THE ROLE OF DISPERSANT PRE-APPROVALS IN GLOBAL GOOD PRACTICE

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WHY PLAN FOR SPILL RESPONSE?

IN PEACE TIME IT ALLOWS FOR...

- Careful consideration of approaches
- Identification & prioritisation of sites
- Strategic allocation of resources
- Resolution of stakeholder conflicts
- Rapid and effective decision-making
• Knowledge of tanker routes
• Volume & types of oil transported
• Navigational & Environmental hazards
• State of preparedness
- Spill statistics may allow a quantitative analysis of trends
- An assessment can be made of likely sources of oil spills
- Details gathered on most frequent oil types traded/carried
- Potential quantities spilled (quantities handled/vessel DWT)
- Scenarios (loading/offloading, bunkering, navigational hazards)
RISK ASSESSMENT: ARABIAN SEA & BAY OF BENGAL

MSC CHITRA/KHALIJIA III (2010)
KEW BRIDGE (2006)
TIGER SPRINGS (2010)

Tanker Incidents
- 7-700 Tonnes (8)
- >700 Tonnes (10)

2011 Oil Movement
- 0 to 10 Million Tonnes
- 10 to 50 Million Tonnes
- 100 to 200 Million Tonnes
- 200 to 300 Million Tonnes
- 50 to 100 Million Tonnes
- Greater than 300 Million Tonnes

Sources: ENP, GEBCO, NOAA, National Geographic, OilPrice, NAVTEQ, GeoFramed.org and other contributors
- Dispersants used at many small/medium-scale incidents but not well documented
- Large-scale spills are very rare and large-scale dispersant use is even more rare
- Not used during AMOCO CADIZ response due to proximity of vessel to shore
- Not used on a large scale during EXXON VALDEZ response – initial ‘test sprays’
- Not used during ERIKA or PRESTIGE spill responses (and would not have worked)
- Largest-scale response to date was to DEEPWATER HORIZON (6,800 MT applied)
CASE STUDIES

SEA EMPRESS, UK, 1996

TASMAN SPIRIT, Pakistan, 2003

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SEA EMPRESS – PEMBROKESHIRE, UK (15 FEB 1996)

- Full-scale aerial spraying operation for 8 days
- UK government & OSRO aircraft utilised
- 446 MT dispersant applied (7 different types)

All dispersants pre-approved for application
• Large oil spill, highly sensitive area and dispersant was the main response strategy
• **Dispersant policy in place in the contingency planning**
• Massive shoreline clean-up operation was avoided
• Overall environmental damages significantly reduced
• Mitigation of spill impacts due dispersant application

*Dispersants reduced shoreline impact by an estimated 17,000 tonnes of crude*
TASMAN SPIRIT – KARACHI, PAKISTAN (27 JUL 2003)

- Cargo: 67,800 MT Iranian Light crude
- Grounded at entrance to Karachi Port
- Estimated loss of 30,000 MT oil cargo

Approx. 8 km of coast oiled
## DISPERISANT CONSIDERATIONS

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<tr>
<th><strong>ADVANTAGES</strong></th>
<th><strong>DISADVANTAGES</strong></th>
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<tr>
<td>- Could reduce risk of impact on mangroves</td>
<td>- Increased risk of impact on seabed</td>
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<td>- Likely to accelerate breakdown of oil</td>
<td>- Oil may become incorporated in sediment</td>
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<tr>
<td>- Weather conditions ideal for dispersion</td>
<td>- Nearshore fisheries may be at higher risk</td>
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SUMMARY

- Pakistan’s first major spill - no NCP or equipment
- Very large oil spill contained within a relatively small area
- Oil amenable to dispersion but in shallow nearshore waters
- Strategic decision to spray based on assessment of benefits & risks
- Rapid mobilisation of Tier III OSRO likely to have mitigated impacts
- Government approval for spraying granted within 5 hrs
Part II: Generic template that each national authorities can fill with the country specific details.

It considers each task to be completed in the use of chemical dispersants, in order to establish a National Contingency Plan for Chemical Dispersion.

AIMS: to assist competent authorities to define, develop, and revise a national policy document for the use of dispersant.
IMO GUIDELINES ON DISPERANT USE - Part II

List what should be prepared in the planning stage:

- Scientific (e.g. dispersibility studies, principles for NEBA analysis)
- Technical (e.g. selection of product and equipment)
- Logistical (e.g. pre-authorisation for flight, monitoring) issues.

**Emphasis on identification of the decision making body ahead of a spill and Net Environmental Benefit Analysis (NEBA), on Annex 1**

- Annex 2: Decision making process for dispersant application
1. DISPERSANT APPROVED FOR USE

2. LOCATION WHERE DISPERSANT CAN/CANNOT BE USED
   - Net environmental benefit analysis (NEBA)
   - Sensitive resources threatened

3. CONDITIONS FOR USE
   - Oil type
   - Water depth
   - Distance from the shore
   - Currents & tides (movement of the dispersed oil plume)
   - Weather conditions (safety & efficiency of dispersion)
1. DISPERSANTS APPROVED FOR USE

- Information on prior approvals should be in NCP for products which have been specifically approved by Government

- Products must satisfy two criteria: **EFFECTIVENESS AND TOXICITY**

- **Effectiveness test**: proportion of test oil that is dispersed and retained in a water sample

- **Toxicity test**: to ensure that the relative toxicity of an oil: dispersant mixture is no greater than toxicity of oil alone
2. APPROVED LOCATIONS

- NET ENVIRONMENTAL BENEFIT ANALYSIS
  ... balancing the advantages & disadvantages of a given strategy
- SENSITIVITY MAPPING
3. APPROVED SITUATIONS

• IN OPEN SEA
  - High concentrations are unlikely to persist for more than a few hours
  - No significant biological effects

• IN SHALLOW WATERS close to the shore
  - High concentrations may persist for long periods
  - Observable biological effects

• IMO guidelines on dispersant use: *Dispersants acceptable in non-sensitive waters deeper than 10 m (30 ft)*
STAKEHOLDER INFLUENCE?

- Government agencies
- Fishermen
- Food health agencies
- Environment groups
- NGOs
- Tourism agencies
- Public
- Industry
• Dispersant is primary mode of response

• Product approval by licensing authority
  • Efficacy test (must be ≥60% effective)
  • Sea toxicity test: oil + dispersant ≤ oil alone
  • Shore toxicity test: dispersant ≤ oil alone

• Application in deep offshore waters
  • >20m depth and >1NM from 20m isobath
  • MCA ‘standing approval’ for dispersant use
  • Licensing authorities encourage consultation

• Application in shallow & coastal waters
  • <20m depth or <1NM from 20m isobath
  • Clearance needed from licensing authority

• Aerial application following initial test

• 1,400m³ stockpile throughout UK

• Potential to disperse 84,000 MT oil
POLICY EXAMPLES: FRANCE

- Dispersant is considered as an option

- Product approval by licensing authority
  - Efficacy test (must be ≥60% effective)
  - Toxicity test: 10x less than Noramium DA50
  - Biodegradability test: ≥50% biodegradable

- Fixed limits for oil quantity to be dispersed
  - 10 MT at ≥5m depth & ≥0.5NM offshore
  - 100 MT at ≥10m depth & ≥1NM offshore
  - 1,000 MT at ≥15m depth & ≥2.5NM offshore
  - >1,000 MT decided on case-by-case basis

- Vessel & helicopter systems available

- 900m³ stockpile throughout France

- Potential to disperse 54,000 MT oil

- Additional support with Bonn Agreement
• Dispersant typically considered secondary to containment & recovery
• Product must be approved by federal licensing authority (US EPA)
• Pre-approval zones typically ≥ 3 NM offshore and/or depth ≥ 10 m
• Aircraft & vessel systems available through USCG & numerous OSROs
OPERATIONAL CONSIDERATIONS

- **Mode of Application**: sourcing suitable aircraft/vessels & equipment
- **Logistics Issues**: location of dispersant stockpiles, re-loading capability
- **Command & Control**: prioritisation & guidance of dispersant application
- **Personnel Involved**: training & experience of workforce (external support)
- **Termination criteria**: continuous monitoring & evaluation of effectiveness
SUMMARY

“With proper planning, dispersants can provide a rapid and cost-effective response to oil spills”

Or put another way, “If you don’t plan to use dispersants, you plan NOT to use dispersants.”

- Planning is required to facilitate a rapid and effective response
- Dispersant application typically has short ‘window of opportunity’
- Prior approvals by the relevant authorities can speed up the process
- Policy-makers should be aware of all advantages & disadvantages
- The application of NEBA can help to make balanced decisions
- Operational issues should be considered during planning process
THANK YOU

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