

2.2 NORWAY

In Norway, any enterprise in charge of oil handling operations (e.g. oil terminals, refineries, offshore oil fields) are obliged to submit emergency response plans where they have to evaluate which response options lead to the overall least environmental impact. If such scenario-based analysis (also called Net Environmental Damage and Response Analysis – NEDRA) show that dispersants may be an appropriate countermeasure in relevant oil spill scenario, the use of dispersants must be documented as a combat strategy in their oil spill contingency plans.

The Climate and Pollution Agency (Klif), under the Ministry of Environment, is the regulator for the pollution preparedness requirements and considers the enterprises' emergency response analyses and can make specific requirements to include the use of dispersants in the contingency plans and also specific requirements on the capacity of the application system. Norway adopted the present regulations for dispersants usage in 2002. Some minor revision of the regulations entered into force in 2009. This was linked to the inclusion of shoreline cleaning agents into the same regulations, and that the Norwegian Coastal Administration (NCA) became the supervising authority when an incident occur. There was no change in the national policy regarding dispersant use. (http://www.klif.no/artikkel_34957.aspx).

2.2.1 Norwegian Dispersant Approval Regulations

There are dispersant testing protocols both for acute toxicity and effectiveness. There is no official approval list of the dispersants, however, the requirements of the regulation must be fulfilled and documented in all contingency plans involving use of dispersants. The toxicity test method determines the acute toxicity of the dispersant alone, by testing it on a planktonic algae (*Skeletonema costatum* test, ISO/DIS 10253). This is one of the standardised internationally accepted ecotoxicity tests used by the "OSPAR" Convention. Use of dispersant concentrates with $EC_{50} < 10\text{mg/l}$ are prohibited. In a recent research study, the *Skeletonema costatum* exhibits a good correlation to other pelagic PARCOM test organisms representing other trophic levels. For use of dispersant on shorelines, a specific toxicity test on a sediment amphipod (*Corophium volutator*, ISO /TC 147/ SC 5) is recommended.

Enterprises that produce or process oil, have to prove the effectiveness of the dispersants on their own oils, using the IFP dilution test, which is the same "low energy" test as used in France. There is therefore no specific effectiveness threshold for approval, as different oils are used. The aim of the screening is to select the most effective dispersants and to optimize the dosage ratios required for the specific oil. The enterprises also have to test the dispersibility at varying weathering degrees for the relevant oil in order to estimate the "time window" for effective use of dispersants under various turbulence conditions. For this, the IFP test is used in combination with the MNS (Mackay, Nadeau and Steelman) test, representing two turbulence conditions. For enterprises required to have response system, but are not linked to specific types of oils, must document the dispersant effectiveness using a "standard" crude oil (weathered Sture Blend) and a Medium fuel oil (IFO 180) using the WSL test.

2.2.2 Norwegian Dispersant Use Regulations

Climate and Pollution Agency (Klif) and the Norwegian Coastal Administration (NCA) have issued documents / guidelines that clarify the assessments needed to be documented in emergency response analyses and in the oil spill contingency plans or before dispersants can be used. Two documents, a "Control form" and a "Decision matrix", have been compiled. The needed assessment before use includes information on e.g.: weathering properties, the chemical and natural dispersibility of the relevant oil, vulnerable natural resources/sensitive areas, salinity of the water, depth and distance to shore, possible stranding of oil, wind conditions, strategy for spraying of dispersants, operations in darkness, spraying capacity, monitoring for assessing efficacy and criteria for terminating the dispersant treatment operation. A methodology for conducting emergency response analysis of relevant discharge scenarios including use of dispersants has been developed. The methodology forms a basis for preparing generic actions plans most suited to an individual oil spill situation. Enterprises that have such documentation and evaluation in their contingency plans, can submit the simple "Control form" and an eventual dispersant

operation can be initiated immediately. If such documentation is not included in the contingency plans, a specific application for using dispersants is needed.