

IPIECA report series: choosing spill response options to minimise damage

Net Environmental Benefit Analysis

IPIECA, London, UK

Introduction

After an oil spill, urgent decisions need to be made about how to minimise environmental and socio-economic impacts. The advantages and disadvantages of different responses need to be compared with each other and with natural clean-up. This process is called Net Environmental Benefit Analysis.

The process must take into account the circumstances of the spill, the practicalities of clean-up response, the relative impacts of oil and clean-up options, and some kind of judgement on the relative importance of social, economic and environmental factors. Decisions are best and most rapidly made if contingency planning has included reviews of environmental and socio-economic information, and consultations and agreements by appropriate organisations.

Aims of spill response

The aims are to minimise damage to environmental and socio-economic resources, and to reduce the time for recovery. This can involve:

- Guiding or re-distributing the oil into less sensitive environmental components;
- Removing oil from the area of concern and disposing of it responsibly.

Initiation of a response, or a decision to stop cleaning and leave an area for natural clean-up, should be based on an evaluation made both before the spill (as part of the contingency planning process) and after it.

The evaluation process

Evaluation typically involves the following steps:

- Collect information on physical characteristics, ecology and human use of environmental and other resources of the area of interest.
 - Review previous spill case histories and experimental results which are relevant to the area and to response methods which could be used.
 - On the basis of previous experience, predict the likely environmental outcomes if the proposed response is used, and if the area is left for natural clean-up.
 - Compare and weigh the advantages and disadvantages of possible responses with those of natural clean-up.
- Each of these steps is considered in detail in the text.

Considerations and examples

Oil on the water

When a large spill occurs many miles offshore and it is not clear where the oil will move, a wide-ranging preliminary evaluation is an appropriate precaution. Rapid decision making is particularly important for nearshore situations, where there may be only a few hours available before the oil reaches the shore.

If sea conditions preclude containment and recovery, dispersant spraying may be the only possible option if there is to be any at-sea response.

Oil on the shore

If large volumes of mobile oil are present on the shore surface, a rapid response is necessary before the oil spreads. For some shores, ecological recovery times may be reduced by rapid action to remove smothering or particularly toxic oil. In contrast, more time can be given to decisions involving small amounts of weathered oil firmly stuck to the shore or retained beneath the surface.



Mangrove swamps, such as this one in Nigeria, are typically important both ecologically and socio-economically (e.g. for shellfish production). They are also vulnerable to damage by oil.



After the Sea Empress spill in southwest Wales it was important to clean this rocky shore quickly because there was free oil which might have moved elsewhere, the bay in an important area for tourists, and the shore is an area of outstanding ecological interest.



This beach near Madras, India, is an example of an area which is so important for amenity and tourism that restoration of human use after oil pollution would take precedence over ecological considerations (such as protecting any crabs that survived the oil).

For many spills which do not involve thick or particularly toxic oil deposits, moderate shore cleaning has little effect on longer-term recovery rates of shore organisms. This is an important finding for shoreline response, because it raises key issues for decision making about clean-up.

The text discusses these issues in detail, dealing in turn with severity of oiling, whether there are interacting systems (wildlife species or nearshore ecosystems) which might be damaged if the shore is not cleaned, and socioeconomic issues such as the importance of protecting amenity beaches, marinas and fisheries.

Conclusions

Some damage caused by specific response options may be justifiable if the response has been chosen for the greatest environmental and socio-economic benefit overall.

- Groundwork for evaluation of response options is best done before a spill as part of contingency planning.

- The advantages and disadvantages of different responses should be weighed up and compared both with each other and with the advantages and disadvantages of natural clean-up.
- Response options need to be reviewed when a spill occurs, and such a review should be an ongoing process in cases of lengthy clean-up operations.
- Offshore and nearshore dispersant spraying can lead to an outcome of least environmental harm.
- For onshore evaluation, it is necessary to consider both the shore in itself, and systems which interact with the shore.
- In many cases of oiling there is no long-term ecological justification for clean-up.
- For extremely oiled shores, moderate clean-up can facilitate ecological recovery, but aggressive clean-up may delay it.
- In most cases of shore oiling where moderate clean-up is considered likely to reduce the damage to socioeconomic resources, wildlife or near-shore habitats, this will not make a significant difference to the shore ecological recovery times.

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The core content of this publication is made up of report summaries which reference the full report series. In the printed version of the summary (which is available from the secretariat) the full report series is included on CD-ROM in English, French, Spanish and Russian.

Please visit www.ipieca.org for more details.

ABOUT THE ORGANISATION

The **International Petroleum Industry Environmental Conservation Association (IPIECA)**, was established in 1974. It is a voluntary non-profit organisation whose membership includes both petroleum companies and associations at the national, regional or international levels.

Separate working groups within IPIECA address global environmental and social issues related to the petroleum industry: oil spill preparedness and response, global climate change, biodiversity, social responsibility, fuel quality and vehicle emissions, and human health. IPIECA also helps members identify new global issues and assesses their potential impact on the oil industry.

IPIECA holds formal United Nations status, which allows it access as a Non-Governmental Organisation (NGO) to all UN negotiations. The Association represents the views of its members in public fora and provides an interface between the petroleum industry and the United Nations Agencies.

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