



# Monitoring the offshore marine environment

Norwegian Pollution Control Authority - SFT

## Why monitor?

- Overview of the environmental conditions
- Development and trends
- To follow up the predictions done in the environmental impact assessment (EIA) and to measure the possible impact of the discharges (chemicals, produced water and cuttings) to the sea floor and water column
- Follow up requirements in the Pollution Control Act, HSE regulations & Discharge permits
- Monitoring has been carried out for 30 years and provides a good tool for the operator and the authorities
- Results shall be available and may be used by all parties
- Independent consultants carry out the surveys

## HSE regulations

- **Framework regulation § 27**  
**Duty to monitor the external environment.**
- **Activity regulation § 49**
- **Planning the monitoring of the external environment, requirements regarding cooperation.**
- **Activity regulation § 52**  
**Environmental monitoring: The monitoring shall cover the sea bed as well as the water column.**



# Environmental monitoring offshore

## SEDIMENTS

- Long history, proven techniques/methods
- Description of presence/absence of organisms
- Direct effects, life or death of organisms
- Effects localised to the vicinity of the discharge

## WATER COLUMN

- Continuous flow of water and low concentrations
- Chronic load
- Lack of knowledge about the long term effects
- Lack of proven techniques/methods to be used offshore

# Appendix 1 provides detailed description

## SEDIMENT MONITORING

- Biological and chemical (no. of stations, replicates, positions ...)
- Sampling by grab, corer (ROV in deep water)
- Statistical analysis, multivariate methods, THC, metals, TOC ... ..

## WATER COLUMN MONITORING

- Fish and mussels, SPMDs
- Biomarkers (EROD, GST, vitellogenin, PAH metabolites, BaPH, lysosomal stability, PAH content, DNA damage, lipid content and general health criteria)



## **Monitoring shall provide:**

- **Feedback on the regulation of the discharges and result in continuous improvement**
- **Better overview of the environmental status in larger areas**
- **Show the background levels and possible changes of this level caused by offshore activities**
- **Information about the situation in the vicinity of the installations**
- **Analysis and results with high power of significance!**
- **Results for the public**
- **A good management tool for the authorities**