

# Do we have the right testing procedures on place for oil spill dispersants?

Marine Theme Objective: Science for integrated management

## What's the problem?

The UK oil spill product approval scheme has been established for over 30 years and is recognised as one of the most comprehensive and effective schemes of its type. It is designed to enable the assessment of a product on the basis of efficiency (dispersants only) and toxicity (all products).

In order to ensure that the testing and approval process and techniques remain 'fit for purpose' in light of a changing shipping and response industry the UK government conducts periodic public consultation and review of the process. The most recent of these reviews was conducted and completed in 2007. Its remit was to canvass expert opinion from a broad spectrum of stakeholders on a wide range of testing and approval issues and to recommend any necessary improvements. The review was overseen by the UK's primary licensing authority for spill treatment products, the Marine and Fisheries Agency (MFA), and they issued recommendations for improvements to the scheme.

## What are the aims of the project?

The MFA Scheme review considered a broad range of topics, from the use of different test approaches to the impacts of UV light on the toxicity of oil/dispersed oil.

The two primary recommendations requiring urgent research to implement were:

1. That a new test was developed to enable a toxicity based assessment of products designed for use on these types of oil. This was in recognition of the increased likelihood of fuel oil or heavy oil spills.
2. In recognition of data that provide strong evidence that dispersant products elicit higher toxicity in the Sea Test when added as 'neat' as opposed to water diluted, it was recommended that the practice to approve products as neat/water diluted on the basis of a neat test only should cease. Further research is required to establish new pass/fail criteria for water diluted product testing.

In light of these recommendations this research project was developed with 2 primary aims:

1. Develop and validate a new test procedure for the approval of products for use on Heavy Oils.
2. Investigate the relationship of toxicity in the Sea Test when dispersants are added as neat or water diluted. Establish new separate pass/fail assessment criteria for dispersant approval for water diluted products.



Figure 1: A Sea Test in progress (Cefas)

## Which policy areas will the research inform?

The UK is a signatory to the International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC), 1990. Parties to the convention are required to establish measures for dealing with pollution incidents.

This research helps to strengthen the UK's commitment to the convention and to strengthen the regulatory approaches for product approval covered under the Food and Environment Protection Act (FEPA) and the recent Marine and Coastal Access Act.



## Do we have the right response testing procedures in place for oil spill dispersants?

### What are the results from the project and how will they be used?

The project has enabled a substantial amount of research to be conducted into how oil spill dispersants affect the bioavailability and toxicity of a range of representative fuel oils under controlled test conditions. One of the most critical areas in establishing a statutory test for heavier oils is the selection of the standard oil, and under this project a range of oils, of varying viscosities, were investigated. Criteria for selection included treatability, mechanical dispersibility (under control test conditions), toxicity and it being representative of oils routinely used/transported in UK waters. Using these criteria a representative IFO180 from Falmouth was selected as the test oil.

Under the project a number of test trials were conducted using the selected test oil and a range of routinely used dispersants. This allowed a dataset to be generated about how modern dispersants affect the toxicity of a spilled fuel oil which can, in turn, be used to establish appropriate pass/fail criteria for future products.

In a similar way a substantial dataset was produced for a range of dispersants, using the already routinely used standard crude oil Kuwait crude, when applied neat to the oil (i.e. as water diluted). The extra data supplemented that already available and confirmed that, under test conditions, dispersants applied as water diluted increase dispersed oil toxicity.

The results datasets for the fuel oil and water diluted test procedures have been statistically analysed to establish a range of potential pass/fail criteria. The data produced under this project will form the basis for detailed discussions with the Marine Fisheries Agency (Marine Management Organisation) to establish how the new procedures can be implemented into a modified UK scheme for the approval of oil spill treatment products.

Ultimately an amended scheme will enable products to be separately tested and approved for treating offshore fuel oil spills and to be approved for different modes of application (e.g. as neat or water diluted). The aim is to improve the UK approval scheme, widen the potential 'products toolbox' for responders and to contribute to public reassurance in the event of a spill.



Figure 2: Dispersant spraying (Maritime and Coastguard Agency)

### Where can I find further information about this and related research?

To find out more about the review and the UK approval scheme please visit the MFA website at <http://www.mfa.gov.uk/environment/oil/products.htm>

To find out more about this and associated research into the environmental impacts of oil and treatment products please contact Mark Kirby at Cefas [mark.kirby@cefas.co.uk](mailto:mark.kirby@cefas.co.uk)

Alternatively, please contact Defra's Marine and Fisheries Science Unit: [marinescience@defra.gsi.gov.uk](mailto:marinescience@defra.gsi.gov.uk)

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