since 1961

Baltica

BALTICA Volume 27 Special Issue 2014 : 1-2
doi: 10.5200/baltica.2014.27.08

Reducing the oil spill threat to the marine environment (Foreword)

Victor Klemas[1] and Nerijus Blažauskas[2]

Oil spills can harm marine life and degrade coastal habitat. Most of the large oil spills in the oceans and coastal waters stem from oil tanker groundings, break-ups and collisions resulting in surface oil slicks and clouds of neutrally buoyant oil droplets below the surface. Tankers emptying their ballast tanks also cause oil contamination. Oil spills occurring during offshore drilling operations are not as numerous, as tanker break-ups, but they can cause more long-term damage to the environment as the Deepwater Horizon oil spill in the Gulf of Mexico proved.

To limit the damage from spills and to facilitate containment and cleanup efforts, authorities responsible for clean-up operations need to rapidly obtain information on the type of oil, location, size and extent of the spill, direction and speed of oil movement, and wind, current and wave information for predicting future oil drift and dispersion. To optimize the response to oil spills, comprehensive maps of most valuable assets and most vulnerable coastal areas must be produced. In addition, formal agreements and joint response plans between neighbouring countries, along with a common methodology and approach must be prepared.

For oil spill emergencies the main operational data requirements are fast turn-around time and frequent imaging of the site to monitor the dynamics of the spill. Remote sensors on satellites and aircraft have been able to meet these requirements by tracking the spilled oil over wide areas at various resolutions and at frequent intervals, thus facilitating the targeting of cleanup and control efforts, including the deployment of skimming vessels and protective booms. Remote sensors also provide key inputs to drift prediction models by observing physical and biological processes on the sea surface. For example, thermal infrared sensors are mapping sea surface temperatures, microwave radiometers are measuring sea surface salinity, radar imagers are mapping surface wave fields and oil slicks, radar altimeters are providing data on sea surface elevation and currents, and scatterometers are measuring sea surface winds.

Sensitivity mapping, damage cost assessment, evaluation of coastal ecosystem services affected by the accidental oil pollution are the essential steps in oil pollution preparedness, response and cooperation efforts. There are number of attempts made in order to assist responders during an incident. A good example of simplified guidance providing a structured approach to successfully manage the development of oil spill sensitivity maps, was prepared by IPIECA - the global oil and gas industry association for environmental and social issues. In the recommended approach, the integration of sensitivity maps within the oil spill contingency plan was promoted by indicating the key elements to be included in each type of map.

Sandy beaches of the south-eastern part of the Baltic Sea are rather unique and create a particular area of interest, accommodating oil extraction, transportation and handling activities near the most sensitive areas under the protection of the EU and UNESCO. The importance of effective oil spill management and environmental security, related to the risk of accidental oil spills, and their impact on the marine environment was recognized by the NATO Science for Peace and Security Programme (SPS) for 2012–2014.

However, the assessment of sensitivity to and management of the consequences of potential oil spills was slightly complicated as the area of response and threat belongs to the neighbouring Kaliningrad Oblast of Russian Federation and Lithuania with different traditions, political measures and research capabili-

ties. Despite of that the common Lithuanian-Russian project "Development of solutions for effective oil spill management in the South-Eastern Baltic" was established that resulted in the present *Baltica* Special Issue publications. The hope of authors is that the current study makes a valuable step forward in order to operationally harmonize and scientifically ground a response capacity for this commonly used area.

Editors acknowledge reviewers of this *Baltica* Journal Special Issue Professor Emelyan Emelyanov (Kaliningrad) and Dr. Henry Vallius (Helsinki–Espoo) for their useful comments and suggestions. Authors acknowledge highly effective management of the above project partially funded by the NATO SPS Programme.

School of Marine Science and Policy,
University of Delaware[1]
Marine Science and Technology Centre,
Klaipėda University[2]