

# Post-spill environmental monitoring – the Premiam initiative

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Fisheries & Aquaculture  
Science



**Cefas**

# Why Do Post Incident Monitoring?

- **Human health and safety.**
- **Understanding what the impact to the environment is (including the long-term!).**
- **Understand impact on commercial and natural resources.**
- **Input to compensation issues.**
- **Effectiveness of response and clean up.**
- **Learn for the future.**

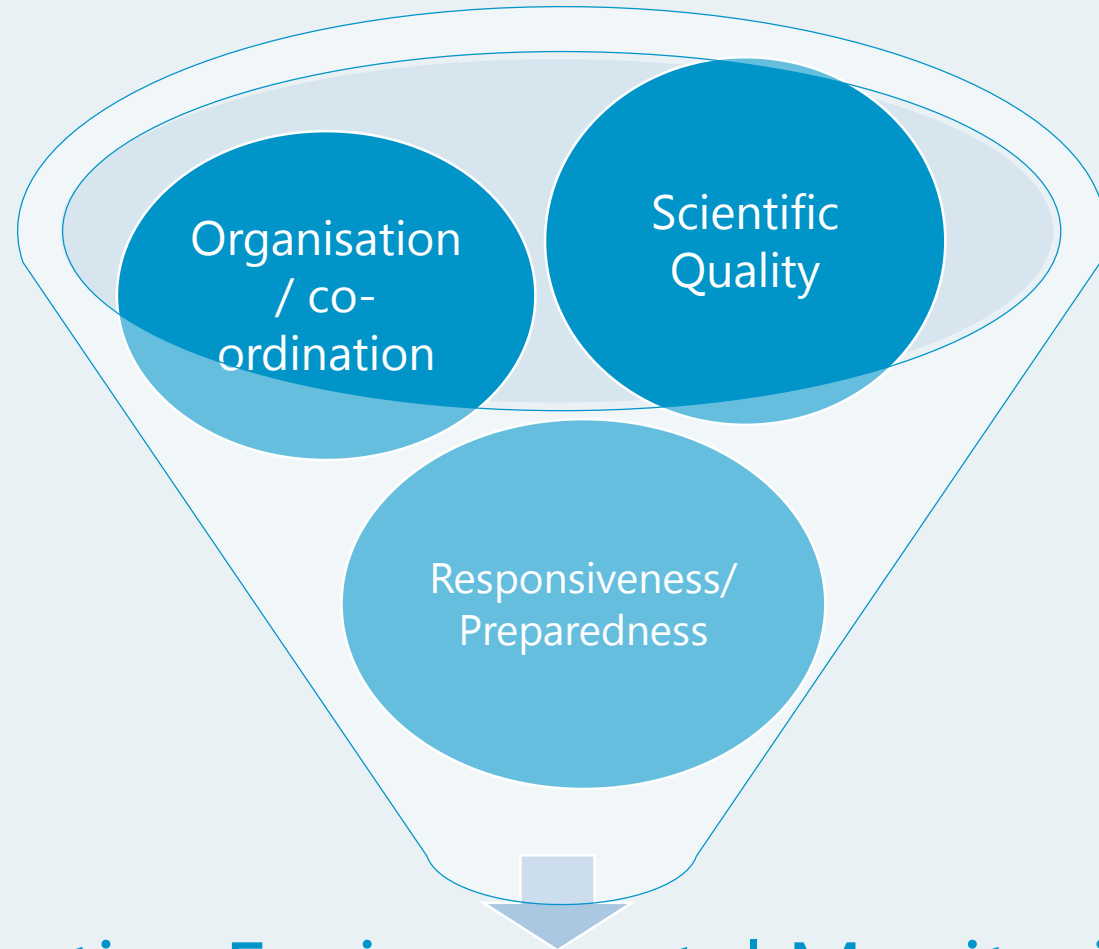


# What can post-spill monitoring tell us?

- **Primary impact:** The need to provide early evidence of any environmental and economic impact (and to document areas not impacted) to key stakeholders (e.g. government and the general public).
- **Wider effects:** The need to apply an appropriate and effective method of investigating the potential impact on the wider marine environment and its resources.
- **Best methods:** Impact assessment methodology needs to be considered to not only assesses the short-term impacts, but also allow the prediction of potential longer-term impacts.
- **Efficient resource use:** The need to ensure effective use of resources during monitoring so that unnecessary procedures are avoided but that potentially useful ones are not overlooked.
- **Mitigation effectiveness:** The need to provide an assessment of the effectiveness, or not, of spill response clean-up and reinstatement measures, including the use of dispersants.
- **Compensation/Liability:** The need to provide monitoring and assessment input to the determination of compensation and/or liability issues as necessary.



# The Ingredients



Effective Environmental Monitoring



# How, what, why, who....



- Started life in 2009
- Aim: 'Develop procedures and practices to ensure a fast, pre-considered and efficient response to impact assessment and monitoring.'
- How: Promoting best practice, developing guidance/tools, management & decision making processes & creating a forum for cooperation.
- Who: Partnership of over 20 UK government agencies & departments.  
Industry group
- What: Premiam is a cross-government/industry initiative. Not a separate organisation but a forum for debate and progress.
- It is an inclusive group aimed at maintaining awareness of post-spill issues and working across borders and sectors to facilitate preparedness.



# Achievements



- Post-Spill Monitoring Guidelines
- Development and promotion of the Monitoring Coordination Cell concept (PMCC etc.)
- Development of tools and publications to facilitate the assessment of preparedness and prioritise activity.
- Inclusion in the National Contingency Plan and integration with response exercises.
- Promotion of best-practice and engagement (e.g. biennial conference, website, presentations etc.).
- A forum for discussion across stakeholders.

# Guidance

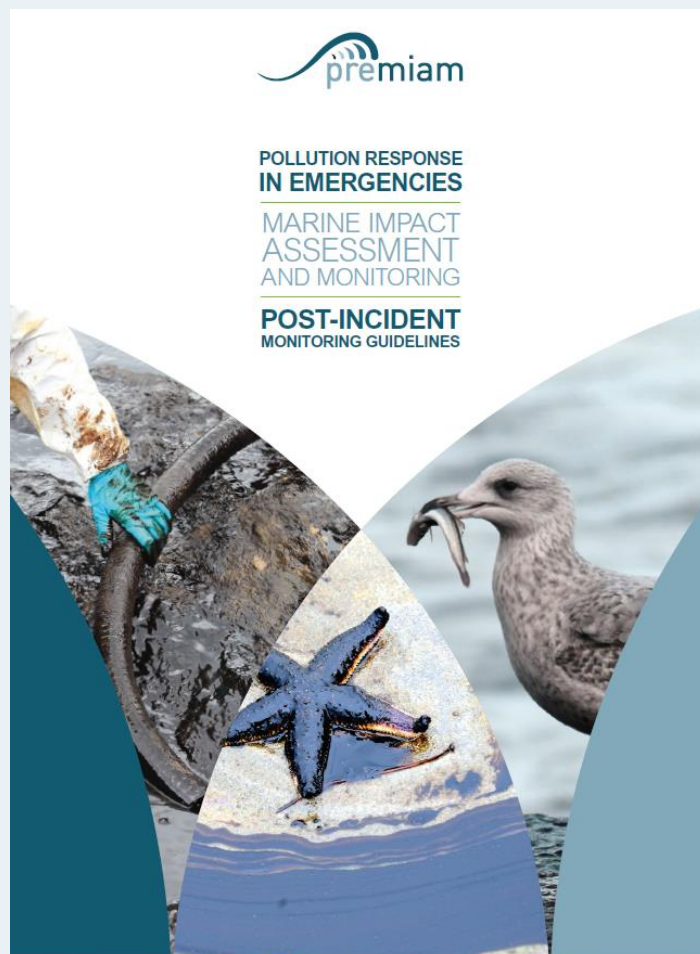


- How?
- What?
- Where?
- When?
- What with!



# Guidance

**NEW EDITION to be published in 2017/18 !**



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# 1. The p

## 10 Post-incident Monitoring Guidelin



While worst-case scenarios rarely see a total loss of cargo and bunkers, this may be a good starting point for early modelling until more accurate information is available.



The reconnaissance should be carried out by an ecologist with relevant expertise as soon as possible after free oil or chemical(s) have stopped moving around.



### 4.3 ECOI

#### 4.3.3 Ger

Early recon (e.g. saltmarsh interest) the small patch be carried out after free reconnaissance (Moore 2000 survey sho

- basic bio purpose adequat
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- ecologic (any sig growth, show sig
- brief ass species
- collectio as press
- other rel evidenc
- brief ass logistica

Reconnaissance habitats (e. appropriate have been ecological potential for

#### 4.3.3.1 Bio

The range damage as: solely on th biological fi and for ea techniques effects that follows:



### Known vulnerability and sensitivity

Habitats above the level of spring high tides are not normally vulnerable to marine oil or chemical spills. Few studies have therefore been carried out on oil spill impacts to terrestrial maritime habitats, and fewer have detected any notable impacts. The Braer oil spill was one of the few to result in significant terrestrial contamination, due to incredibly strong winds and the large volumes of light oil that were released next to the coast. Studies at other marine oil spills, including the *Sea Empress*, have shown no discernible effects on vegetation that was not heavily oiled. It is concluded that terrestrial vegetation is not normally vulnerable to marine oil spills and, in any case, impacts are unlikely to be detected unless visibly coated with oil. No such studies have to date been undertaken following chemical spills in the marine environment.

Coastal habitats above the level of spring high tides may be physically impacted by intensive clean-up activity if they are used as an access route to the shore or as a laydown area for equipment. Those that will be particularly vulnerable include foredune communities of sand dunes, vegetated shingle ridge communities and machair. Sand dunes and other vegetated marine habitats also provide important erosion protection to some coastlines, and it is possible that physical damage due to clean-up activities could initiate more serious erosion.

Terrestrial maritime habitats are also important to a large variety of animals, including insects and other invertebrates, amphibians (e.g. natterjack toad), reptiles (e.g. sand lizard) and small mammals. These species may also be vulnerable to clean-up activity, including disturbance. No specific guidance is provided for these animals, but approaches and methods can be adapted from other sections.

### Impact assessment methods

In some regards, post-spill impact assessment is easier for terrestrial marine vegetation than for intertidal areas. The work is not hindered by sea/tides and the natural removal of surface contamination and impacted vegetation, although the initial scorching and dieback effects may disappear when new growth begins (i.e. in the following spring/summer).

**Reconnaissance** – taking particular note of scorching and dieback effects.

**Biological survey attributes** – some of the more likely potential indicators are: vegetation condition (signs of scorching and dieback). Recovery will be indicated by new growth from spill-damaged perennials.



### Strategy

If good-quality pre-incident data exists from the impacted area – re-establish previous survey sites and use the same methodology to survey impacted vegetation.

If no (or inadequate) pre-incident data are available from the impacted area, but oiling or chemical contamination is very severe and significant impacts are expected – establish discontinuous belt transects or random quadrats across selected impacted communities (preferably stratified by level of oiling or contamination) and in reference areas outside; use standard botanical survey methods to survey plant communities; monitor changes at seasonal intervals. Comparisons between impacted and reference sites will be strongly influenced by other environmental factors.

Potential bioassay studies on soil from the contaminated areas and reference sites should include counts of germinating seeds of local grasses.

### Effects of clean-up

Methods to study effects of physical damage from access and clean-up would depend on the affected habitat, but measurements and monitoring of percentage cover are likely to be appropriate. (Further useful information can be found in Bayfield and Frankiss, 1997; Evans, 1998; Little *et al.*, 2001; Wolseley and James, 1997.)

### References

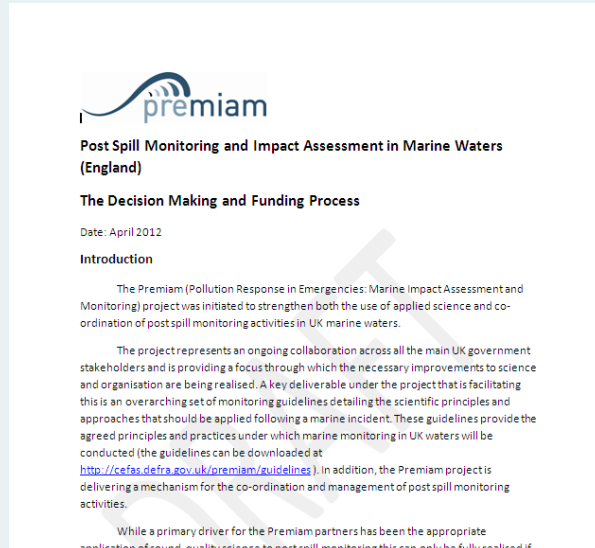
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Evans, S. 1998. *Effects of oil and clean-up of oil from the Sea Empress on the nationally rare and scarce vascular plants of Pembrokeshire*. CCW, Pembrokeshire, UK. 20pp + appendices.

Little, A.E., Moore, J.J. and Dyrinda, P.J. 2001. *Ecological impacts of shoreline clean-up during the Sea Empress oil spill*. A report to the Countryside Council for Wales. 124pp + plates.

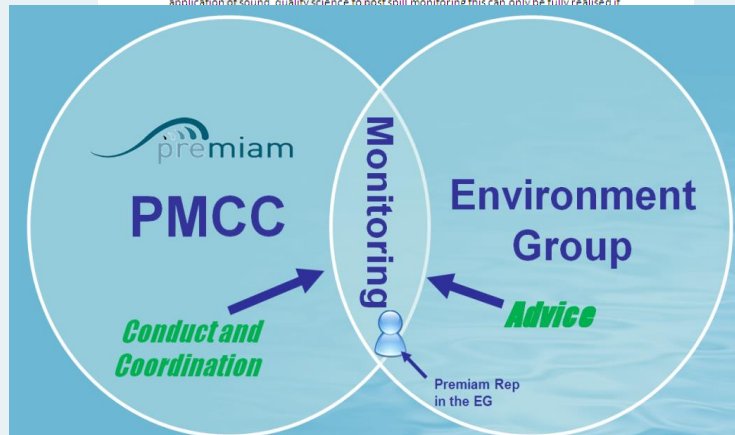
Wolseley, P. and James, P. 1997. *Report of resurvey of lichen quadrats on Skomer Island NNR*. Report to CCW from The Natural History Museum. 79pp.

# Clear Decision Making & Responsibilities

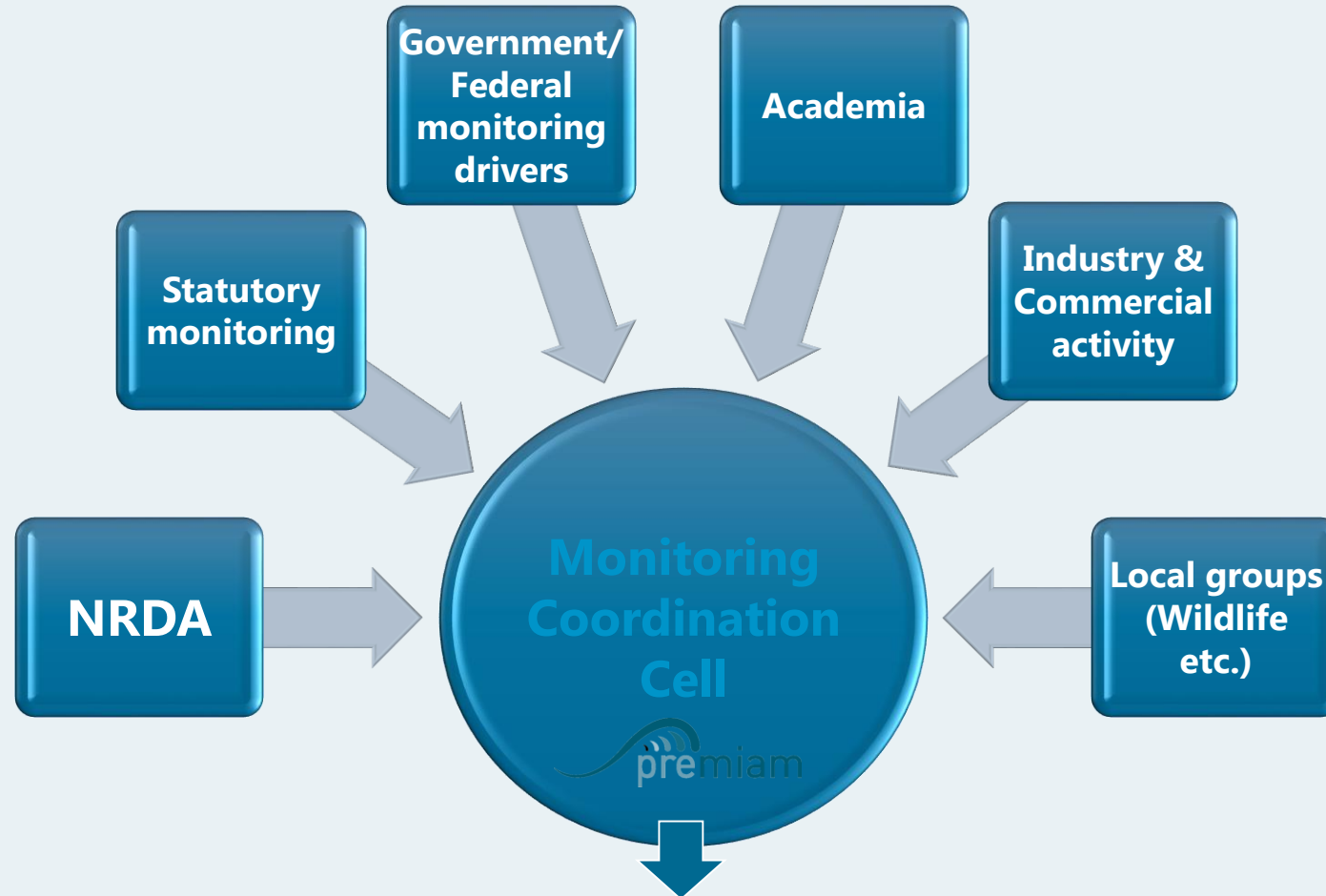


## Premium Monitoring Coordination Cell (PMCC)

- Development of a coordinated monitoring programme
- Formation and management of a monitoring 'Team'
- Maintenance of strong communications
- Management of financials
- Generation of updates, reports final assessment etc..
- Chaired by monitoring expert



# Integration & Co-ordination



**Fully integrated, comprehensive and cost-effective monitoring programme**



# Premiam Conference 2012 -2014 - 2016



# Premium Conference 2012 -2014 - 2016

**Premium 2018 – London - June/July 2018**

*Effective post-spill monitoring – Sharing best practice and experience*

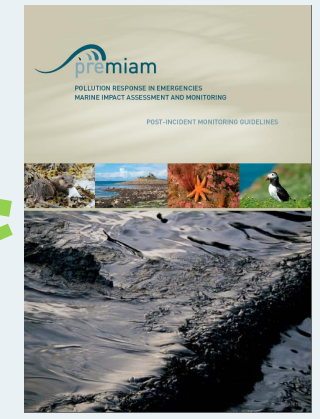
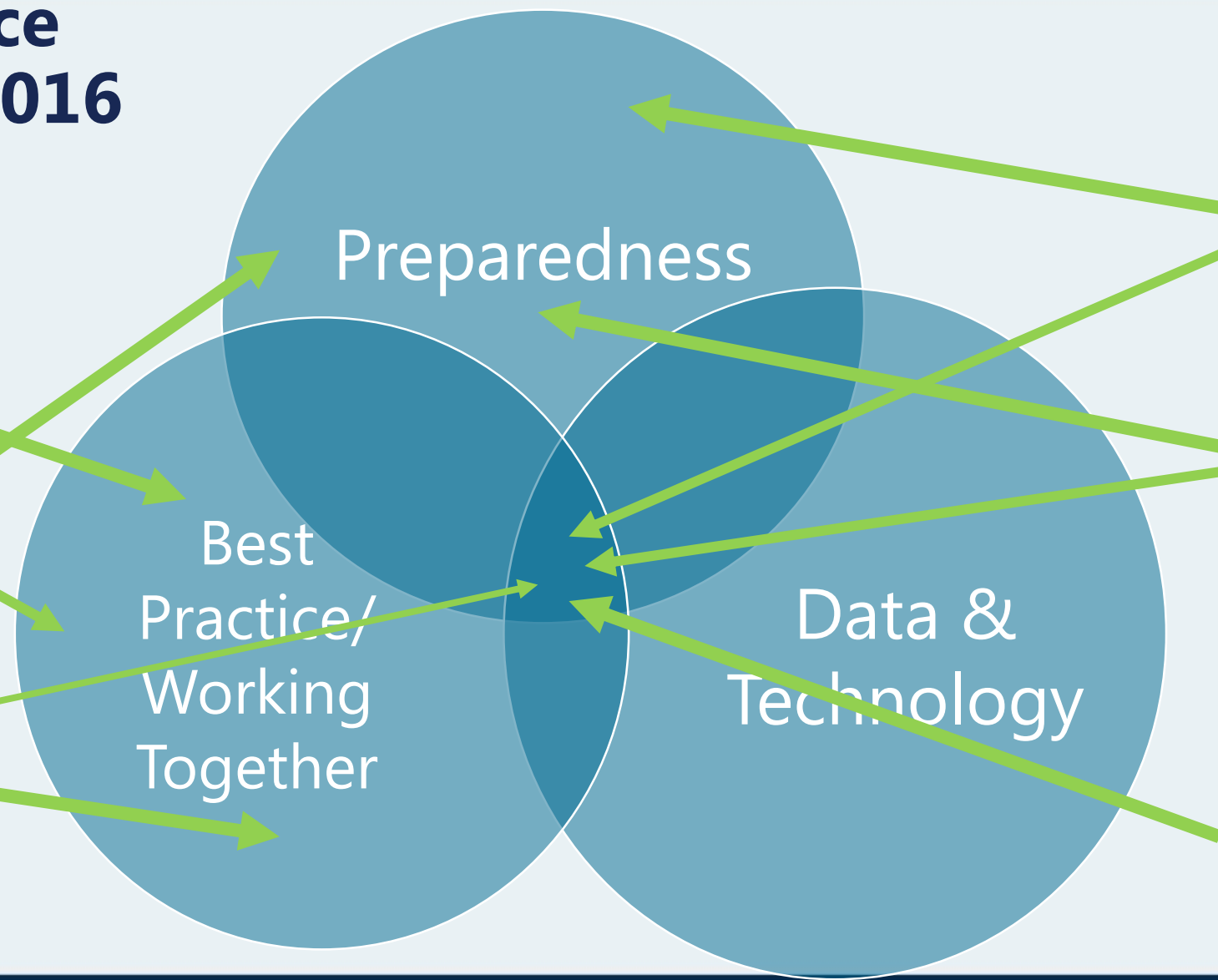
3rd Premium Post-Spill Monitoring Conference, June 2016, London – Registration now open!

# Conference Themes 2016



**NATIONAL CONTINGENCY PLAN FOR MARINE POLLUTION FROM SHIPPING AND OFFSHORE INSTALLATIONS**

**Monitoring Preparedness Assessment in Marine Systems (MPAS)**



**Monitoring Preparedness Assessment Matrix (MPAS)**

Area	Preparedness level			
	Not prepared	Low preparedness	Prepared (at risk)	Completely Prepared
Strategic Context	Not prepared	Low preparedness	Prepared (at risk)	Completely Prepared
Policy & Knowledge	Not prepared	Low preparedness	Prepared (at risk)	Completely Prepared
Engagement	Not prepared	Low preparedness	Prepared (at risk)	Completely Prepared
Planning	Not prepared	Low preparedness	Prepared (at risk)	Completely Prepared
Responsibility and Subsequence	Not prepared	Low preparedness	Prepared (at risk)	Completely Prepared
Operational Coordination	Not prepared	Low preparedness	Prepared (at risk)	Completely Prepared
Region & Region	Not prepared	Low preparedness	Prepared (at risk)	Completely Prepared
Practice	Not prepared	Low preparedness	Prepared (at risk)	Completely Prepared
Overall Monitoring Preparedness Assessment Score (0-100)	Not prepared	Low preparedness	Prepared (at risk)	Completely Prepared

Kirby, M.F., Gioia, R. and Law, R.J. Marine Poll. Bull. (2014)

**premium**

<http://www.premium.gov.uk>

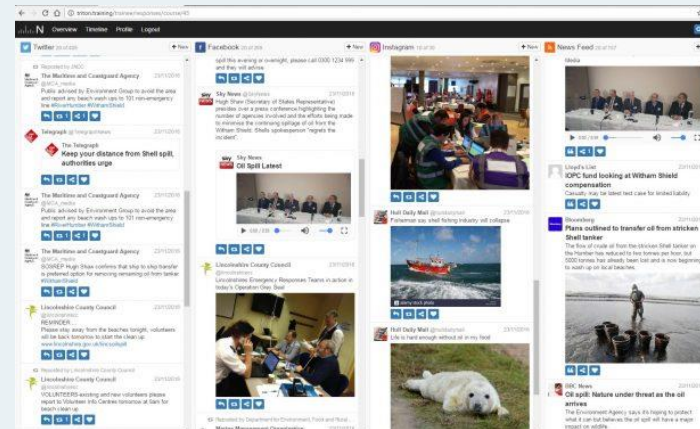
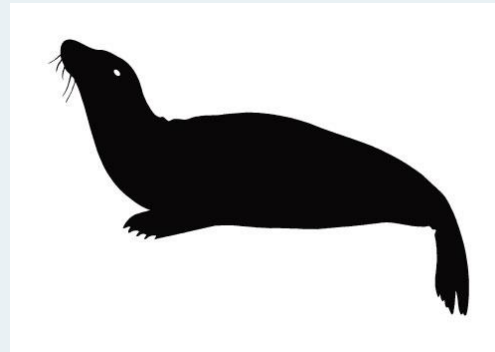
KEEP CALM AND SHARE BEST PRACTICE

# Exercise Grey Seal



## NATIONAL CONTINGENCY PLAN FOR MARINE POLLUTION FROM SHIPPING AND OFFSHORE INSTALLATIONS

The Maritime & Coastguard Agency  
Spring Place  
105 Commercial Road  
Southampton SO15 1EG  
Tel: +44 (0)2380 329482/484  
Fax: +44 (0)2380 329485



# Challenges



- Skills and Expertise
- Funding
- Stakeholder support & Consistency of Approach
- Integrating environmental monitoring into the wider understanding of what 'effective response' is. Through monitoring do we know how effective our response has been.

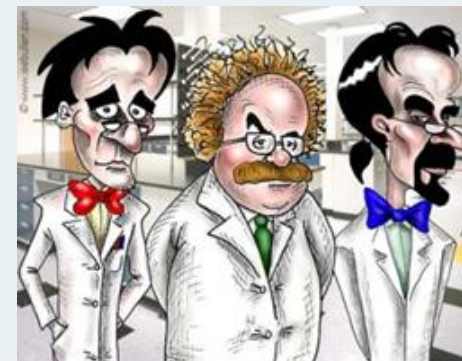






# Who pays?

- Funding streams are uncertain – not high on government officials priority list & austerity pressures.
- Delays caused by uncertainties in responsibility – getting organisations to take (admit?) responsibility difficult.
- Response & clean-up considered – but not always monitoring.
- Perceived lack of control over spending does not help.
- These are all issues that can be pre-considered and agreed.



# Stakeholder support & Consistency of Approach

- Spills do not respect boundaries.
- In times of reducing funds non-duplication of effort and sharing of best practice is advisable.
- Political and legal responsibilities have meant differing approaches within countries (e.g. the devolved admins in the UK).
- How do we best work together?

**CONSISTENCY**  
**IS** 



# Effective Response

Includes:

- Health & Safety
- Salvage
- Spill Response
- Clean –up
- Communications

AND

- Environmental Monitoring and Impact Assessment

How do we promote a more integrated approach?



# Thank You!



Questions?

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[www.cefas.co.uk/premiam](http://www.cefas.co.uk/premiam)

