Spill Impact Mitigation Assessment (SIMA)

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Why SIMA

Oil Spill Response

A key objective for any oil spill response

To minimize the impacts to ecological, socioeconomic and cultural resources at risk.

Do it Fast

- **Chance of success is high**

Do it right

- **Cleanup response may cause negative impact to the environment**

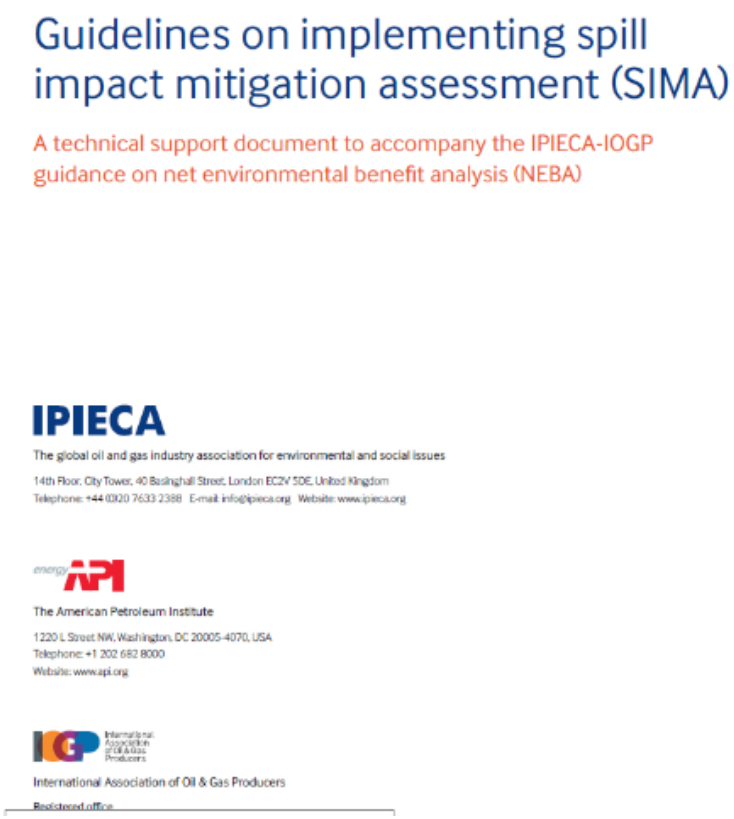
Decision supports by stakeholders

- **The cleanup methods have to be agreed and support by key stakeholders**

What is the SIMA

IPIECA guideline

Tool for risk assessment and selection of the oil spill response strategy and methods


Guidelines on implementing spill impact mitigation assessment (SIMA)

A technical support document to accompany the IPIECA-IOGP guidance on net environmental benefit analysis (NEBA)

IPIECA

The global oil and gas industry association for environmental and social issues

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http://www.ipieca.org/resources/awareness-briefing/guidelines-on-implementing-spill-impact-mitigation-assessment-sima/

Spill Impact Mitigation Assessment (SIMA)

Net Environmental Benefit Analysis (NEBA)

A structured approach to compare the impact mitigation potential of candidate response options and develop a response strategy that will minimize the net impact of an oil spill on the environmental, socio-economic and cultural resources of concern.

NEBA = **N**et **E**nvironmental **B**enefit **A**ssessment

Spill Impact Mitigation Assessment (SIMA)

A replacement for NEBA process, although the underlying principles of the risk analysis process have not changed.

The SIMA process encompasses ecological, socio-economic and cultural considerations, and this new term eliminates the perceptions associated with the word 'benefit'

NEBA / SIMA

Regardless of terminology, effective implementation of NEBA/SIMA processes;

SIMA

Quantitative

Pre plan

Balance trade-off

Response strategy by scenario

Agreed upfront, ready to implement

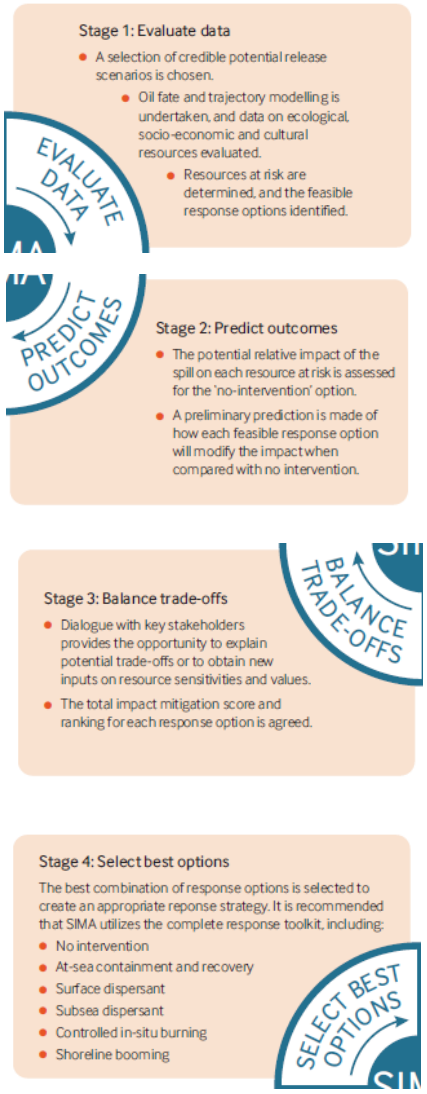
No Zero impact method

Design for likely scenario, adjustable to fit the real event

How to develop SIMA

4 stages of SIMA

1. ***Compile and evaluate data*** for relevant oil spill scenarios including
   - fate and trajectory modelling,
   - identification of resources at risk and
   - determination of feasible response options.
2. ***Predict outcomes/impacts for***
   - 'no intervention' option
   - the effectiveness of the feasible response options for each scenario.
3. ***Balance trade-offs*** by weighing and comparing
   - the range of benefits and
   - drawbacks associated with each feasible response option,
   - including no intervention, for each scenario.
4. ***Select the best response option(s)*** for each scenario,
   - based on the combination of techniques that will minimize
     - the overall ecological,
     - socio-economic and
     - cultural impacts and
     - promote rapid recovery.



SIMA Process

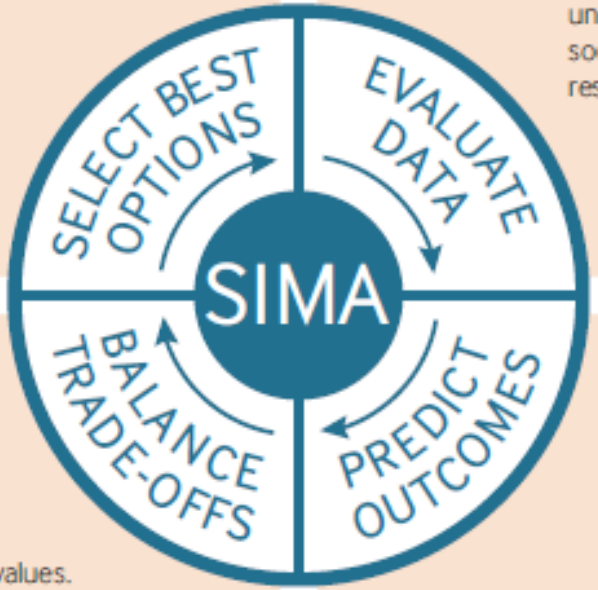
Stage 4: Select best options

The best combination of response options is selected to create an appropriate reponse strategy. It is recommended that SIMA utilizes the complete response toolkit, including:

- No intervention
- At-sea containment and recovery
- Surface dispersant
- Subsea dispersant
- Controlled in-situ burning
- Shoreline booming

Stage 1: Evaluate data

- A selection of credible potential release scenarios is chosen.
  - Oil fate and trajectory modelling is undertaken, and data on ecological, socio-economic and cultural resources evaluated.
    - Resources at risk are determined, and the feasible response options identified.



Stage 3: Balance trade-offs

- Dialogue with key stakeholders provides the opportunity to explain potential trade-offs or to obtain new inputs on resource sensitivities and values.
- The total impact mitigation score and ranking for each response option is agreed.

Stage 2: Predict outcomes

- The potential relative impact of the spill on each resource at risk is assessed for the 'no-intervention' option.
- A preliminary prediction is made of how each feasible response option will modify the impact when compared with no intervention.

SIMA Stage 2: Predict outcomes

SIMA Stage 3: Balance trade-offs

2. Relative impact assessment

4. Impact modification factors

3. Predict the effectiveness and impact modification potential of the various response options

1. Resource compartments	NO INTERVENTION: Potential relative impact	NO INTERVENTION: A	CONTAINMENT AND RECOVERY: Impact modification factor	CONTAINMENT AND RECOVERY: Relative impact mitigation score	SURFACE DISPERSANT: Impact modification factor	SURFACE DISPERSANT: Relative impact mitigation score	SUBSEA DISPERSANT	CONTROLLED IN-SITU BURNING: Impact modification factor	CONTROLLED IN-SITU BURNING: Relative impact mitigation score	SHORELINE BOOMING: Impact modification factor	SHORELINE BOOMING: Relative impact mitigation score
			B1	A x B1	B2	A x B2		B4	A x B4	B5	A x B5
Seabed	None	1	0	0	0	0		0	0	0	0
Lower water column	None	1	0	0	0	0		0	0	0	0
Upper water column	Low	2	1	2	-2	-4		0	0	0	0
Water surface	Medium	3	1	3	3	9		2	6	0	0
Air	Medum	3	1	3	2	6		1	3	0	0
Shorelines		3	1	3	3	9		2	6	1	3
Saltmarsh	*High*	*4*	*1*		*3*			*2*		*1*	
Estuarine mudflats	*High*	*4*	*1*		*3*			*2*		*1*	
Sandy beaches	*Low*	*2*	*1*		*3*			*2*		*2*	
High value resources	Low	2	0	0	1	2		0	0	1	2
Socio-economic		4	1	4	2	8		1	4	3	12
Boat harbour	*Medium*	*3*	*1*		*2*			*1*		*2*	
Water recreation	*High*	*4*	*1*		*2*			*1*		*3*	
Cultural	None	1	0	0	2	2		1	1	1	1
Total impact mitigation score:				15		32			20		18
Ranking:				**4th**		**1st**			**2nd**		**3rd**

Not feasible for a surface spill

5. Total impact mitigation score and ranking

SIMA application

Who will involved in the SIMA?

- SIMA presents the opportunity, within limits depending on the context, **to build consensus-based** response strategy among **industry**, **government authorities** and **key stakeholders from the wider community**.

When SIMA might be used?

- Pre-spill planning: make consensus during the peace time
- Incident response:
  - Select the planning scenario that most closely matches the incident circumstances, along with its associated response strategy, as a starting point.
  - Validate or adjust as needed the assumptions and considerations used in the planning SIMA to account for actual incident conditions (this can be a dynamic use of SIMA throughout the response).
  - Confirm the applicability of the pre-determined response strategy or adjust as necessary.

SIMA
development plan

IESG and SIMA

- Knowledge sharing

- Development workshops

- Developing a pilot for Sriracha and Rayong scenarios by 2019

Thank you