



**Environmental Monitoring and Impact Assessment of Marine Spill Incidents:
The Premiam Project**

Mark F Kirby

Cefas, Lowestoft Laboratory, Pakefield Road, Lowestoft, Suffolk, UK, NR33 0HT

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ABSTRACT

The design and conduct of post spill environmental monitoring and impact assessment are a key part of any integrated and effective marine spill incident response. A post spill monitoring programme will need to consider not only the appropriate use of scientific approaches such as chemical analysis, ecotoxicology and ecological impacts surveys but also the key logistics such as transport, chain of custody and storage of samples and the overall management, reporting and co-ordination of the programme. However, the majority of countries around the world have no pre-considered and agreed process for the conduct and co-ordination of post-spill monitoring. This presentation describes how the United Kingdom, through collaboration of all major government stakeholders, has addressed this issue via the Premiam (Pollution Response in Emergencies: Marine Impact Assessment and Monitoring) project. Among the project deliverables Premiam has published specific post-spill monitoring guidelines and has established a process of initiating and co-ordinating the necessary monitoring activity.

INTRODUCTION

Spills of oils and chemicals in the marine environment remain a significant threat. Therefore, the requirement for response capability, improved preparedness and effective post-incident monitoring and assessment remains undiminished.

Why the need for better and more effective post-incident monitoring?

- The need to ensure the provision of early evidence of potential impact to government and the general public.
- The need to have an appropriate and effective way of investigating the impact on the wider marine environment.
- Impact assessment methodology needs to be considered that not only assesses the short-term impacts, but also allows the prediction of potential longer-term impacts.
- To ensure a more effective use of resources so that unnecessary procedures are avoided but that potentially useful ones are not overlooked.
- To provide important information about the effectiveness, or not, of spill response activities including the use of dispersants.

However, there were no established expert guidelines in the UK for post-incident monitoring and impact assessment nor, indeed, was there a fully co-ordinated mechanism for overseeing the practical aspects of the programme (e.g. survey design, sampling, analysis, interpretation etc.). Following the Sea Empress spill in 1996 the Donaldson Report recommended the setting up of 'Environment Groups' (EG) to provide the response units with environmental advice and guidance. This has been implemented by the Maritime and Coastguard Agency, however, the

EGs are primarily advisory, often transitory and do not have an established role in relation to monitoring. The establishment of an 'Impact Assessment Group' was recommended in the Sea Empress Environmental Evaluation Committee report but no consistently applied operational monitoring and impact assessment co-ordinating body has been established on a UK wide basis.

POLICY DRIVERS

The improvement of post-incident monitoring feeds in to the UK obligations to protect our marine environment as a United Nations Law of the Sea (UNCLOS) signatory. The important role that a more co-ordinated approach can play was emphasised in the marine stewardship report 'Safeguarding our Seas'.

The project is also relevant to the UK obligations under the international convention on Oil Pollution Preparedness, Response and Co-operation (OPRC) and the associated Hazardous and Noxious Substances (HNS) protocol. This is implemented through national documents such as the National Contingency Plan (NCP) and the Marine Pollution Contingency Plan (MPCP), which highlight the need for effective post-incident monitoring and impact assessment.

THE PREMIAM PROJECT

The Premiam (Pollution Response in Emergencies: Marine Impact Assessment and Monitoring) project was initiated to strengthen both the use of applied science and co-ordination of post spill monitoring activities in UK marine waters.

The project represents an ongoing collaboration across all the main UK government stakeholders and is providing a focus through which the necessary improvements to science and organisation are being realised. A key deliverable under the project that is facilitating this is an overarching set of monitoring guidelines

detailing the scientific principles and approaches that should be applied following a marine incident. These guidelines (Law et al. 2011) provide the agreed principles and practices under which marine monitoring in UK waters will be conducted (the guidelines can be downloaded at (<http://cefas.defra.gov.uk/premium/guidelines>). In addition, the Premium project is delivering a mechanism for the co-ordination and management of post spill monitoring activities including a database network of scientific and logistical partners.

Through the production of expert guidelines and the generation and maintenance of a national network of experts and service providers Premium aims to implement an approach that will ensure:

- *Speed – Fast response in order to gain early impact information or baseline information concerning areas at threat.*
- *Cost effectiveness*
- *Expertise identification and availability*
- *Use of appropriate techniques*
- *Use of best-practice and the ability to learn from previous responses*
- *Co-ordination and integration*

CO-ORDINATION OF MONITORING RESPONSE

While a primary driver for the Premium partners has been the appropriate application of sound, quality science to post spill monitoring this can only be fully realised if it is part of an effective management and co-ordination process fully integrated with national plans (e.g. the National Contingency Plan). The ultimate effectiveness of the monitoring programme might be determined by how well the current or baseline status of the threatened environment is established so that subsequent damage and recovery can be properly assessed. Therefore, as equally

important to deploying the right methodologies is the necessity to deploy them promptly, within hours, before an impact may have occurred.

In order to facilitate the promptness in monitoring initiation the decision making process for the mobilisation of initial sampling and analysis needs to be straight forward with clear responsibilities identified. In addition, it needs to be recognised that any initial mobilisation, sampling or analysis will incur costs and therefore a pre-considered mechanism for funding this initial activity is essential.

A programme of marine monitoring for a significant incident can be extremely complex as it may need to co-ordinate many service contributors and take account of an ever changing scenario. Therefore, under the auspices of the Premium project it has been recommended that, for significant incidents, a Premium Monitoring Co-ordination Cell (PMCC) is formed to oversee the effective organisation and conduct of post spill monitoring.

The mechanisms for the formation, management and integration of any PMCC are currently being developed with the government partners. Of particular importance is to ensure that it integrates seamlessly with the activities of any formed Environment Group and in doing so the monitoring co-ordination cell can be an effective route through which the EG recommendations with respect to monitoring can be actioned. The recommended responsibilities of the PMCC could include:

- The initiation and development of a co-ordinated monitoring programme in line with the Premium post-spill monitoring guidelines.
- The formation and management of a 'monitoring team' (selected from the Premium network of service providers) to undertake the monitoring activities.

- The maintenance of strong communication links to any formed environment group (EG) and other response cells as necessary.
- The management and maintenance of financial and expenditure records pertaining to any monitoring activities (including liaison with and payment of any sub-contractors used).
- Overseeing the generation and publication of reports as necessary. These will include i) regular/routine updates for Premium partner organisations and the EG (and potentially the media), and ii) interim and final monitoring and impact assessment reports.

CONCLUSIONS AND THE FUTURE

The benefits of a well planned and pre-considered monitoring programme are clear for reasons that range from scientific quality to cost-effectiveness and public protection. Furthermore, although the scientific literature is full of studies that have conducted post-incident monitoring and impact assessment (especially following notable incidents) they are rarely of a fully integrated nature nor do they often have high quality pre-incident data for their comparisons.

It is against this background that calls have been made (Kirby and Law 2010; Kerambrun et al 2006) to establish better logistical organisation of post spill monitoring. Initiatives such as PREMIAM are helping to establish a more effective approach to post incident monitoring across the UK. Even once guidelines are established and networks are in place to ensure that the procedures can be conducted within appropriate timeframes, budgets and scientific quality there needs to be continued vigilance on the part of the responsible organisations to ensure it is maintained. The occurrence of marine incidents requiring post-incident monitoring can be frequent but high profile incidents (especially affecting a specific nation) can

also be spaced by years and it is this that can result in complacency, loss of expertise and readiness.

The collaborative approach set out under the Premium project will hopefully act as an ongoing focus for continued sharing and dissemination of best practice not only across government departments but also encompassing the main offshore industries, NGOs and conservation and wildlife organisations. It is anticipated that future activities will include:

- Maintenance of the website, guidelines and networks.
- Drafting of specifically focussed guidance (e.g. for specific areas/zones or for regulatory purposes)
- Provision of appropriate for a for the discussion and dissemination of issues associated with post-spill environmental monitoring (e.g. like the 1 day Premium Conference planned for 4th July)
- Involvement in emergency response exercises. There is a need to exercise the ability to mobilise and co-ordinate monitoring activities as well as other aspects of spill response.

REFERENCES

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The current Premium Partners are:

Cefas (Centre for Environment, Fisheries and Aquaculture Science)

Defra (Department for Environment, Food and Rural Affairs)

MMO (Marine Management Organisation)

MCA (Maritime and Coastguard Agency)

EA (Environment Agency)

FSA (Food Standards Agency)

DECC (Department of Energy and Climate Change)

NE (Natural England)

HPA (Health Protection Agency)

LGA (Local Government Association)

JNCC (Joint Nature Conservation Committee)

MS (Marine Scotland)

SEPA (Scottish Environment Protection Agency)

SNH (Scottish Natural Heritage)

WG (Welsh Government)

CCW (Countryside Council for Wales)

NIEA (Northern Ireland Environment Agency)

AFBI (Agri-Food and Biosciences Institute)

DARD (Department of Agriculture and Rural Development – NI)

For more information please visit www.cefas.defra.gov.uk/premium or contact Mark

Kirby at mark.kirby@cefas.co.uk