

Improving Risk Assessments of Hydrocarbon Spills in Harbor Environments

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II. The stochastic assessment approach involved 100 simulation of every modeling scenario using different samples of ambient conditions. The growing pressure of exposure to petroleum hydrocarbons in tropical Australia involves novel, innovative approaches for assessing risks of hydrocarbon spills. Such an approach has been developed through an in depth collaboration between research and industry organizations. The approach links outcomes of a semi-quantitative risk assessment methodology to results of spill weathering and trajectory numerical modeling, then to emerging tropical toxicological data. The danger assessment was supported triple bottom line concept; it uses a multi-disciplinary expert panel to assess the possibilities and consequential impacts related to potential risk events, like accidental hydrocarbon spills. Typical incidents resulting in hydrocarbon spills were identified supported the analysis of risk profiles for the study area. Model validations suggested that Delft3D-FLOW correctly propagated the tidal variations from the open boundary through the whole model domain, and accounted for variable in time and space winds. Spill trajectory modeling was administered employing a purpose-developed oil spill trajectory and fates model, MEDSLIK-II. The stochastic assessment approach involved 100 simulation of every modeling scenario using different samples of ambient conditions whenever. Three thresholds for modeling of potential entrained hydrocarbon impacts were set to 10 ppb, typical of temperate climates, and 103 ppb and 64 ppb, which are EC10 for tropical coral without and with UV impacts. An inter-comparison of the respective probability maps demonstrated that appropriate thresholds may improve the predictive efficiency of spill impact assessments within the estuarine and open-ocean environments, resulting in more coherent contingency planning and response measures

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