

EMERGING TECHNOLOGIES FOR MARINE OIL SPILL RESPONSE

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Accidents associated with oil exploration, production, and transportation activities have led to the release of millions of tonnes of petroleum and related products into our oceans. In many cases, this has resulted in major ecological, economic, and social problems for both onshore and offshore environments. The spilled oil can directly impact living organisms including the quality and safety of seafood for human consumption. The floating oil can also be carried by waves, winds, and currents to biologically rich and sensitive nearshore waters and the intertidal ecosystems. To mitigate the environmental impacts caused by marine oil spills, a series of overarching research priorities have been identified to advance our use of oil spill countermeasure strategies such as spill treating agents (e.g., dispersants, herders, and surface-washing agents), natural attenuation and bioremediation, in-situ burning, oil translocation, as well as decanting and oily waste disposal. In addition, the decision-support tools for oil spill response have evolved rapidly in recent years. Although much progress has been made, many major challenges remain to be addressed for the safe and effective response of marine oil spills. This special issue will be dedicated to emerging marine oil spill response technologies, including treatment techniques and management tools to support decision-making on their use. It aims to provide a summary of current and emerging spill response methods with information on their mode of action, application methods, performance and environmental risks associated with their use. The special issue calls for original research, reviews, and perspectives in the field of the current standing of marine oil spill response technologies. Topics include, but are not limited to:

- Marine oil spill prevention and impact mitigation
- Simulation and modelling of oil behaviour
- Spilled oil detection, identification and characterization
- Fate, transport, and effects of spilled oil in the marine environment
- Natural attenuation of spilled oil
- Spill treating agents for onshore and offshore oil remediation
- In-situ burning
- Field tests of oil spill response techniques
- Physical/Mechanical recovery of oil
- Oil-water separation technologies
- Oily waste treatment, disposal and management
- Methods for the selection of the optimal oil spill response strategy
- Aquatic toxicology associated with oil spills and response measures
- Decision support methods and best management practices for oil spill response
- Computer graphics, GIS and expert systems for supporting response decision making
- Optimization of spill response and treatment processes
- Ecosystem and biodiversity recovery from oil spills
- Co-contamination of oil and other environmental pollutants

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