Oil Spill R&D at SINTEF

March 2015

Oil spill response for the future

In the event of accidental oil discharge there is a need for a quick and adequate response in order to reduce the environmental consequences. Research and good knowledge about the behaviour and fate of a pollutant is crucial for good preparedness and adequate response actions.

SINTEF has more than twenty years of experience in the testing of oils in their laboratories and meso- scale facilities, and from real-time oil spill sampling and analyses.

SINTEF develops and utilizes numerical models addressing the effects and risks associated with operational and accidental discharges to the marine environment. The following activities related to oil spill and discharge studies are conducted at SINTEF:

- **Oil weathering studies**
  - Physical and chemical properties of oils
  - Emulsifying properties
  - Meso-scale flume testing
  - Dispersibility study
    - Screening and dosage testing of dispersants
    - Determine the time window for use of dispersants
- **Oil spill identification/fingerprinting** (CEN guideline)

- **Analysis and characterization of oil pollution**
  - Acute spills
  - Regular releases
- **Environmental monitoring**
  - Field trials
  - Oil spill response teams
  - Oil detection dogs
- **Response technologies**
  - Mechanical recovery
  - Dispersant technology (surface and sub-surface application)
  - In-situ burning
  - Shoreline treatment and remediation
- **Oil spills in arctic areas / Ice-infested water**
- **Oil spill fate and effects**
  - Degradation (biodegradation and photo-oxidation)
  - Ecotoxicological assessment

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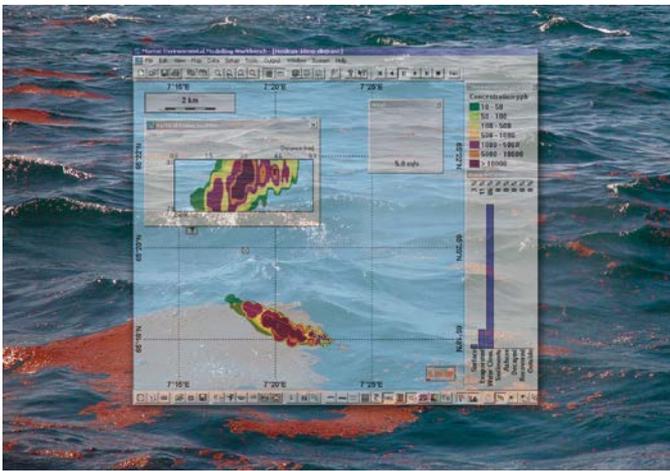
- **Oil spill modelling tools**
  - Oil Spill Contingency Analysis and Response - **OSCAR**
  - Oil spill drift and spreading. The OSCAR model provides a scenario-based and 3-D statistic approach to objective evaluation of alternative response strategies
  - Deep spill modeling - **DeepBlow** .The model computes the physical behaviour of oil well blowouts in both deep and shallow water
  - Oil Weathering Model - **SINTEF OWM**. The model provides predictions of the behaviour of spilled oil at sea under different weather conditions
  - Dose-related Risk and Effects Assessment Model - **DREAM**. The DREAM model simulates releases of complex mixtures of chemicals, such as those associated with produced water
  - **Partrack model** simulates the behaviour and fate of drill muds and cuttings from offshore platforms
  - The OSCAR model tool acts as a basis for Net Environmental Damage Risk Assessment (NEDRA) approach to give a quantitative estimate for the combating of oil spills, and to evaluate the environmental impact with use of different response strategies
- **Subsurface blowouts**
  - Modelling
  - Scaled simulation
  - Testing of dispersant injection

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