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HNS-MS : Improving Member States preparedness to face an HNS pollution of the Marine System

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When dealing with a HNS pollution incident, one of the priority requirements is the identification of the hazard and an assessment of the risk posed to the public and responder safety, the environment and socioeconomic assets upon which a state or coastal community depend. The primary factors which determine the safety, environmental and socioeconomic impact of the released substance(s) relate to their physico-chemical properties and fate in the environment.

Until now, preparedness actions at various levels have primarily aimed at classifying the general environmental or public health hazard of an HNS, or at performing a risk analysis of HNS transported in European marine regions. Operational datasheets have been (MIDSIS-TROCS) or are being (MAR-CIS) developed collating detailed, substance-specific information for responders and covering information needs at the first stage of an incident. However, contrary to oil pollution preparedness and response tools, only few decision-support tools used by Member State authorities (Coastguard agencies or other) integrate 3D models that are able to simulate the drift, fate and behaviour of HNS spills in the marine environment. When they do, they usually consider simplified or steady-state environmental conditions. Moreover, the above-mentioned available HNS information is currently not sufficiently detailed or not suitably classified to be used as an input for an advanced HNS support decision tool.

HNS-MS aims at developing a 'one-stop shop' integrated HNS decision-support tool that is able to predict the drift, behaviour and Fate of HNS spills under realistic environmental conditions and at providing key product information - drawing upon and in complement to existing studies and databases - to improve the understanding and evaluation of a HNS spill situation in the field and the environmental and safety-related issues at stake. The 3D HNS drift and fate model and decision-support tool will also be useful at the preparedness stage.
The expected results will be an operational HNS decision-support tool (prototype) for the Bonn Agreement area that can also be viewed as a demonstrator tool for other European marine regions. The developed tool will have a similar operational level as OSERIT, the Belgian oil spill drift model.

The HNS decision-support tool will integrate the following features:
1. A database containing the physico-chemical parameters needed to compute the behaviour in the marine environment of 100+ relevant HNS;
2. A database of environmental and socioeconomic HNS-sensitive features;
3. A three dimensional HNS spill drift and fate model able to simulate HNS behaviour in the marine environment (including floaters, sinkers, evaporators and dissolvers).
4. A user-friendly web-based interface allowing Coastguard stations to launch a HNS drift simulation and visualize post-processed results in support of an incident evaluation and decision-making process.

In this contribution, we will present the methodology followed to develop these four features.