Response Phase:
Developing Strategy to Mitigate Impacts

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on behalf of ipieca

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Content

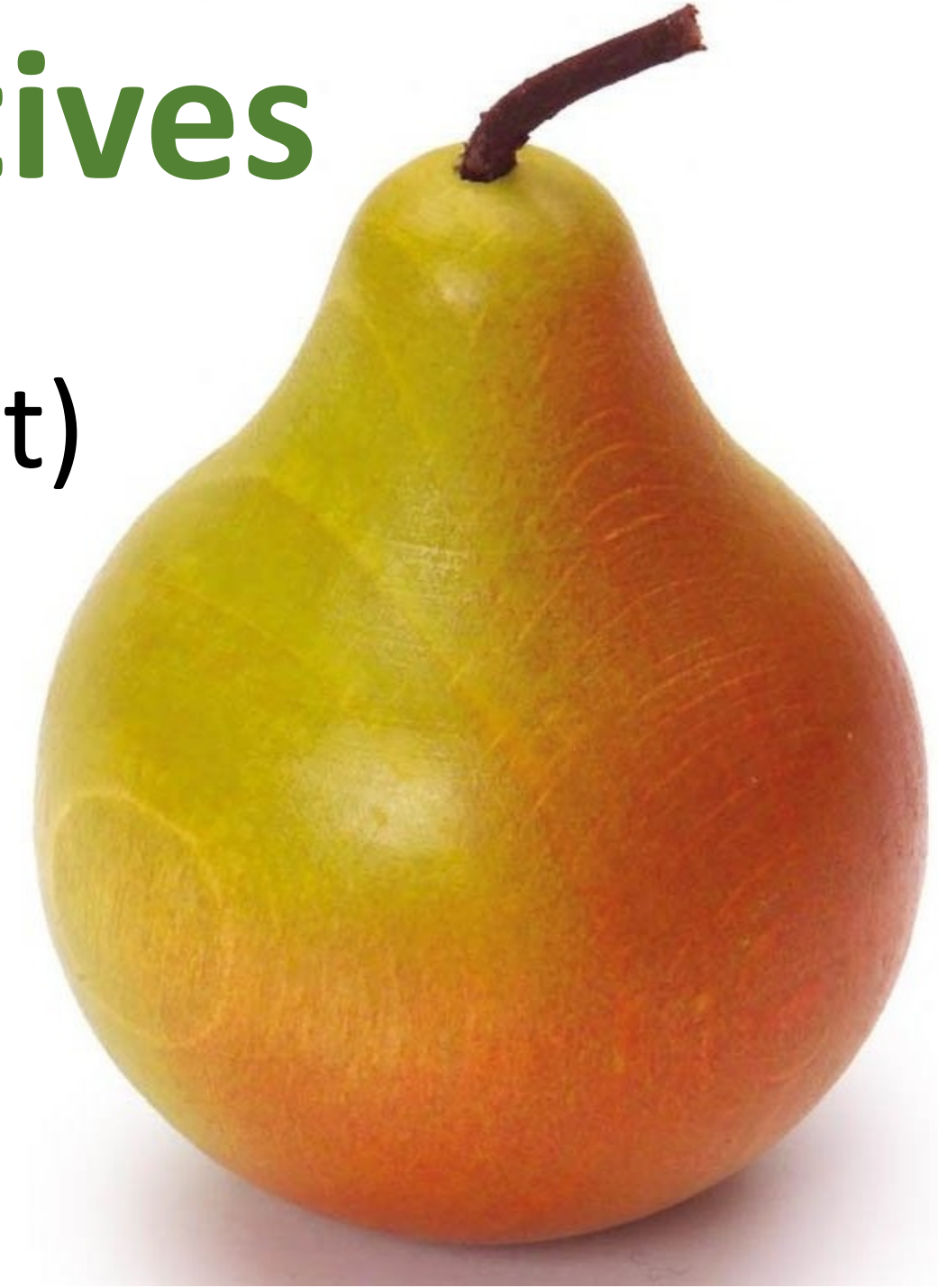
① Response objectives and toolkit

② “NEBA”

③ The “SIMA” methodology

Response objectives

1. People (safety first)
2. **Environment**
3. Assets
4. Reputation



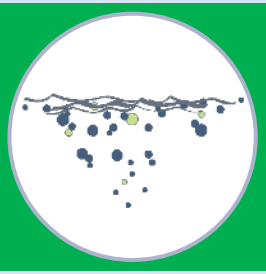
Environmental Impacts

non-persistent

oil

persistent

Response techniques: the ‘toolkit’



Dispersant

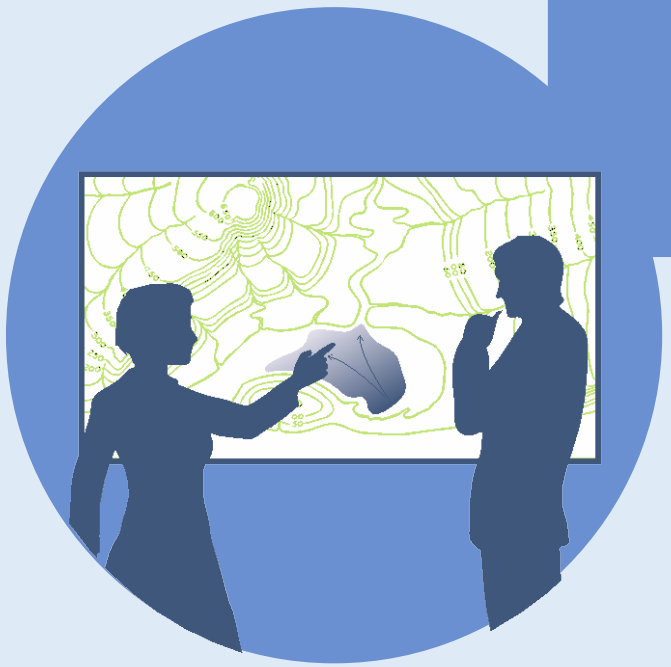
In-situ burning (controlled burn)

Containment

Shoreline protection and clean-up

Net Environmental Benefit Analysis (NEBA)

Structured approach to compare the ecological and socio-economic benefits of potential response techniques, and develop a response strategy to reduce the overall impact of an oil spill



Choosing response techniques to maximize mitigation of spill impacts

Incorporates stakeholder dialogue and can provide reassurance to communities

NEBA origins go back >25 years:

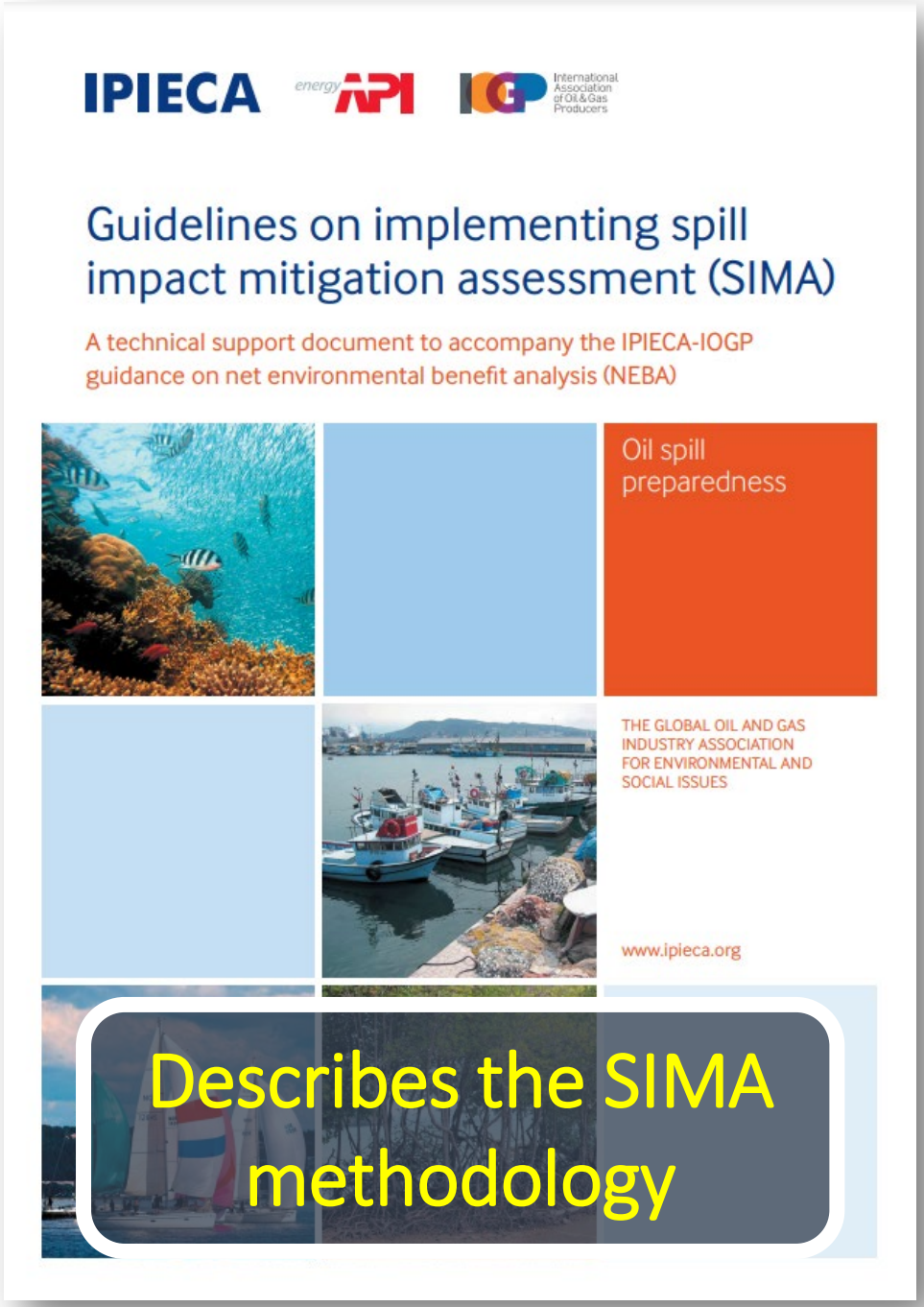
Alaskan spill in 1989

Original proposal from State was to remove and wash rocks

NOAA stated "*no net environmental benefit to be gained by shoreline excavation and washing*" and that "*this technology has the potential of aggravating the injury to the environment caused by the spill.*"

Current Industry publications

Describes the NEBA principles – updates the IPIECA 2000 publication



Describes the SIMA methodology

NEBA fundamentals

*"…NEBA will require taking into account the circumstances of the spill, the **practicalities** of clean-up response, scientific understanding of the **relative impacts** of oil and clean-up options, and some kind of **value judgement** of the **relative importance** of social, economic and environmental factors.*

***Common sense** and **consensus-forming** are just as important in this decision making as quantifiable scientific information…"*

Building a NEBA methodology

...how complex should it be?

Spill Impact Mitigation Assessment (SIMA) is a practical methodology

- Used during contingency planning and incident response
- Applicable to larger or higher consequence scenarios

Spill Impact Mitigation Assessment (SIMA)

Transparent
Promotes dialogue

Holistic
Integrates ecological, socio-economic and cultural considerations

Qualitative assessment
Incorporates community values and expert judgement

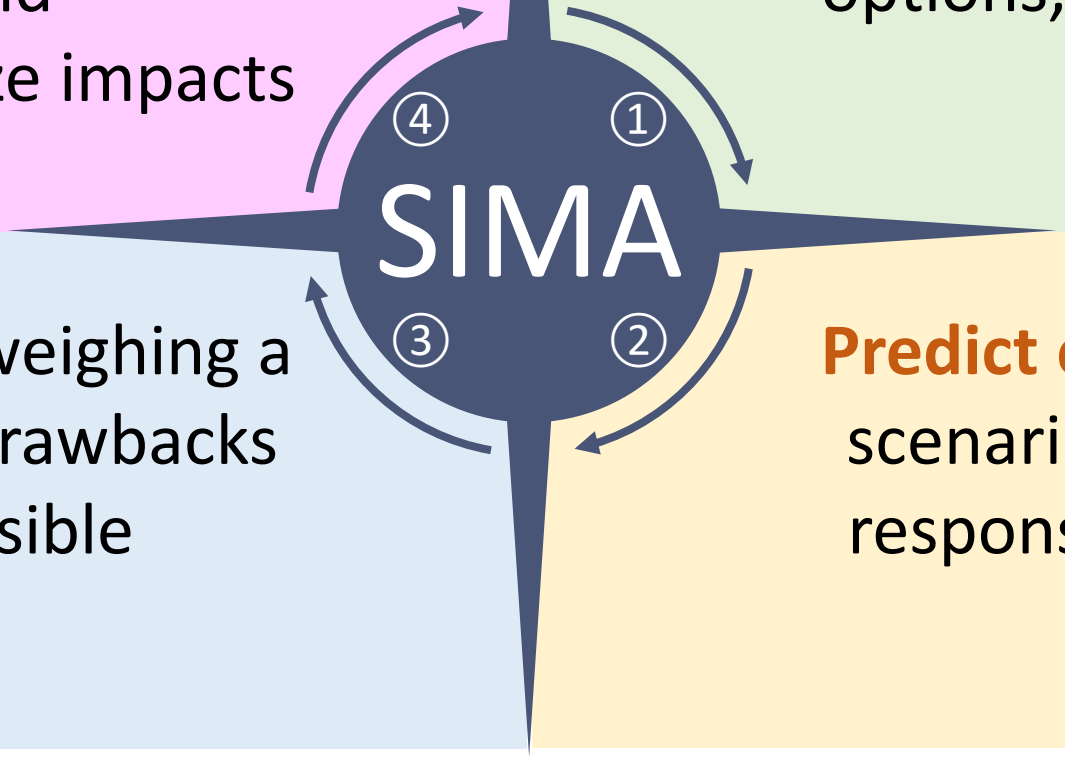
Promotes all response techniques
Assessing their benefits and drawbacks

Flexible
Adaptable to local setting and concerns

SIMA Process

Evaluate data to identify spill scenarios and potential response options, and to understand the potential impacts

Predict outcomes for the given scenarios, to determine which response options are effective and feasible



Balance trade-offs by weighing a range of benefits and drawbacks resulting from each feasible response option

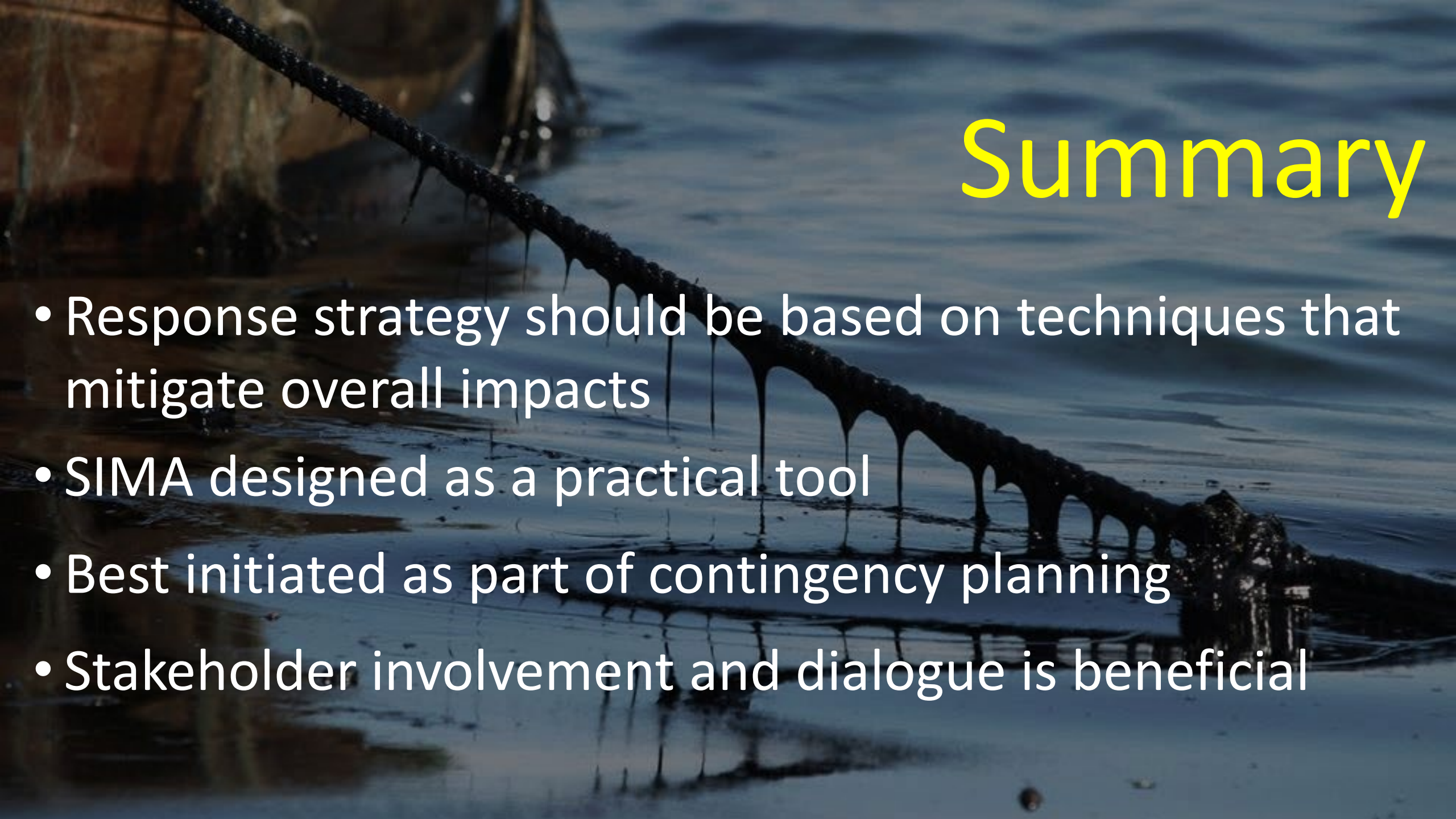
Select the best options for the given scenarios, based on which combination of tools and techniques will minimize impacts

SIMA Matrix

RESOURCE COMPARTMENTS		NO INTERVENTION	CONTAINMENT AND RECOVERY		SURFACE DISPERSANT		SUBSEA DISPERSANT	CONTROLLED IN-SITU BURNING		SHORELINE BOOMING	
		Potential relative impact	Impact modification factor	Relative impact mitigation score	Impact modification factor	Relative impact mitigation score		Impact modification factor	Relative impact mitigation score	Impact modification factor	Relative impact mitigation score
		A	B1	A x B1	B2	A x B2		B4	A x B4	B5	A x B5
Seabed	None	1	0	0	0	0	Not feasible for a surface spill	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**

Challenges

Criticism	Counter viewpoint
It's too simplistic	Choosing and prioritising response options is not complicated
The 'maths' is flawed	It's not a formula – just a guide
It doesn't quantify impact	It doesn't need to – it is assessing *relative* impact mitigation potential
What about laboratory studies?	They do not represent the real world and can lead to blinkered perspectives
Ecological concerns should override socio-economic	The default matrix is weighted towards ecology but this can be adapted to fit local values



Summary

- Response strategy should be based on techniques that mitigate overall impacts
- SIMA designed as a practical tool
- Best initiated as part of contingency planning
- Stakeholder involvement and dialogue is beneficial