General enquiries on this form should be made to:
Defra, Science Directorate, Management Support and Finance Team,
Telephone No. 020 7238 1612
E-mail: research.competitions@defra.gsi.gov.uk

SID 5 Research Project Final Report

- **Note**

  In line with the Freedom of Information Act 2000, Defra aims to place the results of its completed research projects in the public domain wherever possible. The SID 5 (Research Project Final Report) is designed to capture the information on the results and outputs of Defra-funded research in a format that is easily publishable through the Defra website. A SID 5 must be completed for all projects.

  A SID 5A form must be completed where a project is paid on a monthly basis or against quarterly invoices. No SID 5A is required where payments are made at milestone points. When a SID 5A is required, no SID 5 form will be accepted without the accompanying SID 5A.

- This form is in Word format and the boxes may be expanded or reduced, as appropriate.

- **ACCESS TO INFORMATION**

  The information collected on this form will be stored electronically and may be sent to any part of Defra, or to individual researchers or organisations outside Defra for the purposes of reviewing the project. Defra may also disclose the information to any outside organisation acting as an agent authorised by Defra to process final research reports on its behalf. Defra intends to publish this form on its website, unless there are strong reasons not to, which fully comply with exemptions under the Environmental Information Regulations or the Freedom of Information Act 2000.

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Project identification

1. Defra Project code: A0818

2. Project title:

   Toxicological research into the development of risk assessment procedures to enable formulation changes in approved oil treatment products to be processed as part of the FEPA approval scheme (DISCON)

3. Contractor organisation(s):

   CEFAS Burnham Laboratory
   Remembrance Avenue
   Burnham-on-Crouch
   Essex
   CM0 8HA

4. Total Defra project costs: £ 80,621

5. Project: start date ..... 01 April 2003

   end date 31/03/05

6. It is Defra's intention to publish this form.
Please confirm your agreement to do so.....**YES** ☒ **NO** ☒

(a) When preparing SID 5s contractors should bear in mind that Defra intends that they be made public. They should be written in a clear and concise manner and represent a full account of the research project which someone not closely associated with the project can follow.
Defra recognises that in a small minority of cases there may be information, such as intellectual property or commercially confidential data, used in or generated by the research project, which should not be disclosed. In these cases, such information should be detailed in a separate annex (not to be published) so that the SID 5 can be placed in the public domain. Where it is impossible to complete the Final Report without including references to any sensitive or confidential data, the information should be included and section (b) completed. NB: only in exceptional circumstances will Defra expect contractors to give a "No" answer.
In all cases, reasons for withholding information must be fully in line with exemptions under the Environmental Information Regulations or the Freedom of Information Act 2000.

(b) If you have answered NO, please explain why the Final report should not be released into public domain

Executive Summary

7. The executive summary must not exceed 2 sides in total of A4 and should be understandable to the intelligent non-scientist. It should cover the main objectives, methods and findings of the research, together with any other significant events and options for new work.

The UK statutory approval scheme for oil spill treatment products has been in place for nearly 30 years. During this time the approval process, including the two toxicity testing elements (The Sea and Rocky Shore tests), has become established as one of the most respected and comprehensive in the world. However, it has changed very little in that time and this has prompted a current review of the testing and approval process.

The review will encompass many aspects of the schemes applicability, organisation and flexibility and this research project was commissioned to address one specific aspect that had been highlighted as of particular concern. Due to the longevity of the scheme, and the fact that products require their approvals to be renewed every five years, certain products have now been through the renewal process on numerous occasions. This introduced a phenomenon known as 'constituent creep' by which small amendments by applicants were made to constituent recipes thus resulting in a slightly different formulation over time.

Scientific judgement was used to assess whether these small changes were environmentally significant but it was recognised that there was a lack of sound toxicological information regarding dispersants and their constituents to aid this decision process and therefore the advice was potentially subject to challenge. This research project was commissioned to address the issue.

Extensive testing was conducted using original and amended formulations (in which specific constituent proportions were changed) to see whether modest formulation changes were toxicologically significant. In general, it was found that small changes in any constituent did not change the dispersant performance in the Sea Test but that there was some evidence of changes in the Rocky Shore test. This difference was due to the masking effect of the oil toxicity in the Sea Test and it was concluded that the test was not appropriate for differentiating between these modest formulation changes.

Further studies focused on inherent toxicity assessments of original and amended dispersants using the *Tisbe battagliai* bioassay. These concluded that small increases in certain constituents caused an increase in formulation toxicity (e.g. sodium dioctyl sulphosuccinate - SDS) while others caused no increase or even decreased the toxicity (e.g. sorbitan monooleate – SMO). This approach allowed the categorisation of dispersant constituents in relation to their ability to contribute and amend inherent formulation toxicity.

The toxicity results are discussed in detail and their relevance to environmental scenarios and the possible use of predictive techniques such as quantitative structure activity relationships (QSAR) are also covered in the report.

Drawing on the research results four potential 'Assessment Protocol Options' have been detailed and their advantages and disadvantages discussed. A number of recommendations are made including the need to engage other stakeholders in forming a consensus way forward with the assessment process and the need for a proposed assessment process review to address a range of important issues relating to the scheme.

Project Report to Defra

8. As a guide this report should be no longer than 20 sides of A4. This report is to provide Defra with details of the outputs of the research project for internal purposes; to meet the terms of the contract; and to allow Defra to publish details of the outputs to meet Environmental Information Regulation or Freedom of Information obligations. This short report to Defra does not preclude contractors from also seeking to publish a full, formal scientific report/paper in an appropriate scientific or other journal/publication. Indeed, Defra actively encourages such publications as part of the contract terms. The report to Defra should include:
   - the scientific objectives as set out in the contract;
   - the extent to which the objectives set out in the contract have been met;
   - details of methods used and the results obtained, including statistical analysis (if appropriate);
   - a discussion of the results and their reliability;
   - the main implications of the findings;
   - possible future work; and
   - any action resulting from the research (e.g. IP, Knowledge Transfer).

Please see Executive Summary
Due to the nature of the commercial information contained within this report and prior agreements with manufacturers not to reveal dispersant formulation the full report is not generally available. For further information on this report please contact Mark Kirby (m.f.kirby@cefas.co.uk).

References to published material

9. This section should be used to record links (hypertext links where possible) or references to other published material generated by, or relating to this project.

Please see Executive Summary
Due to the nature of the commercial information contained within this report and prior agreements with manufacturers not to reveal dispersant formulation the full report is not generally available. For further information on this report please contact Mark Kirby (m.f.kirby@cefas.co.uk).