and the Vuosaari Harbour will be operative as planned in the end of year 2008